

MM

---

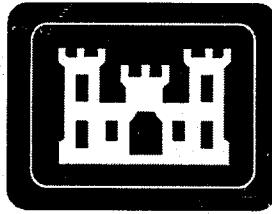
USACE REVIEW DRAFT

# **FUSRAP 1999 NESHAP ANNUAL REPORT FOR NIAGARA FALLS STORAGE SITE (NFSS)**

**LEWISTON, NEW YORK**

**AUGUST 2000**

---



U.S. Army Corps of Engineers  
Buffalo District Office  
Formerly Utilized Sites Remedial Action Program

# **FUSRAP 1999 NESHAP ANNUAL REPORT FOR NIAGARA FALLS STORAGE SITE (NFSS)**

**AUGUST 2000**

---

---

*prepared by*

U.S. Army Corps of Engineers, Buffalo District Office, Formerly Utilized Sites Remedial Action Program

*with technical assistance from*

Science Applications International Corporation – Buffalo Technical Support  
under Contract No. DAHA90-94-D-007-DN04

**THIS PAGE INTENTIONALLY LEFT BLANK**

## **TABLE OF CONTENTS**

1.	INTRODUCTION.....	1
1.1	SITE DESCRIPTION.....	1
1.2	SOURCE DESCRIPTION.....	1
2.	REGULATORY STANDARDS.....	4
2.1	40 CFR 61, SUBPART H .....	4
2.2	40 CFR 61, SUBPART Q .....	4
3.	AIR EMISSION DATA.....	4
4.	DOSE ASSESSMENTS .....	5
4.1	MODEL SOURCE DESCRIPTION.....	5
4.2	DESCRIPTION OF DOSE MODEL.....	5
4.3	COMPLIANCE ASSESSMENT.....	6
5.	SUPPLEMENTAL INFORMATION .....	6
5.1	RADON-222 FLUX.....	6
6.	REFERENCES.....	7

APPENDIX A – ANNUAL WIND EROSION EMISSION CALCULATION

APPENDIX B – SOURCE TERM CALCULATIONS AND ANNUAL AIR RELEASES

APPENDIX C – 1999 RADON-222 FLUX MEASUREMENTS

APPENDIX D – NATIONAL CLIMATIC DATA CENTER, BUFFALO, NEW YORK

## ACRONYMS AND ABBREVIATIONS

BNI	Bechtel National, Inc.
CAP88-PC	Clean Air Act Assessment Package-1988, Version 2.00
Ci	curie(s)
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
E	annual wind erosion emission
EPA	Environmental Protection Agency
FUSRAP	Formerly Utilized Sites Remedial Action Program
g	gram(s)
m <sup>2</sup>	square meter(s)
MEI	maximally exposed individual
mph	miles per hour
mrem	millirem
NOAA	National Oceanic and Atmospheric Administration
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFSS	Niagara Falls Storage Site
TETLD	tissue-equivalent thermoluminescent dosimeters
USACE	United States Army Corps of Engineers
WCS	waste containment structure
yr	year(s)

## **1. INTRODUCTION**

In 1974, the Atomic Energy Commission, a predecessor to the Department of Energy (DOE), instituted the Formerly Utilized Sites Remedial Action Program (FUSRAP). This program is now managed by United States Army Corps of Engineers (USACE) to identify and clean up, or otherwise control sites where residual radioactivity remains from the early years of the nation's atomic energy program or from commercial operations causing conditions that Congress has authorized USACE to remedy under FUSRAP. The Niagara Falls Storage Site (NFSS) is a DOE owned storage site managed under FUSRAP. In October 1997, Congress transferred the responsibility for FUSRAP from DOE to USACE.

### **1.1 Site Description**

NFSS is located in the Town of Lewiston in northwestern New York state, northeast of Niagara Falls and south of Lake Ontario (Figure 1). The 77-ha site includes one former process building (Building 401), two office buildings, a small equipment shed, and a 4-ha Waste Containment Structure (WCS). The property perimeter is fenced and public access is restricted.

Land use in the region is primarily rural; however, the site is bordered by a chemical waste disposal facility (ChemWaste Management Chemical Services, Inc.) on the north, a solid waste disposal facility (Modern Disposal, Inc.) on the east and south, and a Niagara Mohawk Power Corporation right-of-way on the west. The nearest residential areas are approximately 1.1 km southwest of the site; the residences are primarily single-family dwellings.

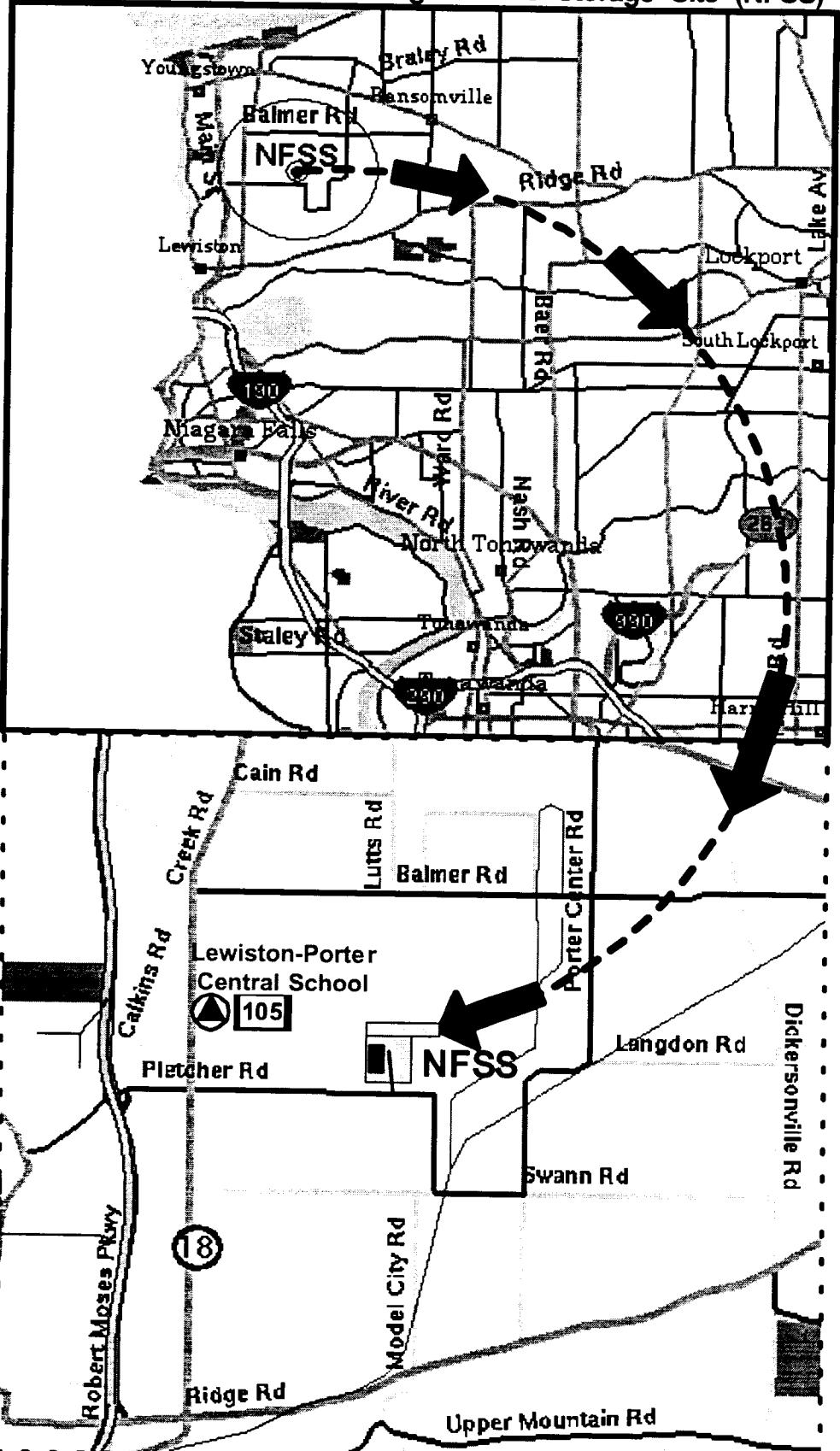
### **1.2 Source Description**

Beginning in 1944, NFSS was used as a storage facility for low-level radioactive residues and wastes. The residues and wastes are the process by-products of uranium extraction from pitchblende (uranium ore). Waste also came from clean-up activities of buildings and process equipment used in the uranium extraction process. The residues originated at other sites and were transferred to NFSS for storage in buildings and onsite pits and surface piles. Table 1 includes a brief history and description of the major radioactive residues and wastes transferred to NFSS. From 1953 to 1959 and 1965 to 1971, Building 401 was used as a boron-10 isotope separation plant.

**Table 1. History and Description of Wastes Transferred to NFSS**

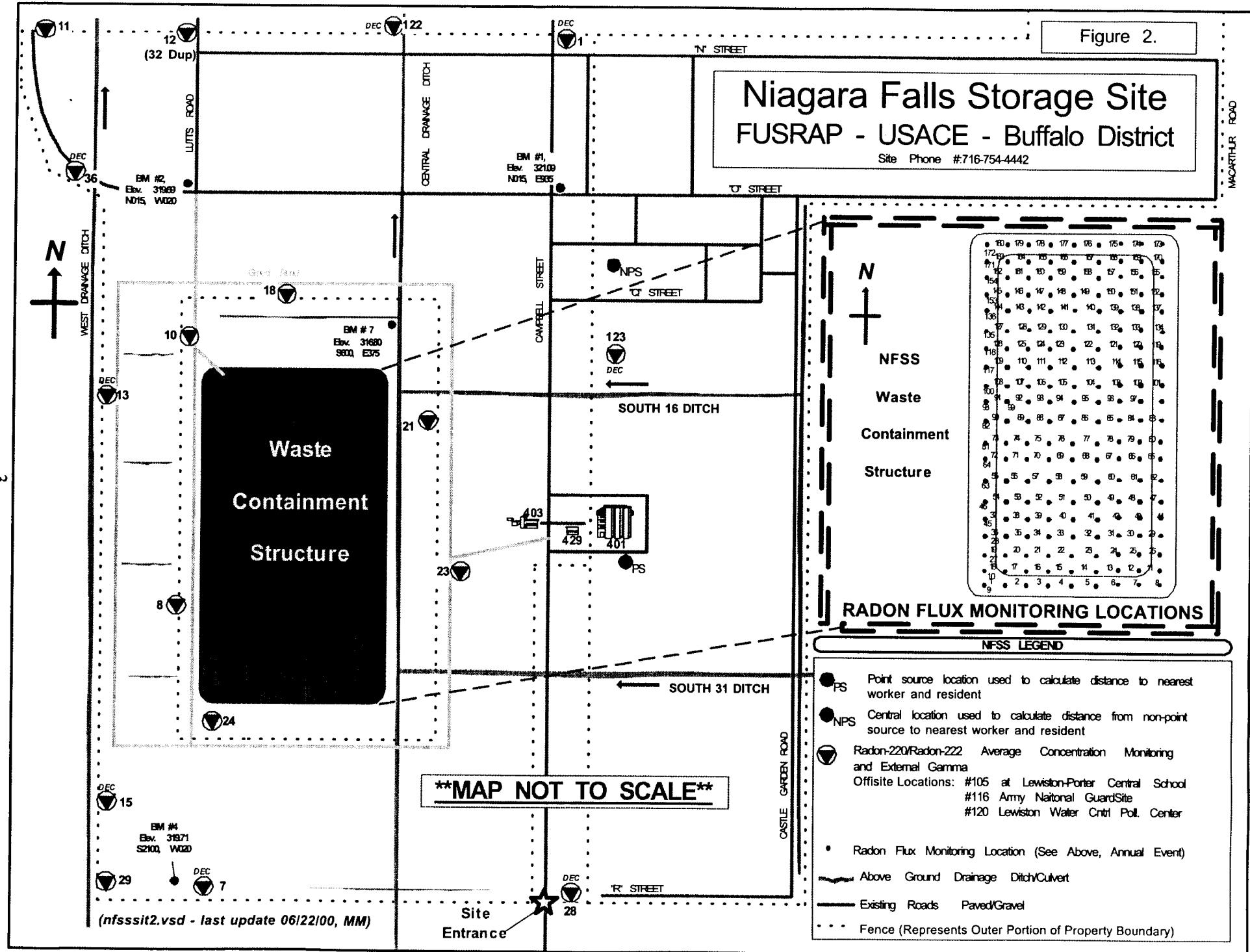
<b>Material</b>	<b>Description</b>	<b>Transferred to NFSS</b>
<b>L-50</b>	Low-level, high-activity radioactive residues from the processing of low-grade uranium ores at Linde Air Products, Tonawanda, New York.	1944
<b>R-10</b>	Low-level, low-activity radioactive residues from the processing of low-grade uranium ores at Linde Air Products, Tonawanda, New York.	1944
<b>F-32</b>	Low-level, high-activity radioactive residues from the processing of high-grade uranium ores at Middlesex, New Jersey.	1944 to early 1950
<b>L-30</b>	Low-level, high-activity radioactive residues from the processing of low-grade uranium ores at Linde Air Products, Tonawanda, New York.	1945
<b>K-65</b>	Low-level, high-activity radioactive residues from the processing of low-grade uranium ores at Mallinckrodt Chemical Works, St. Louis, Missouri.	1949
<b>Middlesex Sands</b>	Sand and abraded material from the sandblasting of buildings and process equipment where the F-32 residue was generated at Middlesex Metal Refinement Plant, Middlesex, New Jersey.	1950

**Figure 1. Site Location Niagara Falls Storage Site (NFSS)**



 Radon-220/Radon-222 Average Concentration Monitoring and External Gamma (Monitors located at Lewiston-Porter School)

Figure 2.



Since 1971, activities at NFSS have been confined to residue and waste storage and remediation. All onsite and offsite areas with residual radioactivity exceeding DOE guidelines were remediated between 1955 and 1992; materials generated during remedial actions (approximately 195,000 m<sup>3</sup>) are encapsulated in the WCS (Figure 2), which is specifically designed to provide long-term storage of the material. During 1999, there were no remedial activities performed.

## 2. REGULATORY STANDARDS

The Environmental Protection Agency's (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) are compliance standards that require annual reporting of emissions of radionuclides and radon gas from operations at DOE facilities.

### 2.1 40 CFR 61, Subpart H

40 CFR 61, Subpart H provides standards for reporting of emissions of radionuclides (excluding radon-222 and radon-220) into the air. Compliance with Subpart H is verified by applying the EPA approved CAP88-PC model. 40 CFR 61.92 states that emissions "shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr." Section 61.93(b) requirements for continuous monitoring from point sources (stacks or vents) are not applicable to NFSS.

### 2.2 40 CFR 61, Subpart Q

40 CFR 61, Subpart Q applies to all storage and disposal facilities that store radium-containing material that emits radon-222 into air. Compliance with Subpart Q is verified by annual monitoring of the WCS for radon-222 flux. Subpart Q states that "no source shall emit more than 20 pCi/m<sup>2</sup>-s of radon-222."

## 3. AIR EMISSION DATA

Table 2 summarizes the sources of air emissions. Appendix A contains the annual wind erosion emission (E) calculation. Appendix B contains the source term calculations and annual air releases.

**Table 2. Air Emission Data - NFSS**

Point Sources	Type Control	Efficiency	Distance to Hypothetical Maximally Exposed Individual
Ra-226 hotspot from Phase I sampling <sup>a</sup>	vegetative cover	99 percent <sup>b</sup>	1300 meters Southwest (resident) <sup>c</sup> 195 meters East (off-site worker)
Non-Point Sources	Type Control	Efficiency	Distance to Hypothetical Maximally Exposed Individual
in situ soil	vegetative cover	99 percent <sup>b</sup>	1475 meters Southwest (resident) <sup>d</sup> 275 meters East (off-site worker)
Group Sources	Type Control	Efficiency	Distance to Hypothetical Maximally Exposed Individual
none	not applicable	not applicable	not applicable

<sup>a</sup>Ra-226 was detected at 1,140 pCi/g (SS203-003); the next highest detection was 16 pCi/g.

<sup>b</sup>This efficiency is the factor used to correct PM<sub>10</sub> emissions for vegetative cover (Appendix A).

<sup>c</sup>Distance from SS203-003 to nearest resident and worker (defined previously (BNI 1997)).

<sup>d</sup>Distance from central location of non-point source to nearest resident and worker; nearest resident and worker defined previously (BNI 1997).

## **4. DOSE ASSESSMENTS**

### **4.1 Model Source Description**

To determine the dose from airborne particulates potentially released from NFSS during 1999, an annual wind erosion emission (E) (Appendix A) is first calculated using local climatological data from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (Appendix D – climatological data included as last appendix due to size). The E factor considers the number of weekly and monthly wind disturbances that exceed the threshold friction velocity above which erosion occurs. The E factor is then applied to the source term to calculate annual released activity for each radionuclide. The source term was developed from sample data compiled during the 1999 Phase I remedial investigation for site soil contamination (Appendix B). Contributions from radon gas, per regulatory guidance, are not considered in this calculation. The total annual released activity is then entered into the EPA's CAP88-PC computer model to perform two calculations:

1. The first calculation estimates resultant doses from airborne particulates to hypothetical individuals at the distances to the nearest residences and to the nearest commercial/industrial facilities as measured from a central location onsite (center of the WCS). Hypothetical doses are then corrected for residential occupancy (conservatively assumed to be 24 hours/day, 365 days/year) and commercial/industrial facility occupancy (40 hours/week, 50 weeks/year). The hypothetical individual receiving the higher of these calculated doses is then identified as the hypothetical Maximally Exposed Individual (MEI) for airborne particulate dose.
2. The second calculation estimates the hypothetical airborne particulate collective dose to the population within 80 km of the site using a population file (generated from county population densities) to determine the number of people in circular grid sections fanning out to 80 km from the center of site.

### **4.2 Description of Dose Model**

#### CAP88-PC Computer Program

The CAP88-PC model is a set of computer programs, databases, and associated utility programs that estimate the dose and risk from airborne radioactivity emissions. The EPA NESHAP compliance procedures for airborne radioactivity emissions and DOE facilities (40 CFR 61.93(a)) require the use of the CAP88-PC model, or other approved procedures to calculate effective dose equivalents to members of the public.

CAP88-PC uses a modified Gaussian plume equation to estimate the average dispersion of radionuclides released from a site. Assessments are done for a circular grid of distances and directions for a radius of 80 kilometers (50 miles) around the facility. Agricultural arrays of milk cattle, beef cattle and agricultural crop area are generated automatically, requiring the user to supply only the State name or agricultural productivity values. Organs and weighting factors are modified to follow the ICRP 26/30 Effective Dose Equivalent calculations. The calculation of deposition velocity and the default scavenging coefficient is also modified to incorporate current EPA policy. The default scavenging coefficient is calculated as a function of annual precipitation. The program calculates the effective dose equivalents by combining the inhalation and ingestion intake rates and the air and ground surface concentrations with dose conversion factors.

### CAP88-PC Input

Input parameters for CAPP88-PC include:

Radionuclide activity releases (Appendix B)

Weather data (average annual temperature, total annual precipitation)

Emission source height and area

Distances to nearest resident and nearest off-site worker (first modeling run only)

The population data for the area around the facility was taken from previous calculations (BNI 1994). This population data was entered into a text file that the program could read and incorporate into the model for the population dose.

### CAP88-PC Output

The "Dose and Risk Equivalent Summaries" from CAP88-PC contains the resulting effective dose equivalents for each modeled run. The effective dose equivalent summary for the nearest resident and off-site worker contains results for the 16 directions around the facility. The effective dose equivalent for each is found by extracting the value for the appropriate distance and direction. The effective dose equivalent for the collective population is the total collective population (person-rem/year) result from any of the summaries in the "Dose and Risk Equivalent Summaries" report from the population assessment.

### **4.3 Compliance Assessment**

CAP88-PC modeling is not necessary because the annual E factor is 0.0 g for reporting year 1999 (Appendix A). This results in a released activity of 0.0 Ci/year (Appendix B). By default, therefore, the effective dose equivalent of the hypothetical MEI is:

Resident -            0.0 mrem per year at all distances  
Off-site Worker -    0.0 mrem per year at all distances

Based on the annual E factor of 0.0 g, the default annual effective dose for the population within 80 km of the facility is:

Population -        0.0 person-rem per year

## **5. SUPPLEMENTAL INFORMATION**

### **5.1 Radon-222 Flux**

Measurement of radon-222 flux provides an indication of the rate of radon-222 emission from a surface. Radon-222 flux is measured with activated charcoal canisters placed at 15-m intervals across the surface of the WCS for a 24-h exposure period. Measurements for 1999 are presented in Appendix C; measurement locations are shown in Figure 2.

Measured results for 1999 ranged from nondetect to 1.22 pCi/m<sup>2</sup>-s, with an average result of 0.104 pCi/m<sup>2</sup>-s. As in previous years, these results are well below the 20 pCi/m<sup>2</sup>-s standard specified in 40 CFR Part 61, Subpart Q, and demonstrate the effectiveness of the containment cell design and construction in mitigating radon-222 migration.

## **6. REFERENCES**

Bechtel National, Inc. (BNI), 1997. "1996 Public Inhalation Dose" 14501-158-CV-030, Rev. 0, Oak Ridge, TN.

Bechtel National, Inc. (BNI), 1994. "CAP88-PC Population Files for NFSS" 14501-158-CV-012, Rev. 0, Oak Ridge, TN.

Environmental Protection Agency (EPA), 1995. *Compilation of Air Pollutant Emission Factors, Fifth Edition*, AP-42, Office of Air Quality Planning and Standards, Research Triangle Park, NC (January).

**THIS PAGE INTENTIONALLY LEFT BLANK**

**APPENDIX A**

**ANNUAL WIND EROSION  
EMISSION CALCULATION**

**FUSRAP 1999 NESHAP ANNUAL REPORT  
FOR  
NIAGARA FALLS STORAGE SITE (NFSS)**

**THIS PAGE INTENTIONALLY LEFT BLANK**

## **WIND EROSION EMISSION CALCULATIONS**

The wind erosion emission calculation is based on local climatological data collected from the Greater Buffalo International Airport by the NOAA, National Climatic Data Center (Appendix D). Results for each step in calculating the wind erosion emission factor, E, are found in Tables A-1 and A-2.

Following 1996 calculations (BNI 1997), the threshold friction velocity ( $U_t$ ) for overburden was selected as the critical value.

$$U_t = 1.02 \text{ m/sec}$$

The number of disturbances for the year 1999 was estimated as 32. This is based on weekly disturbances from April to October and monthly disturbances the rest of the year. The fastest two minute wind speeds for each of the periods in 1999 are tabulated below. This data was obtained from the National Climatic Data Center (Appendix D) for the Buffalo, New York station.

<b>Table A-1. Wind Velocity Raw Data</b>		
<b>Month</b>	<b>Period start</b>	<b>Max 2 minute wind velocity in mph</b>
January	1	39
February	1	37
March	1	34
April	1	37
	8	28
	15	26
	22	26
	29	22
May	6	34
	13	25
	20	34
	27	30
June	3	26
	10	28
	17	17
	24	22
July	1	31
	8	29
	15	25
	22	28
	29	41
August	5	29
	12	29
	19	32
	26	25
September	2	17
	9	24
	16	22
	23	31
October	1	33
November	1	33
December	1	38

The difference between the actual anemometer height and the reference height is used in the following equation (EPA 1995 Equation 5) to convert the wind velocities from those at the actual anemometer height to the reference height:

$$U_{rN} = U_{aN} * (\ln(Z_r/Z_o)/\ln(Z_a/Z_o)) \text{ Where}$$

$Z_a$  = 7 m., the actual anemometer height

$Z_r$  = 10 m., the reference height

$Z_o$  = roughness height (0.003 m or 0.3 cm)

$U_{aN}$  = maximum 2 minute velocities from the table above

$U_{rN}$  = corrected velocities

$$U_{rN} = U_{aN} * (\ln(10m/0.003m)/\ln(7m/0.003m)) = U_{aN} * (1.04599)$$

Table A-2 shows the corrected velocities,  $U_{rN}$ .

The equivalent friction velocity,  $U_N$ , for each period, N, between disturbances (EPA 1995 Equation 4) is:

$$U_N = 0.053 * U_{rN} = 0.053 * (U_{aN} mph(1.04599)) * (0.44704m/s)/(1mph)$$

These equivalent friction velocities are then used to generate erosion potentials using the equation:

$$P_N = [58 * (U_N - U_t)^2] + [25 * (U_N - U_t)]$$

In order to generate erosion potentials, the values of  $U_N$  must be greater than the threshold velocity ( $U_t$ ) of 1.02 m/sec.

Table 2 shows equivalent friction velocities for the maximum 2 minute wind speed for each inter disturbance period. No velocities exceeded the threshold velocity of 1.02 m/sec in 1999.

<b>Table A-2. Corrected and Equivalent Wind Velocity</b>			
<b>Month</b>	<b>Period beginning</b>	<b><math>U_{rN}</math>, corrected wind velocity in mph</b>	<b><math>U_N</math>, equivalent friction velocity in m/sec</b>
January	1	40.8	0.97
February	1	38.7	0.92
March	1	35.6	0.84
April	1	38.7	0.92
	8	29.3	0.69
	15	27.2	0.64
	22	27.2	0.64
	29	23.0	0.55
May	6	35.6	0.84
	13	26.1	0.62
	20	35.6	0.84
	27	31.4	0.74
June	3	27.2	0.64
	10	29.3	0.69
	17	17.8	0.42
	24	23.0	0.55
July	1	32.4	0.77

	8	30.3	0.72
	15	26.1	0.62
	22	29.3	0.69
	29	42.9	1.02
August	5	30.3	0.72
	12	30.3	0.72
	19	33.5	0.79
	26	26.1	0.62
September	2	17.8	0.42
	9	25.1	0.59
	16	23.0	0.55
	23	32.4	0.77
October	1	34.5	0.82
November	1	34.5	0.82
December	1	39.7	0.94

The sum of the time intervals that generate particulate emissions is called P, and the emission factor for 10 micron particles (EPA 1995 Equation 2) is:

$$P = k * \sum P_i \text{ Where}$$

$P_i$  is the emissions for the  $i^{\text{th}}$  time interval

k is the particle size multiplier and equals 0.5 for 10 micron particles

Because no velocities exceeded the threshold velocity, the emission factor (P) is necessarily equal to zero. This leads to the conclusion that the annual wind erosion emission (E) for the calendar year 1999 is also zero.

For informational purposes, the calculation is continued for when time intervals exist which do generate velocities in excess of the threshold velocity.

If the wind velocity had exceeded the threshold velocity, the value for emissions would be corrected for vegetative cover by a factor of V (0.99 for NFSS, EPA 1985, BNI 1997) and for average moisture content PE (109 for NFSS in 1999, EPA 1985, BNI 1997). The corrected emission factor ( $PM_{10}$ ), for 10 micron particles (EPA 1995 Equation 4-1) is:

$$PM_{10} = P * (1 - V) / (PE / 50)^2 \text{ Where the inputs are described above}$$

This  $PM_{10}$  value is then used to derive an annual wind erosion emission (E) in the following formula:

$$E = PM_{10} * A \text{ Where}$$

A is the Phase 1 sampling area

To derive the releases for each radionuclide, the E factor is multiplied by the concentration of each radionuclide in the cover material. The source term and annual release activity are developed in Appendix B.

## **APPENDIX A REFERENCES**

Bechtel National, Inc. (BNI), 1997. "1996 Public Inhalation Dose" 14501-158-CV-030, Rev. 0, Oak Ridge, TN.

Environmental Protection Agency (EPA), 1995. *Compilation of Air Pollutant Emission Factors, Fifth Edition*, AP-42, Office of Air Quality Planning and Standards, Research Triangle Park, NC (January).

Environmental Protection Agency (EPA), 1985. *Rapid Assessment of Exposure to Particulate Emissions from Surface Contaminated Sites*, EPA/600/8-85/002, Office of Health and Environmental Assessment, Washington, DC (February).

**APPENDIX B**

**SOURCE TERM CALCULATIONS  
AND  
ANNUAL AIR RELEASES**

**FUSRAP 1999 NESHAP ANNUAL REPORT  
FOR  
NIAGARA FALLS STORAGE SITE (NFSS)**

**THIS PAGE INTENTIONALLY LEFT BLANK**

The source term for NFSS NESHAPS calculations was developed considering the radionuclides in the uranium, thorium, and actinium decay series as shown in Table B-1. Concentration data for these radioisotopes were taken from the 1999 Phase I remedial investigation as opposed to the historical site database that had been used for previous annual NESHAP reports. The newer data set was used given that many areas around NFSS have already been remediated and covered with clean backfill. Phase I sampling performed in the summer of 1999 focused on identifying areas with elevated activity in surface soil, if any, would still be conservative, but would be more realistic than using the historical data set.

Concentration data are not available for all the radionuclides in Table B-1. If explicit results for a radionuclides are not available, it was assumed that the radionuclide was present in equilibrium with (at the same concentration as) the nearest long-lived parent. Branching ratios were also used, as appropriate, to more accurately estimate source term concentrations.

**Table B-1. Radionuclides Considered in NESHAPS Evaluation**

Uranium Series	Thorium Series	Actinium Series
U-238	Th-232	U-235
Th-234	Ra-228	Th-231
Pa-234m	Ac-227	Pa-231
Pa-234	Th-228	Ac-227
U-234	Ra-224	Th-237 (98.62%)
Th-230	Rn-220 (thoron)	Fr-223 (1.38%)
Ra-226	Po-216	Ra-223
Rn-222 (radon)	Pb-212	Rn-219 (actinon)
Po-218	Bi-212	Po-215
Pb-214 (99.98%)	Po-212 (67.07%)	Pb-211 ( $\approx$ 100%)
At-218 (0.02%)	Tl-208 (35.93%)	At-215 (0.00023%)
Bi-214	Pb-208 (stable)	Bi-211
Po-214 (99.979%)		Po-211 (0.273%)
Tl-210 (0.021%)		Tl-207 (99.73%)
Pb-210		Pb-207 (stable)
Bi-210		
Po-210 ( $\approx$ 100%)		
Tl-206 (0.00013%)		
Pb-206 (stable)		

Nuclides in shaded cells were excluded from dose calculations. The radon isotopes including thoron and actinon are specifically excluded per the regulation and stable nuclides do not contribute to radiological dose.

Nuclides are presented from top to bottom in order of decay starting from the parent radionuclides. Branching fractions are shown, as appropriate, for consideration in source term development. Fractions taken from (Shleien, 1992).

### Summary of 1999 Phase I Characterization Data Used in NESHAPS Dose Calculations

Analyte	Units	Results >					
		Detection Limit	Minimum Detect	Maximum Detect	Average Result	95% UCL of the Mean	Exposure Concentration
Radium-226 <sup>a</sup>	(pCi/g)	198/ 202	0	1140	7.11	16.4	16.4
Radium-226 <sup>b</sup>	(pCi/g)	197/ 201	0	16	1.48	1.67	<b>1.67</b>
Thorium-228	(pCi/g)	201/ 201	0	24	1.24	1.5	1.5
Thorium-230	(pCi/g)	200/ 201	0	16	1.74	1.99	<b>1.99</b>
Thorium-232	(pCi/g)	195/ 196	0	21	1.17	1.39	1.39
Uranium-234	(pCi/g)	176/ 176	0	119	1.88	2.99	<b>2.99</b>
Uranium-235	(pCi/g)	33/ 112	0	6	0.0536	0.142	0.142
Uranium-238	(pCi/g)	176/ 176	0	120	1.9	3.02	<b>3.02</b>

<sup>a</sup> Including 1140 pCi/g outlier NiagAir1 on 25JUL00 at 15:36 using dataset allradnq

<sup>b</sup> Excluding 1140 pCi/g outlier NiagAir1 on 26JUL00 at 08:00 using dataset allradnq

Except where noted, all values generated by program NiagAir1 and NiagAir2 using dataset allradnq. Values used in the uranium series source term estimate bolded for ease of reference.

### Uranium Series Release Estimates

Analyte	(A)	(F) Activity	(S) Source	(R) Released
	Measured Activity (pCi/g)	Fraction <sup>a</sup>	Unit Activity (pCi/g) <sup>b</sup>	Activity (Ci/yr) <sup>c</sup>
U-238	3.02	1.0	3.02	0.00E+00
Th-234		1.0	3.02	0.00E+00
Pa-234m		1.0	3.02	0.00E+00
Pa-234		1.0	3.02	0.00E+00
U-234	2.99	1.0	2.99	0.00E+00
Th-230	1.99	1.0	1.99	0.00E+00
Ra-226	1.67	1.0	1.67	0.00E+00
Rn-222 (radon)	0.0		0	0.00E+00
Po-218		1.0	1.67	0.00E+00
Pb-214	0.9998		1.7	0.00E+00
At-218	0.0002		0.00033	0.00E+00
Bi-214		1.0	1.67	0.00E+00
Po-214	0.99979		1.7	0.00E+00
Tl-210	0.00021		0.00035	0.00E+00
Pb-210		1.0	1.67	0.00E+00
Bi-210		1.0	1.67	0.00E+00
Po-210		1.0	1.67	0.00E+00
Tl-206	0.0		0	0.00E+00
Pb-206 (stable)	0.0		0	0.00E+00

Erosion Rate (E)<sup>d</sup>                  0.0 grams/year

Constant (C)                  1.00E-12 Ci/pCi

<sup>a</sup> F = 0.0 for radon and stable isotopes, and isotopes with activity fractions << 0.01.

F applied to nearest long-lived isotope with measured result.

<sup>b</sup> S = A x F

<sup>c</sup> R = S x E x C

<sup>d</sup> From Appendix A

### Summary of 1999 Phase I Characterization Data Used in NESHAPS Dose Calculations

Analyte	Units	Results >		Minimum Detect	Maximum Detect	Average Result	95% UCL of the Mean	Exposure Concentration
		Detection Limit						
Radium-226 <sup>a</sup>	(pCi/g)	198/ 202		0	1140	7.11	16.4	16.4
Radium-226 <sup>b</sup>	(pCi/g)	197/ 201		0	16	1.48	1.67	1.67
Thorium-228	(pCi/g)	201/ 201		0	24	1.24	1.5	<b>1.5</b>
Thorium-230	(pCi/g)	200/ 201		0	16	1.74	1.99	1.99
Thorium-232	(pCi/g)	195/ 196		0	21	1.17	1.39	<b>1.39</b>
Uranium-234	(pCi/g)	176/ 176		0	119	1.88	2.99	2.99
Uranium-235	(pCi/g)	33/ 112		0	6	0.0536	0.142	0.142
Uranium-238	(pCi/g)	176/ 176		0	120	1.9	3.02	3.02

<sup>a</sup> Including 1140 pCi/g outlier NiagAir1 on 25JUL00 at 15:36 using dataset allradnq

<sup>b</sup> Excluding 1140 pCi/g outlier NiagAir1 on 26JUL00 at 08:00 using dataset allradnq

Except where noted, all values generated by program NiagAir1 and NiagAir2 using dataset allradnq. Values used in the thorium series source term estimate bolded for ease of reference.

### Thorium Series Release Estimates

Analyte	(A) Measured Activity (pCi/g)	(F) Activity Fraction <sup>a</sup>	(S) Source Unit (pCi/g) <sup>b</sup>	(R) Released Activity (Ci/yr) <sup>c</sup>
Th-232	1.39	1.0	1.39	0.00E+00
Ra-228		1.0	1.39	0.00E+00
Ac-227		1.0	1.39	0.00E+00
Th-228	1.5	1.0	1.5	0.00E+00
Ra-224		1.0	1.5	0.00E+00
Rn-220 (thoron)	0.0		0	0.00E+00
Po-216		1.0	1.5	0.00E+00
Pb-212		1.0	1.5	0.00E+00
Bi-212		1.0	1.5	0.00E+00
Po-212	0.6707		1.01	0.00E+00
Tl-208	0.3593		0.539	0.00E+00
Pb-208 (stable)	0.0		0	0.00E+00

Erosion Rate (E)<sup>d</sup> 0.0 grams/year

Constant (C) 1.00E-12 Ci/pCi

<sup>a</sup> F = 0.0 for radon and stable isotopes, and isotopes with activity fractions << 0.01.

<sup>b</sup> F applied to nearest long-lived isotope with measured result.

<sup>c</sup> S = A x F

<sup>c</sup> R = S x E x C

<sup>d</sup> From Appendix A

Summary of 1999 Phase I Characterization Data Used in NESHAPS Dose Calculations							
Analyte	Units	Results >					
		Detection Limit	Minimum Detect	Maximum Detect	Average Result	95% UCL of the Mean	Exposure Concentration
Radium-226 <sup>a</sup>	(pCi/g)	198/ 202	0	1140	7.11	16.4	16.4
Radium-226 <sup>b</sup>	(pCi/g)	197/ 201	0	16	1.48	1.67	1.67
Thorium-228	(pCi/g)	201/ 201	0	24	1.24	1.5	1.5
Thorium-230	(pCi/g)	200/ 201	0	16	1.74	1.99	1.99
Thorium-232	(pCi/g)	195/ 196	0	21	1.17	1.39	1.39
Uranium-234	(pCi/g)	176/ 176	0	119	1.88	2.99	2.99
Uranium-235	(pCi/g)	33/ 112	0	6	0.0536	0.142	<b>0.142</b>
Uranium-238	(pCi/g)	176/ 176	0	120	1.9	3.02	3.02

<sup>a</sup> Including 1140 pCi/g outlier NiagAir1 on 25JUL00 at 15:36 using dataset allradnq

<sup>b</sup> Excluding 1140 pCi/g outlier NiagAir1 on 26JUL00 at 08:00 using dataset allradnq

Except where noted, all values generated by program NiagAir1 and NiagAir2 using dataset allradnq. Values used in the actinium series source term estimate bolded for ease of reference.

Actinium Series Release Estimates				
Analyte	(A) Measured Activity (pCi/g)	(F) Activity Fraction <sup>a</sup>	(S) Source Unit Activity (pCi/g) <sup>b</sup>	(R) Released Activity (Ci/yr) <sup>c</sup>
U-235	0.142	1.0	0.142	0.00E+00
Th-231		1.0	0.142	0.00E+00
Pa-231		1.0	0.142	0.00E+00
Ac-227		1.0	0.142	0.00E+00
Th-237		0.9862	0.140	0.00E+00
Fr-223		0.138	0.0196	0.00E+00
Ra-223		1.0	0.142	0.00E+00
Rn-219 (actinon)		0.0	0	0.00E+00
Po-215		1.0	0.142	0.00E+00
Pb-211		1.0	0.142	0.00E+00
At-215		0.0	0	0.00E+00
Bi-211		1.0	0.142	0.00E+00
Po-211		0.00273	0.00038766	0.00E+00
Tl-207		0.9973	0.142	0.00E+00
Pb-207 (stable)		0.0	0	0.00E+00
Erosion Rate (E) <sup>d</sup>	0.0 grams/year			
Constant (C)	1.00E-12 Ci/pCi			

<sup>a</sup> F = 0.0 for radon and stable isotopes, and isotopes with activity fractions << 0.01.

F applied to nearest long-lived isotope with measured result.

<sup>b</sup> S = A x F

<sup>c</sup> R = S x E x C

<sup>d</sup> From Appendix A

## **APPENDIX B REFERENCES**

Shleien, 1992. *The Health Physics and Radiological Health Handbook*, Scinta, Inc., Silver Spring, MD.

**THIS PAGE INTENTIONALLY LEFT BLANK**

## **APPENDIX C**

### **1999 RADON-222 FLUX MEASUREMENTS**

**FUSRAP 1999 NESHAP ANNUAL REPORT  
FOR  
NIAGARA FALLS STORAGE SITE (NFSS)**

**THIS PAGE INTENTIONALLY LEFT BLANK**

**Table 4**  
**1999 Radon-222 Flux Monitoring Results<sup>a</sup>**  
**Niagara Falls Storage Site**

Radon-222 Flux		Radon-222 Flux		Radon-222 Flux	
Sample ID	(pCi/m <sup>2</sup> /s) <sup>b</sup>	Sample ID	(pCi/m <sup>2</sup> /s) <sup>b</sup>	Sample ID	(pCi/m <sup>2</sup> /s) <sup>b</sup>
202-001	0.104 ± 0.011	202-031	0.090 ± 0.011	202-061	0.131 ± 0.011
202-002	0.076 ± 0.009	202-032	0.108 ± 0.015	202-062	0.094 ± 0.010
202-003	0.050 ± 0.009	202-033	0.110 ± 0.012	202-063	0.104 ± 0.011
202-004	0.107 ± 0.013	202-034	0.086 ± 0.011	202-064	0.101 ± 0.010
202-005	0.114 ± 0.012	202-035	0.128 ± 0.013	202-065	0.100 ± 0.009
202-006	0.160 ± 0.019	202-036	0.104 ± 0.008	202-066	0.084 ± 0.009
202-007	0.106 ± 0.014	202-037	0.156 ± 0.018	202-067	0.086 ± 0.004
202-008	0.080 ± 0.013	202-038	0.154 ± 0.012	202-068	0.094 ± 0.009
202-009	0.096 ± 0.014	202-039	0.122 ± 0.013	202-069	0.134 ± 0.016
202-010	0.228 ± 0.022	202-040	0.096 ± 0.011	202-070	0.096 ± 0.010
202-011	0.152 ± 0.018	202-041	0.081 ± 0.015	202-071	0.176 ± 0.013
202-012	0.140 ± 0.017	202-042	0.187 ± 0.017	202-072	0.203 ± 0.017
202-013	0.152 ± 0.017	202-043	0.189 ± 0.016	202-073	0.364 ± 0.029
202-014	0.115 ± 0.012	202-044	0.140 ± 0.016	202-074	0.136 ± 0.010
202-015	0.094 ± 0.016	202-045	0.115 ± 0.015	202-075	0.150 ± 0.011
202-016	0.113 ± 0.015	202-046	0.098 ± 0.012	202-076	0.116 ± 0.011
202-017	0.336 ± 0.028	202-047	0.127 ± 0.013	202-077	0.087 ± 0.008
202-018	0.178 ± 0.016	202-048	0.166 ± 0.016	202-078	0.083 ± 0.009
202-019	0.057 ± 0.011	202-049	0.108 ± 0.012	202-079	0.101 ± 0.009
202-020	0.185 ± 0.018	202-050	0.109 ± 0.012	202-080	0.091 ± 0.008
202-021	0.078 ± 0.012	202-051	0.103 ± 0.012	202-081	0.067 ± 0.008
202-022	0.146 ± 0.016	202-052	0.154 ± 0.016	202-082	0.089 ± 0.009
202-023	0.171 ± 0.017	202-053	0.173 ± 0.017	202-083	0.154 ± 0.013
202-024	0.103 ± 0.014	202-054	0.366 ± 0.026	202-084	0.079 ± 0.005
202-025	0.137 ± 0.017	202-055	0.294 ± 0.025	202-085	0.084 ± 0.009
202-026	0.191 ± 0.018	202-056	0.144 ± 0.013	202-086	0.105 ± 0.010
202-027	0.095 ± 0.010	202-057	0.117 ± 0.016	202-087	0.146 ± 0.013
202-028	1.219 ± 0.084	202-058	0.131 ± 0.010	202-088	0.194 ± 0.014
202-029	0.115 ± 0.014	202-059	0.106 ± 0.011	202-089	0.194 ± 0.022
202-030	0.101 ± 0.010	202-060	0.088 ± 0.012	202-090	0.226 ± 0.018

<sup>c</sup> Background	
	0.210 ± 0.017
<sup>d</sup> Field Dup.Locations	
1	0.198 ± 0.014
21	0.275 ± 0.019
30	0.173 ± 0.014
41	0.112 ± 0.010
59	0.122 ± 0.011
48	0.125 ± 0.010
52	0.158 ± 0.010
79	0.068 ± 0.008
Background	0.226 ± 0.019

**Table 4**  
**1999 Radon-222 Flux Monitoring Results<sup>a</sup>**  
**Niagara Falls Storage Site**

<b>Radon-222 Flux</b>		<b>Radon-222 Flux</b>		<b>Radon-222 Flux</b>	
<b>Sample ID</b>	<b>(pCi/m<sup>2</sup>/s)<sup>b</sup></b>	<b>Sample ID</b>	<b>(pCi/m<sup>2</sup>/s)<sup>b</sup></b>	<b>Sample ID</b>	<b>(pCi/m<sup>2</sup>/s)<sup>b</sup></b>
202-091	0.051 ± 0.009	202-121	<0.05	202-151	0.070 ± 0.012
202-092	0.057 ± 0.009	202-122	0.027 ± 0.006	202-152	<0.05
202-093	0.045 ± 0.009	202-123	<0.05	202-153	0.064 ± 0.010
202-094	0.044 ± 0.008	202-124	0.054 ± 0.011	202-154	0.091 ± 0.011
202-095	0.038 ± 0.008	202-125	0.050 ± 0.013	202-155	0.054 ± 0.006
202-096	<0.05	202-126	0.052 ± 0.013	202-156	0.055 ± 0.007
202-097	0.040 ± 0.006	202-127	0.086 ± 0.014	202-157	0.046 ± 0.009
202-098	0.063 ± 0.009	202-128	0.047 ± 0.009	202-158	0.059 ± 0.010
202-099	0.043 ± 0.008	202-129	<0.05	202-159	0.051 ± 0.012
202-100	0.065 ± 0.009	202-130	0.063 ± 0.010	202-160	0.098 ± 0.011
202-101	0.055 ± 0.008	202-131	<0.08	202-161	0.063 ± 0.013
202-102	0.061 ± 0.008	202-132	0.049 ± 0.009	202-162	<0.04
202-103	0.057 ± 0.008	202-133	<0.04	202-163	0.040 ± 0.010
202-104	0.041 ± 0.007	202-134	<0.05 ±	202-164	0.056 ± 0.012
202-105	0.065 ± 0.010	202-135	0.056 ± 0.006	202-165	0.054 ± 0.013
202-106	0.065 ± 0.005	202-136	0.059 ± 0.008	202-166	<0.05
202-107	0.059 ± 0.007	202-137	0.044 ± 0.008	202-167	<0.05
202-108	0.046 ± 0.006	202-138	0.058 ± 0.009	202-168	0.071 ± 0.013
202-109	0.063 ± 0.010	202-139	0.054 ± 0.010	202-169	0.055 ± 0.015
202-110	0.068 ± 0.012	202-140	0.054 ± 0.010	202-170	0.041 ± 0.012
202-111	0.035 ± 0.010	202-141	0.040 ± 0.012	202-171	<0.04
202-112	0.051 ± 0.008	202-142	0.045 ± 0.012	202-172	0.068 ± 0.012
202-113	<0.03	202-143	0.069 ± 0.012	202-173	0.044 ± 0.015
202-114	0.050 ± 0.010	202-144	0.044 ± 0.010	202-174	0.075 ± 0.012
202-115	0.036 ± 0.013	202-145	0.045 ± 0.011	202-175	<0.04
202-116	0.030 ± 0.011	202-146	0.050 ± 0.013	202-176	0.069 ± 0.013
202-117	0.053 ± 0.012	202-147	0.048 ± 0.013	202-177	0.050 ± 0.012
202-118	0.053 ± 0.009	202-148	0.066 ± 0.013	202-178	0.073 ± 0.016
202-119	0.037 ± 0.009	202-149	<0.1	202-179	0.042 ± 0.013
202-120	0.071 ± 0.012	202-150	0.072 ± 0.013	202-180	0.056 ± 0.009

<b>Background</b>	
	0.045 ± 0.012
<b>d Field Dup.Locations</b>	
104	0.081 ± 0.012
110	<0.056 ±
113	0.043 ± 0.010
128	0.066 ± 0.015
140	0.037 ± 0.015
147	0.040 ± 0.008
151	0.057 ± 0.007
172	0.052 ± 0.014
<b>Background</b>	0.094 ± 0.016

Note: The EPA standard for radon-222 flux is 20 pCi/m<sup>2</sup>/s.

a. Radon-222 flux monitoring was performed on:

(1-90) October 7 to 8th, 1999

(91-180) October 25 to 26th, 1999

b. pCi/m<sup>2</sup>/s - picocuries per square meter per second.

c. Background sample taken at Porter/Lewiston School

d. Duplicate samples consist of a field duplicate placed directly next to the original sample location.

## **APPENDIX D**

# **NATIONAL CLIMATIC DATA CENTER BUFFALO, NEW YORK**

**FUSRAP 1999 NESHAP ANNUAL REPORT  
FOR  
NIAGARA FALLS STORAGE SITE (NFSS)**

**THIS PAGE INTENTIONALLY LEFT BLANK**

1999

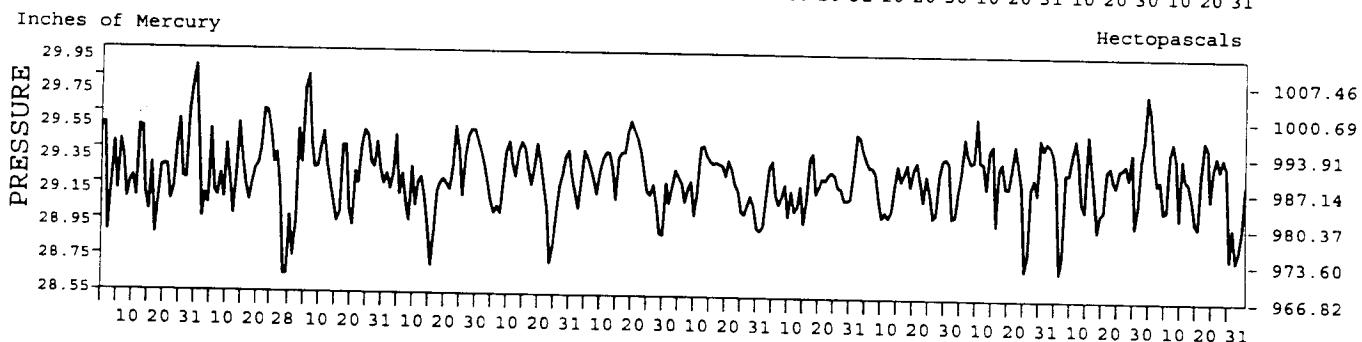
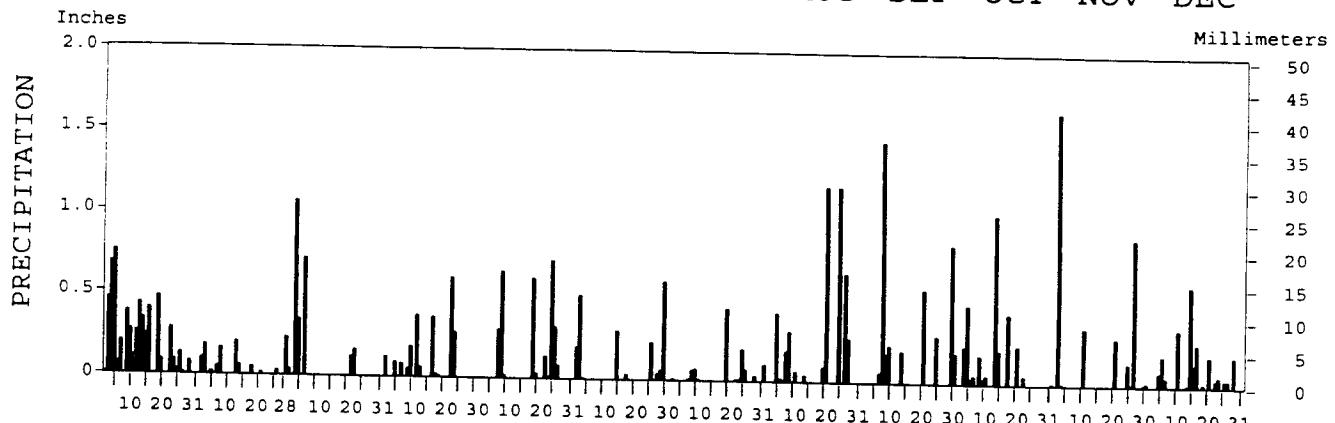
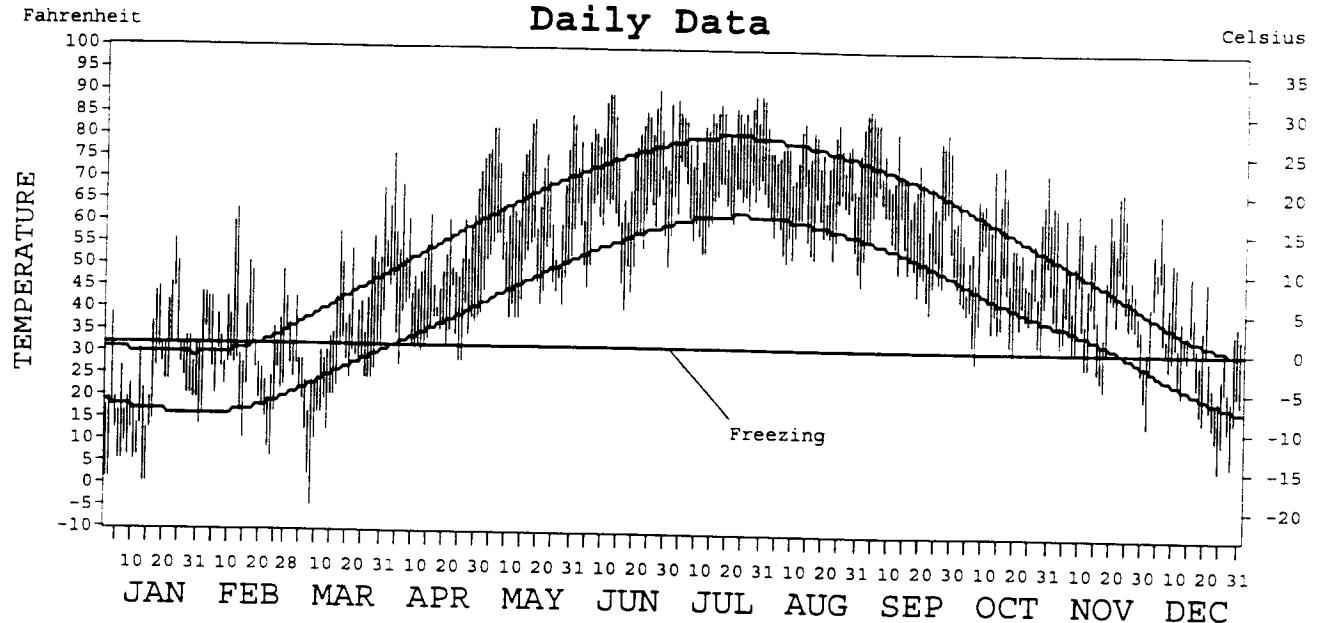
**LOCAL CLIMATOLOGICAL DATA  
ANNUAL SUMMARY WITH COMPARATIVE DATA**



ISSN 0198-3571

BUFFALO,  
NEW YORK (BUF)

**Daily Data**



I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,  
AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

NATIONAL  
OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

NATIONAL  
ENVIRONMENTAL SATELLITE, DATA,  
AND INFORMATION SERVICE

NATIONAL  
CLIMATIC DATA CENTER  
ASHEVILLE, NORTH CAROLINA

DIRECTOR  
NATIONAL CLIMATIC DATA CENTER

*Thomas R. Karl*

# METEOROLOGICAL DATA FOR 1999

BUFFALO, NY (BUF)

LATITUDE: 42° 56' 27" N LONGITUDE: 78° 44' 09" W ELEVATION (FT): GRND: 739 BARO: 739 TIME ZONE: EASTERN (UTC + 5) WBAN: 14733

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F		29.9	38.1	38.7	54.7	70.3	78.2	83.5	76.5	73.5	58.7	51.2	38.4	57.6	
MEAN DAILY MAXIMUM		56	63	68	76	85	91	90	84	87	75	69	64	91	
DATE OF OCCURRENCE		23	12	31	03	30	27	30+	24+	03	16	23	05	JUN 27	
MEAN DAILY MINIMUM		17.0	23.8	23.3	37.2	49.0	58.5	65.0	59.3	55.1	41.5	36.5	25.6	41.0	
LOWEST DAILY MINIMUM		1	7	-4	28	39	41	54	47	41	30	22	6	-4	
DATE OF OCCURRENCE		14+	23	08	05	13+	16	12+	31	22	07	30	24	MAR 08	
AVERAGE DRY BULB		23.5	31.0	31.0	46.0	59.7	68.4	74.3	67.9	64.3	50.1	43.9	32.0	49.3	
MEAN WET BULB		22.0	27.8	28.1	41.0	53.2	62.0	67.4	62.4	58.5	45.7	40.0	29.3	44.8	
MEAN DEW POINT		17.8	21.4	22.1	34.7	46.9	57.3	63.2	58.7	54.2	40.2	34.0	24.1	39.6	
NUMBER OF DAYS WITH:															
MAXIMUM ≥ 90°		0	0	0	0	0	3	2	0	0	0	0	0	5	
MAXIMUM ≤ 32°		21	9	10	0	0	0	0	0	0	0	1	8	49	
MINIMUM ≤ 32°		30	25	28	6	0	0	0	0	0	0	3	9	124	
MINIMUM ≤ 0°		0	0	1	0	0	0	0	0	0	0	0	0	1	
H/C		1280	949	1048	566	193	58	0	17	97	454	628	1014	6304	
COOLING DEGREE DAYS		0	0	0	0	33	165	297	112	81	0	0	0	688	
RH		79	69	71	69	64	69	70	75	72	70	70	73	71	
HOUR 01 LST		81	71	76	74	76	79	78	85	83	76	72	75	77	
HOUR 07 LST		83	74	80	77	72	77	79	86	82	80	76	77	79	
HOUR 13 LST		75	65	62	62	52	58	57	60	58	58	65	69	62	
HOUR 19 LST		79	70	69	63	59	58	68	68	68	68	69	74	68	
S		20	42	55	58	70	62	66	51	58	51	34	26	49	
W/O		NUMBER OF DAYS WITH:													
HEAVY FOG (VISBY ≤ 1/4 MI)		4	3	1	2	0	0	2	1	0	1	2	1	17	
THUNDERSTORMS		2	0	1	3	2	3	6	4	2	2	0	1	26	
CLOUDINESS		SUNRISE-SUNSET: (OKTAS)													
CEILOMETER (< 12,000 FT.)															
SATELLITE (> 12,000 FT.)															
MIDNIGHT-MIDNIGHT: (OKTAS)															
CEILOMETER (< 12,000 FT.)															
SATELLITE (> 12,000 FT.)															
NUMBER OF DAYS WITH:															
CLEAR															
PARTLY CLOUDY															
CLOUDY															
PR		MEAN STATION PRESS. (IN.)	29.31	29.26	29.27	29.22	29.24	29.28	29.21	29.22	29.23	29.31	29.26	29.23	29.25
MEAN SEA-LEVEL PRESS. (IN.)		30.10	30.05	30.06	29.99	30.00	30.03	29.95	29.97	29.98	30.08	30.07	30.05	30.03	
WINDS		RESULTANT SPEED (MPH)	5.1	4.2	4.5	0.2	3.6	3.9	2.9	1.5	2.8	4.9	7.2	6.5	3.7
RES. DIR. (TENS OF DEGS.)		23	23	28	20	22	21	21	25	21	24	25	24	24	
MEAN SPEED (MPH)		12.7	10.1	10.9	10.6	9.3	8.1	9.9	7.8	8.0	9.6	11.8	11.5	10.0	
PREVAIL.DIR. (TENS OF DEGS.)		26	23	24	23	23	24	23	24	17	21	24	27	23	
MAXIMUM 2-MINUTE WIND:															
SPEED (MPH)		39	37	34	37	34	30	41	32	31	33	33	38	41	
DIR. (TENS OF DEGS.)		24	24	24	22	24	25	31	27	24	34	26	23	31	
DATE OF OCCURRENCE		19	12	18	06	25+	02	31	24	23	14	03	26	JUL 31	
MAXIMUM 5-SECOND WIND:															
SPEED (MPH)		48	45	44	46	47	40	54	40	47	43	43	51	54	
DIR. (TENS OF DEGS.)		24	24	25	20	22	25	31	27	22	35	26	24	31	
DATE OF OCCURRENCE		19+	12	18	06	25	02	31	24	23	14+	03	26	JUL 31	
PRECIPITATION		WATER EQUIVALENT:													
TOTAL (IN.)		5.78	1.10	2.43	2.21	2.82	1.93	1.00	4.38	3.95	2.95	3.33	2.20	34.08	
GREATEST 24-HOUR (IN.)		0.75	0.26	1.28	0.80	0.71	0.59	0.43	1.27	1.52	1.22	1.65	0.60	1.65	
DATE OF OCCURRENCE		04	01-02	03-04	22-23	24	29	19	19-20	06-07	13-14	02	14	NOV 02	
NUMBER OF DAYS WITH:															
PRECIPITATION ≥ 0.01		22	11	6	12	10	9	12	9	13	9	15	140		
PRECIPITATION ≥ 0.10		15	5	5	6	6	5	3	7	8	7	5	7	79	
PRECIPITATION ≥ 1.00		0	0	1	0	0	0	0	2	1	1	1	0	6	
SNOWFALL		SNOW, ICE PELLETS, HAIL:													
TOTAL (IN.)		65.1	6.9	15.8	1.0	0.0	0.0	0.0	0.0	0.0	T	0.9	12.7	102.4	
GREATEST 24-HOUR (IN.)		14.7	2.5	9.4	0.7	0.0	0.0	0.0	0.0	0.0	T	0.7	3.7	14.7	
DATE OF OCCURRENCE		03-04	07	06	12						13	30	28	JAN 03-04	
MAXIMUM SNOW DEPTH (IN.)		30	2	11	0	0	0	0	0	0	T	4	30	30	
DATE OF OCCURRENCE		15	14+	07+							30	23	JAN 15		
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0		15	3	4	0	0	0	0	0	0	0	0	5	27	

**NORMALS, MEANS, AND EXTREMES**  
**BUFFALO, NY (BUF)**

LATITUDE:		LONGITUDE:		ELEVATION (FT):		TIME ZONE:												WBAN: 14733	
42° 56' 27" N		78° 44' 09" W		GRND: 739 BARO: 739		EASTERN (UTC + 5)													
ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR				
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	30.2	31.6	41.7	54.2	66.1	75.3	80.2	77.9	70.8	59.4	47.1	35.3	55.8				
	MEAN DAILY MAXIMUM	54	31.3	32.9	41.4	54.6	66.3	76.0	80.5	78.6	72.1	60.5	47.3	36.0	56.4				
	HIGHEST DAILY MAXIMUM	56	72	70	81	94	90	96	97	99	98	87	80	74	99				
	YEAR OF OCCURRENCE	1950	1997	1945	1990	1991	1988	1995	1948	1953	1951	1961	1982	1948					
	MEAN OF EXTREME MAXS.	54	53.2	54.3	67.4	77.1	83.6	88.7	90.0	88.5	85.8	78.1	67.9	56.9	74.3				
	NORMAL DAILY MINIMUM	30	17.0	17.4	25.9	36.2	47.0	56.5	61.9	60.1	53.0	42.7	33.9	22.9	39.5				
	MEAN DAILY MINIMUM	54	18.0	18.4	25.8	36.2	46.6	56.5	61.8	60.0	52.7	43.1	33.8	23.5	39.7				
	LOWEST DAILY MINIMUM	56	-16	-20	-7	12	26	35	43	38	32	20	9	-10	-20				
	YEAR OF OCCURRENCE	1982	1961	1984	1982	1947	1945	1945	1982	1991	1965	1971	1980	FEB 1961					
	MEAN OF EXTREME MINS.	54	-7	0.0	7.8	23.1	33.7	43.4	50.8	47.5	37.6	29.4	18.8	4.0	24.6				
	NORMAL DRY BULB	30	23.6	24.5	33.8	45.2	56.6	65.9	71.1	69.0	61.9	51.1	40.5	29.1	47.7				
	MEAN DRY BULB	54	24.7	25.7	33.7	45.4	56.6	66.2	71.2	69.4	61.9	51.8	40.5	29.7	48.1				
	MEAN WET BULB	16	23.8	24.2	30.4	40.9	51.1	59.9	64.4	63.2	56.7	46.4	36.8	28.3	43.8				
	MEAN DEW POINT	16	19.0	19.1	24.3	34.4	45.0	55.1	59.8	59.0	52.5	41.3	31.7	23.6	38.7				
	NORMAL NO. DAYS WITH:																		
	MAXIMUM ≥ 90°	30	0.0	0.0	0.0	*	0.1	0.6	1.6	0.7	*	0.0	0.0	0.0	3.0				
	MAXIMUM ≤ 32°	30	17.5	15.4	7.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	12.3	55.0			
	MINIMUM ≤ 32°	30	28.6	25.7	23.9	10.5	0.7	0.0	0.0	0.0	*	3.1	13.9	25.9	132.3				
	MINIMUM ≤ 0°	30	2.2	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.4				
H/C	NORMAL HEATING DEG. DAYS	30	1283	1134	967	594	279	59	5	17	130	431	735	1113	6747				
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	19	86	194	141	37	0	0	0	477				
RH	NORMAL (PERCENT)	30	76	76	73	68	67	69	68	72	74	73	76	78	72				
	HOUR 01 LST	30	77	79	78	75	76	79	79	83	83	80	79	79	79				
	HOUR 07 LST	30	79	80	80	76	75	77	78	83	84	82	80	81	80				
	HOUR 13 LST	30	72	70	65	58	56	56	55	58	60	61	69	73	63				
S	HOUR 19 LST	30	76	75	72	64	62	62	60	66	72	73	76	77	70				
	PERCENT POSSIBLE SUNSHINE	55	31	38	46	50	58	64	67	64	57	50	29	27	48				
W/O	MEAN NO. DAYS WITH:																		
	HEAVY FOG (VISBY ≤ 1/4 MI)	57	1.6	1.8	2.6	2.1	2.3	1.2	0.8	0.9	1.0	1.3	1.3	1.3	18.2				
CLOUDINESS	57	0.2	0.2	1.2	2.3	3.3	5.2	5.8	5.9	3.7	1.6	1.1	0.4	30.9					
	MEAN:														8.8				
	SUNRISE-SUNSET (OKTAS)	1																	
PR	MIDNIGHT-MIDNIGHT (OKTAS)	1																	
	MEAN NO. DAYS WITH:																		
	CLEAR	1			5.0		4.0		4.0										
WINDS	PARTLY CLOUDY	1			4.0		8.0		5.0										
	CLOUDY	1	3.0	4.0	9.0		7.0	8.0											
	MEAN STATION PRESSURE (IN)	27	29.29	29.30	29.20	29.20	29.20	29.20	29.20	29.30	29.30	29.30	29.30	29.29	29.26				
PR	MEAN SEA-LEVEL PRES. (IN)	16	30.05	30.07	30.05	29.97	29.98	29.95	29.99	30.04	30.05	30.08	30.07	30.06	30.03				
	MEAN SPEED (MPH)	51	13.8	13.0	12.8	12.3	11.1	10.6	10.2	9.5	10.0	10.7	12.3	12.9	11.6				
WINDS	PREVAIL DIR (TENS OF DEGS)	32	26	24	24	23	24	24	24	24	24	24	26	27	24				
	MAXIMUM 2-MINUTE:																		
	SPEED (MPH)	4	44	54	44	38	43	37	41	32	39	46	46	43	54				
	DIR. (TENS OF DEGS)	23	24	26	24	24	24	36	31	27	26	24	23	23	24				
	YEAR OF OCCURRENCE	1996	1997	1998	1997	1997	1998	1998	1999	1997	1996	1998	1996	1996	FEB 1997				
	MAXIMUM 5-SECOND:																		
	SPEED (MPH)	4	57	70	57	48	55	47	54	44	47	60	61	54	70				
	DIR. (TENS OF DEGS)	24	25	27	26	23	23	27	31	27	22	24	22	23	25				
	YEAR OF OCCURRENCE	1997	1997	1998	1997	1997	1996	1999	1997	1999	1996	1998	1996	1996	FEB 1997				
PRECIPITATION	NORMAL (IN)	30	2.70	2.31	2.68	2.87	3.14	3.55	3.08	4.17	3.49	3.09	3.83	3.67	38.58				
	MAXIMUM MONTHLY (IN)	56	6.88	5.90	5.97	5.90	7.22	8.36	8.93	10.67	8.99	9.13	9.75	8.71	10.67				
	YEAR OF OCCURRENCE	1982	1990	1991	1961	1989	1987	1992	1977	1977	1954	1985	1990	AUG 1977					
	MINIMUM MONTHLY (IN)	56	1.03	0.81	1.20	1.27	1.21	0.11	0.93	1.10	0.77	0.30	1.44	0.69	0.11				
	YEAR OF OCCURRENCE	1946	1968	1967	1946	1965	1955	1989	1948	1964	1963	1944	1943	JUN 1955					
	MAXIMUM IN 24 HOURS (IN)	56	2.57	2.31	2.14	2.09	3.52	5.01	3.38	3.88	4.94	3.49	2.51	2.33	5.01				
	YEAR OF OCCURRENCE	1982	1954	1954	1991	1986	1987	1963	1979	1945	1949	1949	1990	JUN 1987					
	NORMAL NO. DAYS WITH:																		
	PRECIPITATION ≥ 0.01	30	19.8	17.7	16.1	14.0	12.3	11.2	9.8	11.3	11.3	12.8	16.0	20.1	172.4				
	PRECIPITATION ≥ 1.00	30	0.2	0.2	0.2	0.2	0.5	0.8	0.7	1.0	0.7	0.5	0.4	0.4	5.9				
SNOWFALL	NORMAL (IN)	30	25.7	18.2	10.3	3.8	0.3	0.0	0.0	0.0	0.0	0.2	9.9	23.8	92.2				
	MAXIMUM MONTHLY (IN)	56	68.3	54.2	29.3	15.0	7.9	T	T	T	T	3.1	31.3	68.4	68.4				
	YEAR OF OCCURRENCE	1977	1958	1993	1975	1989	1980	1993	1991	1994	1972	1976	1985	DEC 1985					
	MAXIMUM IN 24 HOURS (IN)	56	25.3	19.4	17.2	6.8	7.9	T	T	T	2.8	19.9	37.9	37.9					
	YEAR OF OCCURRENCE	1982	1984	1993	1975	1989	1980	1993	1991	1994	1972	1976	1985	37.9					
	MAXIMUM SNOW DEPTH (IN)	51	38	42	20	12	4	0	0	0	0	2	16	28	42				
	YEAR OF OCCURRENCE	1977	1977	1984	1975	1989					1972	1955	1995	1995	DEC 1995				
	NORMAL NO. DAYS WITH:																		
	SNOWFALL ≥ 1.0	30	7.6	5.8	3.3	1.1	0.1	0.0	0.0	0.0	0.0	0.1	2.8	6.7	27.5				

PRECIPITATION (inches) 1999 BUFFALO, NY (BUF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	2.06	1.74	1.72	2.54	2.87	2.55	4.02	2.01	4.55	4.20	3.20	3.25	34.71
1971	1.46	3.03	2.07	1.48	1.56	4.25	4.50	4.43	1.88	1.57	3.07	3.61	32.91
1972	2.17	3.44	3.99	2.99	3.64	6.06	0.99	4.19	3.06	2.96	4.28	3.86	41.63
1973	2.03	1.98	3.27	3.56	2.99	1.68	3.68	2.98	1.44	4.27	4.07	4.89	36.84
1974	2.44	2.19	3.19	3.15	3.36	3.86	1.80	3.64	2.42	1.75	5.38	3.13	36.31
1975	2.11	2.93	2.92	1.86	3.31	3.65	2.34	8.49	2.44	1.13	2.77	4.58	38.53
1976	3.19	3.43	5.59	4.01	4.70	3.36	5.65	1.65	5.39	3.61	2.11	3.83	46.52
1977	3.38	1.59	2.42	3.60	1.39	2.79	3.64	10.67	8.99	2.61	4.45	8.02	53.55
1978	6.29	1.36	1.72	1.84	3.95	2.42	1.48	3.51	4.40	3.72	1.55	3.50	35.74
1979	5.43	2.03	2.48	3.16	1.63	2.18	3.51	6.26	5.61	3.88	4.14	3.43	43.74
1980	1.97	1.08	4.05	2.43	1.60	5.82	3.55	3.58	4.53	4.69	2.36	2.65	38.31
1981	1.11	3.50	1.70	3.09	2.56	3.68	5.05	3.13	4.24	3.31	2.22	2.87	36.46
1982	6.88	1.28	2.64	2.33	3.66	3.14	1.50	4.62	3.37	2.06	6.31	3.32	41.11
1983	1.44	1.30	3.20	2.55	3.28	2.99	2.01	3.51	2.11	4.62	5.19	7.30	39.50
1984	1.54	3.59	1.77	2.53	4.67	6.86	1.37	4.16	3.73	0.87	2.66	3.67	37.42
1985	4.27	3.34	4.42	1.33	3.46	3.21	1.81	4.63	1.20	3.73	9.75	4.85	46.00
1986	2.31	2.60	1.95	3.33	4.42	4.15	2.82	2.73	3.88	4.34	3.11	4.02	39.66
1987	2.90	0.85	3.66	3.40	1.35	8.36	3.09	3.38	5.32	2.62	4.44	2.78	42.15
1988	1.58	4.07	2.99	2.96	2.74	1.56	6.35	2.69	2.07	6.08	3.37	2.15	38.61
1989	1.77	2.54	3.15	1.88	7.22	7.83	0.93	1.84	3.85	2.98	4.83	2.34	41.16
1990	2.69	5.90	1.50	5.22	6.08	3.55	3.14	3.25	3.65	4.59	2.61	8.71	50.89
1991	2.07	2.06	5.97	5.83	3.10	0.86	3.34	2.84	3.19	3.11	4.02	3.81	40.20
1992	2.01	2.45	2.93	4.68	3.48	2.21	8.93	3.79	5.56	2.80	4.92	3.80	47.56
1993	4.35	1.92	3.02	2.55	1.79	4.99	1.78	3.86	5.53	3.69	3.58	3.60	40.66
1994	2.90	1.40	2.61	4.02	3.54	4.27	2.08	4.09	3.19	1.87	4.08	2.67	36.72
1995	4.89	2.62	1.33	1.41	2.40	1.33	3.53	2.07	1.32	6.07	4.14	2.88	33.99
1996	3.42	2.09	2.37	5.63	4.08	5.20	5.15	2.14	7.51	4.22	2.99	3.42	48.22
1997	4.25	2.97	4.47	1.65	3.61	3.06	1.85	4.67	5.06	2.29	4.32	2.88	41.08
1998	5.61	2.28	3.86	2.54	3.73	2.87	4.39	1.74	2.43	2.10	1.61	1.54	34.70
1999	5.78	1.10	2.43	2.21	2.82	1.93	1.00	4.38	3.95	2.95	3.33	2.20	34.08
POR=													
129 YRS	3.13	2.67	2.79	2.76	2.98	2.93	2.91	3.20	3.15	3.09	3.30	3.28	36.19

WBAN : 14733

AVERAGE TEMPERATURE (°F) 1999 BUFFALO, NY (BUF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	17.6	24.6	30.1	46.9	57.3	66.0	71.0	70.2	64.0	54.5	41.6	27.4	47.6
1971	20.9	27.0	29.8	41.8	54.5	67.6	68.7	67.8	65.4	58.7	39.1	33.5	47.9
1972	25.5	22.0	30.1	41.1	59.1	62.6	71.0	67.7	62.8	46.2	36.0	30.8	46.2
1973	27.6	22.9	42.4	46.9	54.5	68.2	72.3	71.8	61.7	54.3	40.8	29.0	49.4
1974	27.1	22.3	33.0	46.2	53.1	65.6	69.9	69.9	59.6	49.2	40.2	31.7	47.3
1975	30.1	29.1	30.8	39.3	62.1	68.0	72.3	69.7	58.3	53.1	46.9	28.3	49.0
1976	19.7	31.8	37.2	46.5	53.4	68.4	67.8	67.5	60.1	46.3	34.1	22.0	46.2
1977	13.8	24.6	39.8	47.0	60.3	64.4	72.0	68.1	62.6	49.6	43.3	27.9	47.8
1978	20.4	15.5	28.2	42.5	57.4	65.1	70.4	70.3	60.8	49.5	40.4	30.4	45.9
1979	20.5	14.9	38.2	44.3	56.9	66.5	71.3	67.5	61.9	50.7	43.5	33.4	47.5
1980	25.8	21.2	31.8	46.1	58.1	61.9	71.7	72.6	62.4	48.7	39.4	25.3	47.1
1981	19.3	32.9	33.9	47.2	56.4	66.2	71.8	70.0	60.9	48.2	40.4	29.0	48.0
1982	17.2	23.2	32.5	41.6	61.0	62.2	71.8	65.0	61.6	52.6	43.0	37.5	47.4
1983	27.0	29.6	36.7	43.6	53.9	67.6	74.2	71.2	63.7	51.7	40.8	22.7	48.6
1984	20.4	33.8	27.1	47.7	52.9	67.8	70.3	70.3	58.5	53.2	39.0	35.6	48.1
1985	21.1	24.8	35.6	49.5	59.5	62.7	69.7	69.2	64.2	52.5	42.0	25.6	48.0
1986	25.5	24.5	36.2	47.8	59.7	64.1	71.1	67.9	61.8	50.9	37.7	32.4	48.3
1987	26.1	25.0	37.7	50.0	60.5	68.9	74.2	68.9	63.4	47.9	42.5	34.3	50.0
1988	26.6	24.3	35.2	46.1	59.7	64.0	74.8	72.4	62.1	46.9	43.0	30.0	48.8
1989	31.3	22.7	33.0	41.9	55.1	65.9	71.5	68.5	60.8	51.5	37.9	17.4	46.5
1990	33.4	29.3	36.9	48.5	54.9	66.7	71.4	70.4	61.7	52.5	43.4	34.4	50.3
1991	26.0	30.6	37.8	50.5	64.3	69.1	71.9	71.0	62.0	53.1	39.3	31.3	50.6
1992	27.1	27.7	31.6	43.8	57.3	63.4	66.8	66.3	61.6	47.9	40.2	31.9	47.1
1993	29.5	20.7	30.7	47.3	57.0	66.0	73.4	72.0	59.4	49.2	39.6	29.6	47.9
1994	17.2	22.8	33.4	48.2	54.7	69.0	73.3	68.0	61.9	52.2	45.1	34.0	48.3
1995	29.8	21.9	37.8	42.3	56.8	69.9	72.7	73.0	60.0	54.2	36.4	24.5	48.3
1996	22.5	24.2	29.0	42.2	54.5	67.8	68.5	70.5	62.7	51.7	35.4	33.5	46.9
1997	24.7	30.1	33.1	42.3	50.6	66.7	68.6	66.8	60.5	50.5	37.6	31.8	46.9
1998	31.1	34.1	36.5	46.8	62.8	65.3	69.6	71.2	63.7	52.6	42.0	35.3	50.9
1999	23.5	31.0	31.0	46.0	59.7	68.4	74.3	67.9	64.3	50.1	43.9	32.0	49.3
POR=													
126 YRS	25.0	24.8	32.6	43.7	55.1	64.8	70.5	69.0	62.4	51.5	40.1	29.6	47.4

published by: NCDC Asheville, NC

HEATING DEGREE DAYS (base 65°F) 1999 BUFFALO, NY (BUF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	6	6	93	328	695	1161	1361	1057	1085	691	327	36	6846
1971-72	11	29	87	202	771	971	1218	1237	1070	707	187	112	6602
1972-73	16	33	113	574	860	1054	1152	1173	696	542	318	24	6555
1973-74	2	14	171	326	720	1107	1167	1187	989	553	365	51	6652
1974-75	2	0	187	483	738	1024	1077	1001	1053	764	175	32	6536
1975-76	3	15	197	368	535	1134	1400	958	853	557	358	40	6418
1976-77	15	35	180	573	921	1328	1580	1123	775	544	207	90	7371
1977-78	5	40	110	473	646	1146	1376	1378	1130	670	282	81	7337
1978-79	14	3	154	472	732	1067	1371	1400	823	619	285	65	7005
1979-80	16	35	134	455	636	973	1208	1265	1022	559	240	142	6685
1980-81	2	0	128	498	759	1224	1411	895	956	527	269	33	6702
1981-82	6	11	170	514	732	1108	1476	1163	1002	698	147	95	7122
1982-83	4	65	140	382	656	848	1172	987	868	636	342	71	6171
1983-84	5	10	125	418	722	1304	1378	899	1167	519	385	35	6967
1984-85	11	22	210	360	774	905	1354	1120	902	476	196	95	6425
1985-86	8	12	114	378	685	1215	1215	1128	885	519	197	80	6436
1986-87	4	42	137	430	811	1003	1199	1115	837	447	213	28	6266
1987-88	3	25	91	527	665	948	1184	1174	916	560	186	113	6392
1988-89	5	17	122	560	654	1078	1038	1177	985	687	321	60	6704
1989-90	1	28	170	411	806	1466	970	995	866	518	311	46	6588
1990-91	5	2	141	395	640	941	1203	956	836	431	141	22	5713
1991-92	1	1	166	376	762	1037	1169	1076	1027	633	254	93	6595
1992-93	28	41	148	525	738	1021	1095	1235	1053	526	257	60	6727
1993-94	0	8	212	486	752	1089	1476	1174	972	502	327	48	7046
1994-95	0	26	123	390	591	955	1085	1201	835	674	247	22	6149
1995-96	14	3	164	329	851	1250	1310	1178	1107	677	333	22	7238
1996-97	15	1	130	406	881	969	1241	970	983	673	438	40	6747
1997-98	17	25	150	457	814	1023	1045	862	878	538	96	104	6009
1998-99	0	9	88	378	682	912	1280	949	1048	566	193	58	6163
1999-	0	17	97	454	628	1014							

COOLING DEGREE DAYS (base 65°F) 1999 BUFFALO, NY (BUF)

WBAN : 14733

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	0	0	0	16	21	108	197	173	72	12	0	0	599
1971	0	0	0	0	9	119	136	122	107	15	0	0	508
1972	0	0	0	0	12	48	210	123	57	0	0	0	450
1973	0	0	0	6	2	126	233	230	78	3	0	0	678
1974	0	0	0	0	7	71	163	158	29	0	0	0	428
1975	0	0	0	0	90	129	238	171	3	3	0	0	634
1976	0	0	0	8	7	149	109	119	40	0	0	0	432
1977	0	0	0	12	68	78	228	142	45	0	1	0	574
1978	0	0	0	0	52	91	189	173	35	0	0	0	540
1979	0	0	0	6	40	118	217	120	49	20	0	0	570
1980	0	0	0	0	32	56	217	242	58	2	0	0	607
1981	0	0	0	2	13	78	225	173	55	0	0	0	546
1982	0	0	0	3	31	18	221	74	45	2	0	2	396
1983	0	0	0	0	5	157	300	214	90	15	0	0	781
1984	0	0	0	5	16	123	183	193	23	1	0	0	544
1985	0	0	0	18	32	32	161	151	96	0	1	0	491
1986	0	0	0	7	38	60	200	137	46	0	0	0	488
1987	0	0	0	4	79	151	298	152	49	0	0	0	733
1988	0	0	0	0	29	88	315	255	41	8	0	0	736
1989	0	0	0	0	21	97	207	143	50	0	0	0	518
1990	0	0	3	29	4	104	208	176	47	14	0	0	585
1991	0	0	0	3	125	153	221	193	83	13	0	0	791
1992	0	0	0	1	24	53	90	90	55	0	0	0	313
1993	0	0	0	0	14	97	267	231	51	3	0	0	663
1994	0	0	0	5	14	175	267	125	36	2	0	0	624
1995	0	0	0	0	2	176	262	256	21	1	0	0	718
1996	0	0	0	0	12	108	131	177	65	2	0	0	495
1997	0	0	0	0	0	99	135	84	22	12	0	0	352
1998	0	0	1	0	34	118	148	207	57	1	0	0	566
1999	0	0	0	0	33	165	297	112	81	0	0	0	688

SNOWFALL (inches) 1999 BUFFALO, NY (BUF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1970-71	0.0	0.0	0.0	0.0	2.6	32.3	17.2	19.4	22.6	2.9	0.0	0.0	97.0
1971-72	0.0	0.0	0.0	0.0	18.7	12.9	27.6	31.4	14.1	5.2	0.0	0.0	109.9
1972-73	0.0	0.0	0.0	3.1	18.9	19.8	9.9	16.1	8.5	2.4	0.1	0.0	78.8
1973-74	0.0	0.0	0.0	0.0	3.0	23.1	19.7	22.8	12.9	7.1	0.1	0.0	88.7
1974-75	0.0	0.0	0.0	T	22.1	23.6	11.0	16.3	7.6	15.0	0.0	0.0	95.6
1975-76	0.0	0.0	0.0	T	5.5	27.3	21.6	8.3	17.3	2.5	T	0.0	82.5
1976-77	0.0	0.0	0.0	0.2	31.3	60.7	68.3	22.7	13.5	2.2	0.5	0.0	199.4
1977-78	0.0	0.0	0.0	T	15.0	53.4	56.5	21.7	5.8	1.8	0.1	0.0	154.3
1978-79	0.0	0.0	0.0	T	3.0	10.1	42.6	28.3	4.6	8.7	0.0	0.0	97.3
1979-80	0.0	0.0	0.0	T	12.6	19.7	10.2	11.7	13.9	0.3	T	T	68.4
1980-81	0.0	0.0	0.0	T	6.7	21.6	14.4	5.0	13.2	T	0.0	0.0	60.9
1981-82	0.0	0.0	0.0	T	1.8	24.8	53.2	12.7	9.0	10.9	0.0	0.0	112.4
1982-83	0.0	0.0	0.0	0.0	15.8	12.9	9.0	5.5	6.9	2.3	T	0.0	52.4
1983-84	0.0	0.0	0.0	T	17.7	52.0	13.4	32.5	16.0	0.9	T	0.0	132.5
1984-85	0.0	0.0	0.0	0.0	1.4	11.2	65.9	20.9	6.3	1.5	0.0	0.0	107.2
1985-86	0.0	0.0	0.0	0.0	5.2	68.4	17.3	17.3	4.8	1.7	T	0.0	114.7
1986-87	0.0	0.0	0.0	0.0	13.7	4.8	28.5	7.7	10.8	2.0	0.0	0.0	67.5
1987-88	0.0	0.0	0.0	T	0.9	9.8	6.9	31.9	6.1	0.8	0.0	0.0	56.4
1988-89	0.0	0.0	0.0	0.5	0.6	10.8	5.4	29.6	10.1	2.5	7.9	0.0	67.4
1989-90	0.0	0.0	0.0	T	7.8	34.8	11.8	28.0	1.4	9.9	T	0.0	93.7
1990-91	0.0	0.0	0.0	T	0.7	15.4	16.6	16.1	8.5	0.2	T	0.0	57.5
1991-92	0.0	T	0.0	0.2	18.0	21.4	18.4	7.0	22.8	5.0	0.0	0.0	92.8
1992-93	0.0	0.0	0.0	0.6	13.7	16.5	13.1	19.5	29.3	0.5	T	0.0	93.2
1993-94	T	0.0	T	2.9	4.8	27.9	35.4	21.6	13.2	6.9	0.0	0.0	112.7
1994-95	0.0	0.0	T	0.0	0.9	7.8	23.1	34.6	4.3	3.9	T	0.0	74.6
1995-96	0.0	0.0	0.0	0.0	15.7	61.2	25.3	11.9	24.1	3.2	T	0.0	97.6
1996-97	0.0	0.0	0.0	0.0	11.5	18.9	42.4	9.3	13.4	2.1	0.0	0.0	74.2
1997-98	0.0	0.0	0.0	0.2	16.5	16.8	13.6	1.8	25.3	T	T	0.0	100.6
1998-99	0.0	0.0	0.0	0.0	0.2	11.6	65.1	6.9	15.8	1.0	0.0	0.0	91.1
POR=													
55 YRS	T	T	T	0.3	11.0	22.7	24.2	17.5	12.0	3.0	0.4	T	

WBAN : 14733

REFERENCE NOTES:

PAGE 1:

THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:

H/C INDICATES HEATING AND COOLING DEGREE DAYS.

RH INDICATES RELATIVE HUMIDITY

W/C INDICATES WEATHER AND OBSTRUCTIONS

S INDICATES SUNSHINE.

PR INDICATES PRESSURE.

CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS (OKTAS).

GENERAL:

T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.

+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.

BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

NORMALS ARE 30-YEAR AVERAGES (1961 - 1990).

ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.

PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.

POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.

WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.

0.0 OR . INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.

CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET.

THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.

GENERAL CONTINUED:

CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS.

WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.

WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.

RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.

AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.

SNOWFALL DATA COMPRIZE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL.

A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65°F.

DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.

DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.

WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS (OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

1999  
BUFFALO,  
NEW YORK (BUF)

The Niagara Frontier experiences a fairly humid, continental type climate, but with a definite "maritime" flavor due to a strong modification from the Great Lakes (especially Lake Erie). Buffalo's weather reputation is highly exaggerated, and due mainly to its propensity for localized heavy Lake-effect snowstorms in late fall and early winter. Summers, on the other hand, are among the most pleasant in the Northeast.

Winters in general are cloudy, cold and snowy...but are changeable and include frequent thaws and rain as well. Snow covers the ground more often than not from Christmas into early March...but periods of bare ground are not uncommon. Over half of the annual snowfall comes from "Lake-effect" process and is very localized. This feature develops when cold air crosses the warmer lake waters and becomes saturated.. creating clouds and precipitation downwind. The exact location of these snowbands are determined by the direction of the wind. Areas south of Buffalo derive much more snow from this process than the more densely populated northern suburbs. This snow machine can start as early as mid-November, peaks in December, then virtually shuts down after Lake Erie freezes in mid to late January. The Buffalo area is not subject to heavy general or "synoptic" snowstorms. Most of them pass by to the east. Total season snowfall ranges from about 60 inches in the far northern suburbs to 80-90 inches in the city and eastern suburbs to as much as 120 inches south of the city. The lakes do modify any extreme cold as the mercury falls below zero on only about four nights in an average winter...with anything below -10 extremely rare.

Spring comes slowly to the Niagara Frontier. The ice pack in lake Erie does not usually disappear until mid-April and the Lake remains chilly through most of May. As the prevailing flow is southwesterly, areas near the lake are often as much as 20 degrees colder than inland locations. Conversely, the cool Lake acts as a strong stabilizing influence so areas near the city and lakeshore experience fewer thunderstorms and more sunshine than inland areas in spring. The slow start to the growing season also diminishes the threat of damaging late season frosts. The average date of the last frost is around April 30 in the metro area...but mid-May well inland.

Summer is beautiful in the Buffalo area. Sunshine is plentiful, temperature are warm but seldom hot, and humidity levels moderate. Rainfall is adequate, but does show an overnight maximum and seldom is a problem for outdoor activities. The stabilizing effect of Lake Erie continues to inhibit thunderstorms and enhance sunshine in the immediate Buffalo area..at least through most of July. It also moderates most extreme heat approaching from the Ohio Valley. There usually are several periods of uncomfortably warm and muggy weather in an average summer...but 90-degree readings are relatively rare (only 3 per year). August usually turns a bit more humid and showery as the Lake is warmer and loses its stabilizing influence. In fact, a good nighttime thunderstorm or two is often a feature of late summer in Buffalo. Overall though...Buffalo has the sunniest and driest summers of any major city in the Northeast.

Autumn is pleasant, but rather brief. September is usually very tame, and much of October as well. The first frosts can be expected in late September over interior sections, but not until mid-October in the metro area. The warm lake can extend the growing season into early November during some years close to the Lakeshore. The growing season is relatively long for the latitude...about 180 days...and is conducive to the many fruit orchards and wineries, especially near Lake Ontario and along the Lake Erie shore. Cold air surges from Canada become more common starting in late October...with their passage over the warmer Great Lakes resulting in a drastic increase in cloud cover in late October and early November as the Lake-effect season begins. The first measurable snows can be expected in mid to late November, but ground cover is only sporadic until mid December. Many of Buffalo's greatest snowstorms however, have occurred in late November and early December, all due to the Lake effect phenomenon.

## STATION LOCATION

BUFFALO, NEW YORK

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	NORTH	WEST	ELEVATION ABOVE SEA LEVEL	GROUND										AUTOMATIC EQUIPMENT	Type
							WIND	INSTRUMENTS	EXTREME	PSYCHROMETER	SUNSHINE	TIPPING BUCKET	RAIN GAGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOMETER		
Downtown Buffalo Main and Seneca Streets	11/1/70	3/24/71	NA	42° 53'	78° 53'	610	68	53									66	
Brown Building Main and Seneca Streets	3/25/71	8/30/71	NA	42° 53'	78° 53'	610	68	34									62	
Weed Block Main and Swan Streets	8/31/71	6/21/73	500 ft. N	42° 53'	78° 53'	616	72	58									68	
Weed Block Main and Swan Streets	6/21/73	11/1/81	NA	42° 53'	78° 53'	616	85	72									67	
White Building Main and Swan Streets	11/1/81	11/1/83	NA	42° 53'	78° 53'	616	113	107									98	
Board of Trade Building Seneca and Pearl Streets	11/1/83	5/1/87	650 ft. SSW	42° 53'	78° 53'	608	108	100	100								108	
Downtown Buffalo Board of Trade Building Seneca and Pearl Streets	5/1/87	10/7/95	NA	42° 53'	78° 53'	608	108	103	103								93	
Downtown Buffalo Board of Trade Building Seneca and Pearl Streets	10/7/95	2/28/96	NA	42° 53'	78° 53'	608	123	118	118								108	
Guaranty (Prudential) Bldg., Church and Pearl Streets	3/1/96	2/13/13	825 ft. N	42° 53'	78° 53'	612	206	178	178								168	
New York Telephone Bldg Church & Franklin Streets	2/13/13	6/30/43	175 ft. W	42° 53'	78° 53'	604	280	247	247		238							Consolidated at airport.
AIRPORT Buffalo Airport Administration Building	7/12/29	11/18/39	NA	42° 56'	78° 44'	702	58	19	19							a16		a - Installed 1936.
Buffalo Airport Administration Building	11/18/39	8/22/60	750 ft. ESE	42° 56'	78° 44'	693	96 d20	34	34	NA b32	NA b34	NA c32	32	NA	NA	b - Installed 7/1/43. c - Effective 7/1/53. d - Moved to field site 8/24/59.		
Wea. Bur. Observatory+ Greater Buffalo Inter. National Airport +NWS Observatory++ effective 10/3770.	8/23/60	12/01/95	0.4 mi. NE	42° 56'	78° 44'	705	20 f33 g33 i33	5	5	33	5	5	4	NA e4 h4 i4	NA	e - Commissioned 2000' WNW of thermometer site 10/23/63. f - Raised 5/18/77. g - Moved 2400' E 7/17/81. h - Type change 10/23/85. i - Minor move 7/7/86.		
--WEA. SVC CONTRACT MET. Observatory eff. 10/1780.																		
Greater Buffalo International Airport	12/01/95	Present	NA	42° 56'	78° 44'	739										S	ASOS Commissioned 12/01/95	

## SUBSCRIPTION:

Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801.

INQUIRIES/COMMENTS CALL: (828) 271-4800

National Climatic Data Center  
15 Patton Avenue, P.O. Box  
Asheville NC 28801-5001OFFICIAL BUSINESS  
NOT FOR PRIVATE USE \$3.00  
FORWARD AND ADDRESS CORRECTION

FIRST CLASS  
POSTAGE & FEES PAID  
United States Department of Commerce  
NOAA Permit No. G - 19



# **JANUARY 1999**

# **LOCAL CLIMATOLOGICAL DATA**

NOAA, National Climatic Data Center

NOAA, National Climatic Data Center

**BUFFALO, NY**

## **GREATER BUFFALO INTL AIRPORT (BUE)**

Lat: 42°56' N Long: 78°44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358Y

Temperature F												Deg Days Base 65°		Weather		Snow/Ice On Gnd (in)		Precipitation (Inches)		Pressure (Inches of HG)		Wind		Speed = MPH Dir = Tens of Degrees						
Date	Max	Min	Avg	Dep From Normal	Avg Dew Pt	Avg Wet Bulb	Heating	Cooling			Depth	Water Equiv	Snow Fall	Water Equiv	Avg Station	Avg Sea Level	Resultant Speed	Res Dir	Avg Speed	5-sec	Dir	Max 2-min	Dir	Date						
1	2	3	4	5	6	7	8	9			11	12	13	14	15	16	17	18	19	20	21	22	23	24						
01	18	2	10	-15	-1	8	55	0	RA SN FG+ FZFG BR HZ		1		0.3	0.01	29.53	30.34	9.7	28	12.1	31	25	23	30	01						
02	20	2	11	-14	3	10	54	0	RA FZRA FZDZ SN PL BR		1		1.7	0.46	29.55	30.36	11.0	09	11.9	29	11	24	09	02						
03	39	18	29	4	23	26	36	0	RA FZRA FZDZ SN PL BR		4		2.6	0.68	28.90	29.69	14.1	22	18.8	44	22	33	23	01						
04	20	13	17	-8	9	15	48	0	RA SN HZ BLSN		10		12.4	0.75	29.17	29.96	17.9	25	19.6	41	22	32	21	04						
05	17	6	12	-13	7	12	53	0	RA SN FG+ FZFG BR HZ BLSN		14		4.3	0.07	29.44	30.25	12.3	22	13.5	28	19	23	20	05						
06	27	6	17	-7	11	16	48	0	TSSN SN FG+ FZFG BR BLSN		13		4.1	0.20	29.15	29.95	16.5	22	18.1	34	25	29	21	06						
07	17	10	14	-10	2	10	51	0	BLSN		13		0.0	0.00	29.45	30.26	13.5	27	13.9	37	26	28	26	07						
08	20	7	14	-10	10	14	51	0	SN BR		11		4.6	0.38	29.36	30.16	5.3	08	7.4	14	06	11	07	08						
09	23	13	18	-6	17	19	47	0	SN FG FZFG BR BLSN		14		3.2	0.27	29.10	29.89	7.6	29	8.7	20	26	16	28	09						
10	18	6	12	-12	5	12	53	0	RA SN BR BLSN		16		2.3	0.11	29.20	30.00	11.5	23	13.2	37	22	29	21	10						
11	14	7	11	-13	3	8	54	0	RA SN FG+ FZFG BR HZ		17		7.5	0.26	29.23	30.03	8.7	25	11.9	26	26	21	26	11						
12	31	14	23	-1	20	22	42	0	SN FZFG BR		25		4.6	0.43	29.11	29.90	3.2	27	7.4	29	23	23	24	12						
13	22	1	12	-12	7	11	53	0	RA SN BR HZ BLSN		27		5.0	0.34	29.54	30.35	14.8	04	15.1	28	04	23	02	13						
14	13	1*	7*	-17	0	4	58	0	RA FZRA FZDZ SN GS BR UP		27	4.1	3.2	0.24	29.53	30.35	17.0	07	17.1	31	07	24	08	14						
15	20	13	17	-6	13	15	48	0	SN BR		30	4.6	4.7	0.40	29.14	29.94	10.6	25	12.7	32	24	25	25	15						
16	37	15	26	3	25	28	39	0	RA SN BR BLSN		27	4.4	T	T	29.03	29.81	19.8	22	20.3	43	21	33	22	16						
17	44	27	36	13	25	32	29	0	BR HZ		23	4.3	0.0	0.00	29.31	30.09	6.4	20	10.2	33	23	26	24	17						
18	45	31	38	15	35	36	27	0	RA SN FG BR UP BLSN		19		2.1	0.47	28.89	29.65	13.0	21	15.4	48	24	34	23	18						
19	32	28	30	7	26	29	35	0	RA SN FZFG BR BLSN		19		0.9	0.09	29.09	29.87	23.3	24	23.3	48*	24	39*	24	19						
20	32	24	28	5	23	26	37	0	BR		17		0.0	0.00	29.29	30.08	7.5	23	8.6	22	23	18	24	20						
21	42	24	33	10	28	31	32	0	FZFG BR		16		0.0	0.00	29.30	30.08	5.4	08	7.8	17	06	16	06	21						
22	46	32	39	16	36	38	26	0	TSRA RA BR		14		0.0	0.28	29.30	30.08	10.2	10	13.2	26	08	21	07	22						
23	56*	45	51*	28	46	48	14	0	RA BR		11		0.0	0.09	29.09	29.85	15.1	17	15.5	34	16	26	17	23						
24	51	32	42	19	30	33	23	0	RA SN PL BR		2		T	0.03	29.16	29.94	18.9	25	19.6	38	24	30	23	24						
25	32	28	30	7	26	28	35	0	SN BR		1	1.2	0.13	29.43	30.21	4.3	27	6.5	18	25	15	26	25							
26	32	25	29	6	24	28	36	0	SN PL		2		T	0.01	29.58	30.37	13.3	24	13.6	34	25	26	24	26						
27	34	21	28	5	23	28	37	0	RA SN BR		1		T	T	29.23	30.01	7.0	09	8.9	18	10	17	10	27						
28	34	21	28	5	28	29	37	0	RA DZ FZDZ SN BR		1		0.3	0.08	29.22	30.00	2.3	36	4.8	14	03	11	02	28						
29	28	20	24	1	19	22	41	0	SN BR		1		0.1	T	29.62	30.42	4.1	26	5.5	23	26	18	26	29						
30	32	20	26	3	22	26	39	0	SN BR		1		T	T	29.79	30.59	2.9	31	10.3	24	36	18	33	30						
31	32	14	23	0	8	18	42	0			1		0.0	0.00	29.90	30.71	6.4	08	7.2	13	06	11	06	31						
29.9												17.8	22.0	41.3	0.0	< Monthly Averages		TOTALS ->	65.1	5.78	29.31	30.10	5.1	23	12.7	<- Monthly Averages				
-.3												<----- DEPARTURE FROM NORMAL ----->		3.08	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3															
DEGREE DAYS												GREATEST 24-HR PRECIPITATION: 0.75 DATE: 04												SEA LEVEL PRESSURE: 30.81 DATE: 31 0948						
MONTHLY TOTAL DEPARTURE												GREATEST 24-HR SNOWFALL: 14.7 DATE: 03-04												MAXIMUM MINIMUM: 29.55 03 0652						
HEATING:												GREATEST SNOW DEPTH: 30 DATE: 15												PRECIPITATION: ≥ 0.01 INCH: 22						
COOLING:												NUMBER OF DAYS WITH → MAXIMUM TEMP ≥ 90: 0												PRECIPITATION: ≥ 0.10 INCH: 15						
1280												MAXIMUM TEMP ≤ 32: 21												PRECIPITATION: ≥ 1.0 INCH: 15						
0												MINIMUM TEMP ≤ 0: 0												SNOWFALL: ≥ 1.0 INCH: 15						

JANUARY 1999  
BUFFALO, NY

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

JANUARY 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01													01	T											01	T	0.01	
02													02												02		0.46	
03													03	T	T	T	T	T	T	T	T	T	T	T	03		0.68	
04													04												04		0.75	
05													05	T	T	0.01	0.01	T							05		0.02	
06													06												06		0.20	
07													07												07	T	0.00	
08													08	T	0.01	0.01	0.01	0.01	0.03	0.02	T	0.03				08		0.38
09	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	09	T	T	T	T	T	T	T	T	T	T	T	09		0.27	
10													10	T	T	T	T	T	T	T	T	T	T	T	10		0.11	
11													11	T	0.02	0.10	0.02	T	0.01	T	0.01	T	0.02	T	0.02	11		0.21
12	T	0.01	0.02	0.03	0.01	0.01	0.02	0.05	0.01	0.01	0.01	0.01	12	T	T	T	T	T	T	T	T	T	T	T	12		0.43	
13													13	T	0.01	T	T	T	T	T	T	T	T	T	T	13		0.34
14													14	T	T	T	T	T	T	T	T	T	T	T	14		0.24	
15	0.06	0.05	0.04	0.05	0.05	0.02	0.01	0.01	0.01	0.01	0.01	0.01	15	T	T	T	T	T	T	T	T	T	T	T	15		0.40	
16	T												16												16	T		
17													17												17		0.00	
18	0.02	0.09	0.02	0.01	T	0.01	T	T	T	T	T	T	18	0.06		0.01		T	T	T	T	T	T	T	18		0.47	
19	T												19												19	0.01	0.09	
20													20												20		0.00	
21													21												21		0.00	
22													22												22		0.28	
23													23												23		0.09	
24	0.03	T			T	T	T	0.01	0.02	0.01	0.02	0.01	24	T	T	T	T	T	T	T	T	T	T	T	24		0.03	
25													25	0.01	T	T	T	T	T	T	T	T	T	T	T	25	0.08	0.13
26													26	T											26	T	0.01	
27													27												27			
28													28	0.01	T	T	T	T	T	T	T	T	T	T	T	28	0.03	0.08
29	T				T	T	T	T	T	T	T	T	29	T	T	T	T	T	T	T	T	T	T	T	29		T	
30	T	T											30												30	T		
31													31												31		0.00	

### MAXIMUM SHORT DURATION PRECIPITATION (See Note 1)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note 1: NCDC derives these data from one-minute ASOS values. The table is not printed when inconsistent with ASOS hourly totals.

Note 2: The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalis
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
	'+' = Heavy	'-' = Moderate	'-' = Light

## BUFFALO, NY JANUARY 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)			VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CEILOMETER	MN-MN CEILOMETER	SATELLITE	MINIMUM	MAXIMUM	
01	410	75				.50	10.00	
02	0	0				.75	10.00	
03	0	0				.75	10.00	
04	244	45				<.25	10.00	
05	0	0				<.25	10.00	
06	0	0				.50	10.00	
07	437	79				6.00	10.00	
08	0	0				.50	10.00	
09	0	0				.50	10.00	
10	555	6				.25	10.00	
11	218	39				<.25	10.00	
12	0	0				.75	10.00	
13	0	0				.75	10.00	
14	0	0				.50	10.00	
15	35	6				.75	10.00	
16	0	0				5.00	10.00	
17	409	72				6.00	10.00	
18	10	2				.50	10.00	
19	0	0				.50	10.00	
20	155	27				4.00	10.00	
21	165	29				.50	10.00	
22	55	10				.75	10.00	
23	30	5				6.00	10.00	
24	0	0				5.00	10.00	
25	0	0				.75	10.00	
26	0	0				7.00	10.00	
27	50	9				5.00	10.00	
28	0	0				.50	9.00	
29	30	5				1.25	10.00	
30	102	17				8.00	10.00	
31	595	100				10.00	10.00	
MONTHLY AVGS						2.37	9.97	
SUNSHINE (MINUTES)								
Total: 3500 Possible: 17575 Percent Possible: 20								
NUMBER OF DAYS WITH:								
SKY CONDITION								
CLR	PTLY	CLDY	CLOUDY	MISSING				
				31				
MINIMUM VISIBILITY (MILES)								
<-0.25	<=3.0	>=7.0						
4	21	3						

# OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**

JANUARY 1999

B14

WBAN # 14733

HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F			WIND SPEED (MPH) DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)		HOUR (LST)	SATELLITE		TEMPERATURE °F			WIND SPEED (MPH) DIRECTION TENS OF DEG										
	SKY COVER	CEILING 100'S OF FT		OBSE	TIME (LST)	EFFECT AMT Outs		DRY BULB	DEW POINT	WET BULB	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	STATION	SEA LEVEL										
																	STATION	SEA LEVEL								
			SUNRISE: 0746	JAN 01			SUNSET: 1651										SUNRISE: 0746	JAN 07	SUNSET: 1657							
01	Few	NC		10.00			16	5	13	62	17	27	29.16	29.96			10.00	17	9	15	70	16	26	29.19	29.98	
04	Few	NC		10.00			14	2	11	58	18	25	29.23	30.03			10.00	15	8	13	74	13	26	29.29	30.09	
07	Few	NC		10.00			13	4	11	67	14	27	29.32	30.12			10.00	11	3	9	70	16	27	29.38	30.18	
10	SCT	NC		10.00			11	1	9	64	21	30	29.50	30.30			10.00	12	0	10	58	16	27	29.46	30.27	
13	SCT	NC		10.00			11	-1	9	58	14	32	29.59	30.41			10.00	14	3	12	61	24	26	29.48	30.28	
16	SCT	NC		10.00			8	-5	6	55	9	33	29.67	30.49			10.00	13	-1	10	54	16	26	29.51	30.32	
19	CLR	NC		10.00			5	-2	4	72	3	26	29.74	30.57			10.00	11	-1	9	58	13	29	29.57	30.38	
22	SCT	NC		10.00			5	-6	3	60	5	23	29.78	30.60			10.00	11	0	9	61	9	30	29.59	30.40	
			SUNRISE: 0746	JAN 02			SUNSET: 1652										SUNRISE: 0746	JAN 08	SUNSET: 1658							
01	BKN	030		10.00			2	-6	1	69	3	18	29.78	30.60			10.00	12	1	10	61	5	19	29.60	30.41	
04	OVC	024		10.00			3	-3	2	76	6	18	29.76	30.59			10.00	12	6	11	77	7	15	29.59	30.40	
07	OVC	150		10.00			5	-2	4	72	6	13	29.74	30.56			9.00	-SN	9	4	8	80	7	13	29.56	30.37
10	OVC	150		10.00			10	4	9	76	8	28	29.76	30.58			10.00	13	4	11	67	8	13	29.50	30.31	
13	SCT	NC		10.00			15	1	12	53	16	10	29.65	30.48			1.00	-SN	17	12	16	80	7	04	29.36	30.16
16	OVC	130		10.00			16	2	13	54	20	09	29.46	30.27			0.75	-SN BR	18	15	17	88	9	04	29.25	30.05
19	VV	004		0.75	-SN BR		15	12	14	88	16	08	29.34	30.14			0.75	-SN BR	19	17	18	92	9	06	29.16	29.96
22	OVC	026		10.00	-FZRA		26	14	22	60	17	07	29.13	29.92			0.50	-SN BR	19	17	18	92	8	03	29.06	29.85
			SUNRISE: 0746	JAN 03			SUNSET: 1653									SUNRISE: 0745	JAN 09	SUNSET: 1659								
01	OVC	027		4.00	-FZRPL BR		22	20	21	91	10	01	29.03	29.82			1.00	-SN BR	20	17	19	89	3	01	28.98	29.77
04	OVC	050		2.00	-FZRPL		24	21	23	88	9	07	28.91	29.70			1.00	-SN BR	20	19	20	96	3	29	28.98	29.77
07	OVC	060		10.00			37	31	35	79	15	19	28.79	29.57			1.00	-SN BR	23	21	22	92	8	34	28.99	29.78
10	OVC	020		10.00	-RA		39	35	37	86	24	21	28.80	29.57			1.00	-SN BR	22	20	21	92	8	32	29.04	29.82
13	OVC	021		7.00	-SN		29	28	29	96	17	25	28.86	29.64			0.50	SN FG	22	19	21	89	10	30	29.09	29.87
16	OVC	028		5.00	-SN		26	24	25	92	22	22	28.92	29.70			1.00	-SN	22	18	21	85	13	26	29.13	29.92
19	OVC	050		3.00	-SN		24	15	21	68	22	22	28.95	29.73			9.00		20	15	19	81	12	28	29.22	30.01
22	OVC	022		1.25	-SN BLSN		20	18	19	92	25	22	28.98	29.75			10.00		16	9	14	74	10	26	29.29	30.09
			SUNRISE: 0746	JAN 04			SUNSET: 1654									SUNRISE: 0745	JAN 10	SUNSET: 1660								
01	OVC	021		2.50	-SN BLSN		17	14	16	88	29	21	28.99	29.78			10.00		13	3	11	64	9	26	29.29	30.09
04	OVC	008		0.50	SN BLSN		15	12	14	88	20	22	29.02	29.81			10.00		10	2	8	69	10	27	29.29	30.10
07	VV	001		<.25	+SN BLSN		15	14	15	95	22	21	29.06	29.85			10.00		9	1	7	70	6	28	29.31	30.11
10	BKN	050		10.00			16	6	14	65	21	26	29.13	29.92			1.25	-SN BR	11	7	10	84	7	22	29.29	30.09
13	Few	NC		10.00			18	10	16	71	18	27	29.15	29.95			10.00		17	5	14	59	17	21	29.19	29.99
16	SCT	NC		10.00			17	5	14	59	18	26	29.22	30.03			6.00	-SN	18	9	16	68	18	21	29.10	29.89
19	BKN	120		10.00			16	4	13	59	14	26	29.30	30.11			1.50	-SN BLSN	15	10	14	80	21	22	29.08	29.87
22	BKN	080		10.00			15	6	13	67	13	26	29.34	30.14			7.00		12	3	10	67	16	26	29.12	29.91
			SUNRISE: 0746	JAN 05			SUNSET: 1655									SUNRISE: 0745	JAN 11	SUNSET: 1701								
01	OVC	075		10.00			14	6	12	71	14	26	29.36	30.16			5.00	HZ	10	0	8	63	17	28	29.13	29.93
04	OVC	039		4.00	-SN BR		15	11	14	84	9	20	29.40	30.20			10.00		9	-1	7	64	16	27	29.18	29.99
07	OVC	050		10.00			13	11	13	91	10	22	29.44	30.24			10.00		7	-1	5	70	18	26	29.28	30.09
10	OVC	041		1.50	-SN		15	6	13	67	8	20	29.48	30.28			10.00		8	-1	6	66	14	28	29.36	30.17
13	BKN	045		9.00	-SN		17	5	14	59	18	26	29.46	30.27			2.00	-SN	11	2	9	67	14	27	29.35	30.16
16	OVC	003		0.50	SN FZFG		16	13	15	88	12	26	29.46	30.27			4.00	-SN	10	6	9	84	3	27	29.30	30.11
19	OVC	033		6.00	BLSN		13	4	11	67	18	20	29.48	30.29			2.00	-SN	10	6	9	84	9	17	29.21	30.03
22	OVC	023		8.00	BLSN		9	1	7	70	20	20	29.46	30.27			1.50	-SN	12	9	11	87	7	15	29.07	29.86
			SUNRISE: 0746	JAN 06			SUNSET: 1656									SUNRISE: 0744	JAN 12	SUNSET: 1702								
01	SCT	NC		10.00			7	-4	5	60	17	20	29.41	30.22			6.00	-SN BR	18	16	17	92	8	16	28.91	29.70
04	BKN	110		10.00			9	-1	7	64	16	19	29.34	30.15			2.50	-SN BR	31	29	30	92	21	24	28.91	29.69
07	OVC	085		10.00			13	2	11	61	12	20	29.24	30.05			0.75	-SN BR	23	20	22	88	10	30	29.00	29.79
10	OVC	025		2.00	-SN		16	11	15	80	18	21	29.15	29.96			8.00		21	17	20	85	12	26	29.14	29.94
13	OVC	023		3.00	-SN		21	15	19	78	21	22	29.06	29.85			10.00		23	15	21	72	6	28	29.15	29.94
16	OVC	004		0.75	-SN BR		23	21	22	92	21	21	29.00	29.79			1.50	-SN BR	22	19	21	89	0	00	29.20	29.98
19	OVC	011		0.50	SN BLSN		27	25	26	92	15	25	29.01	29.79			1.50	-SN BR	22	20	21	92	5	06	29.23	30.03
22	BKN	065		10.00			20	11	17	68	13	26	29.11	29.90			1.50	-SN BR	21	20	21	96	8	05	29.22	30.01

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
JANUARY 1999

HOUR (LST)			OBSERVATION TIME (LST) EFF CLD AMT Okas	WEATHER	TEMPERATURE °F			WIND SPEED (MPH) DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)	HOUR (LST)			OBSERVATION TIME (LST) EFF CLD AMT Okas	WEATHER	TEMPERATURE °F			WIND SPEED (MPH) DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)						
	SKY COVER	CEILING 100'S OF FT			RELATIVE HUMIDITY (%)	DRY BULB	DEW POINT				SKY COVER	CEILING 100'S OF FT	RELATIVE HUMIDITY (%)	DRY BULB	DEW POINT	WET BULB	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	RELATIVE HUMIDITY (%)	DRY BULB	DEW POINT	WET BULB	STATION
<b>SUNRISE: 0744 JAN 13 SUNSET: 1703</b>																									
01	OVC	007		1.25-SN BR	21	19	20	92	12	04	29.24	30.04	01	OVC	010										
04	VV	003		0.75-SN BR	20	18	19	92	10	03	29.26	30.06	04	OVC	010										
07	OVC	012		1.25-SN BR	19	15	18	85	20	02	29.40	30.19	07	OVC	016										
10	OVC	022		2.00-SN	16	11	15	80	16	04	29.50	30.30	10	OVC	010										
13	BKN	250		2.00-SN	12	6	11	77	16	04	29.59	30.39	13	OVC	014										
16	SCT	NC		8.00-SN	7	0	6	73	16	05	29.63	30.45	16	OVC	026										
19	OVC	027		8.00-SN	5	-1	4	76	15	05	29.75	30.56	19	OVC	023										
22	BKN	130		10.00-SN	1	-4	0	79	17	05	29.77	30.59	22	OVC	023										
<b>SUNRISE: 0744 JAN 14 SUNSET: 1704</b>																									
01	BKN	021		10.00-SN	3	-3	2	76	17	07	29.75	30.58	01	OVC	021										
04	OVC	021		10.00-SN	3	-2	2	79	16	08	29.73	30.55	04	BKN	015										
07	OVC	047		6.00-SN BLSN	3	-4	2	72	24	07	29.68	30.51	07	BKN	013										
10	OVC	022		1.25-SN BLSN	1	-5	0	75	23	08	29.63	30.46	10	BKN	016										
13	OVC	032		1.75-SN BLSN	2	-3	1	80	20	07	29.52	30.34	13	BKN	013										
16	OVC	024		6.00-SN BLSN	5	0	4	79	18	07	29.41	30.23	16	SCT	NC										
19	OVC	020		5.00-FZRA	8	5	7	87	15	07	29.36	30.17	19	FEW	NC										
22	OVC	028		1.50-SN	11	8	10	88	10	07	29.31	30.12	22	BKN	250										
<b>SUNRISE: 0743 JAN 15 SUNSET: 1706</b>																									
01	VV	004		0.75-SN	13	11	12	92	8	05	29.20	30.01	01	CLR	NC										
04	VV	005		0.75-SN	18	16	17	92	3	08	29.13	29.93	04	SCT	NC										
07	OVC	009		1.00-SN	19	17	18	92	9	24	29.11	29.90	07	OVC	130										
10	VV	015		0.75-SN BR	14	10	13	84	12	26	29.13	29.94	10	OVC	130										
13	BKN	015		2.50-SN	17	12	16	80	17	26	29.12	29.91	13	BKN	230										
16	OVC	030		1.50-SN	17	13	16	84	17	26	29.13	29.93	16	FEW	NC										
19	BKN	018		8.00-SN	15	9	14	77	22	25	29.16	29.96	19	CLR	NC										
22	FEW	NC		10.00-SN	16	11	15	80	17	25	29.15	29.96	22	OVC	001										
<b>SUNRISE: 0743 JAN 16 SUNSET: 1707</b>																									
01	OVC	017		10.00-SN	15	9	14	77	14	20	29.13	29.93	01	VV	001										
04	OVC	016		10.00-SN	19	14	18	81	14	21	29.09	29.88	04	OVC	004										
07	OVC	022		9.00-SN	24	19	22	81	15	20	29.04	29.83	07	OVC	002										
10	OVC	110		10.00-SN	29	24	27	82	17	21	28.95	29.74	10	OVC	022										
13	OVC	026		10.00-SN	37	29	34	73	26	23	28.89	29.67	13	BKN	080										
16	OVC	022		10.00-SN	37	31	35	79	28	23	28.96	29.73	16	OVC	095										
19	OVC	024		10.00-SN	36	32	34	86	21	23	29.04	29.82	19	OVC	075										
22	CLR	NC		10.00-SN	36	32	34	86	23	21	29.12	29.89	22	OVC	070										
<b>SUNRISE: 0742 JAN 17 SUNSET: 1708</b>																									
01	FEW	NC		10.00-SN	35	31	33	85	21	24	29.23	30.01	01	BKN	120										
04	CLR	NC		8.00-SN	33	30	32	89	15	23	29.30	30.08	04	BKN	140										
07	CLR	NC		7.00-SN	30	28	29	92	10	23	29.36	30.14	07	OVC	095										
10	SCT	NC		6.00-HZ	30	25	28	82	6	20	29.42	30.20	10	BKN	075										
13	OVC	150		10.00-SN	37	27	33	67	7	20	29.40	30.18	13	BKN	080										
16	SCT	NC		10.00-SN	41	24	35	51	6	08	29.33	30.11	16	OVC	140										
19	SCT	NC		10.00-SN	37	18	30	46	8	10	29.28	30.06	19	OVC	095										
22	SCT	NC		10.00-SN	40	23	34	51	9	14	29.16	29.94	22	OVC	065										
<b>SUNRISE: 0742 JAN 18 SUNSET: 1709</b>																									
01	OVC	060		5.00-RA	39	33	37	79	9	19	29.09	29.86	01	OVC	022										
04	BKN	060		10.00-SN	41	36	39	82	12	15	28.96	29.72	04	OVC	010										
07	BKN	120		10.00-SN	44	38	41	79	23	17	28.86	29.63	07	OVC	014										
10	OVC	036		10.00-SN	43	38	41	82	10	21	28.88	29.64	10	OVC	008										
13	OVC	006		4.00-RA BR	36	36	36	100	14	24	28.84	29.61	13	OVC	008										
16	OVC	007		7.00-SN	32	32	32	100	13	23	28.85	29.62	16	OVC	012										
19	SCT	NC		10.00-SN	34	31	33	89	15	23	28.86	29.63	19	OVC	032										
22	OVC	008		4.00-SN BR	32	31	32	96	18	23	28.85	29.62	22	OVC	028										
<b>SUNRISE: 0742 JAN 19 SUNSET: 1710</b>																									
01	OVC	007		3.00-SN BLSN	32	30	31	92	24	23	28.86	29.63	01	OVC	010										
04	OVC	047		0.50-SN FZFG BLSN	30	30	30	100	25	24	28.90	29.68	04	OVC	016										
07	OVC	022		4.00-SN BLSN BR	30	27	29	88	24	24	28.98	29.75	07	OVC	014										
10	OVC	027		1.00-SN BLSN BR	29	25	28	85	24	24	29.07	29.85	10	OVC	026										
13	OVC	024		10.00-SN BLSN BR	29	24	27	8																	

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

JANUARY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)																																																																																																																																																																																																																																																																																																																																																																																											
					Dry Bulb	DeW Point	Wet Bulb		Relative Humidity (Pct)	Speed (mph)						Dry Bulb	DeW Point	Wet Bulb	Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																												
SUNRISE: 0737	JAN	25	SUNSET: 1718		31	24	28	76	10	26	29.33	30.12	01	SCT	NC		SUNRISE: 0731	JAN	31	SUNSET: 1726		19	15	18	85	7	10	29.96	30.77																																																																																																																																																																																																																																																																																																																																																																																		
01 OVC 028			10.00		31	24	28	76	9	26	29.34	30.13	04	CLR	NC		10.00				15	11	14	84	7	06	29.98	30.79																																																																																																																																																																																																																																																																																																																																																																																			
04 OVC 030			9.00		31	24	28	92	6	23	29.33	30.12	07	CLR	NC		10.00				14	7	12	73	7	09	29.99	30.80																																																																																																																																																																																																																																																																																																																																																																																			
07 OVC 028			2.50	-SN BR	29	27	28	92	7	23	29.33	30.12	10	CLR	NC		10.00				20	2	16	45	8	10	29.99	30.80																																																																																																																																																																																																																																																																																																																																																																																			
10 VV 010			0.75	-SN BR	29	28	29	96	0	00	29.35	30.14	13	CLR	NC		10.00				30	1	23	29	7	05	29.93	30.73																																																																																																																																																																																																																																																																																																																																																																																			
13 OVC 020			0.75	-SN BR	30	27	29	88	9	33	29.38	30.17	16	FEW	NC		10.00				32	9	25	38	7	03	29.86	30.67																																																																																																																																																																																																																																																																																																																																																																																			
16 OVC 028			10.00		29	25	28	85	7	36	29.45	30.24	19	FEW	NC		10.00				25	9	21	50	8	04	29.80	30.61																																																																																																																																																																																																																																																																																																																																																																																			
19 OVC 036			10.00		28	23	26	81	3	24	29.54	30.33	22	CLR	NC		10.00				22	8	18	55	8	10	29.77	30.58																																																																																																																																																																																																																																																																																																																																																																																			
22 OVC 036			9.00		29	27	28	92	8	21	29.57	30.36	SUNRISE: 0736	JAN	26	SUNSET: 1719		30	23	28	75	7	26	29.59	30.39	SUNRISE: 0731	JAN	31	SUNSET: 1726		19	15	18	85	7	10	29.96	30.77																																																																																																																																																																																																																																																																																																																																																																									
01 SCT NC			10.00		30	25	28	82	6	23	29.59	30.38	04 OVC 013				10.00				15	11	14	84	7	06	29.98	30.79																																																																																																																																																																																																																																																																																																																																																																																			
07 OVC 026			10.00		30	25	28	82	15	24	29.57	30.36	10 OVC 018				10.00				14	7	12	73	7	09	29.99	30.80																																																																																																																																																																																																																																																																																																																																																																																			
13 OVC 020			7.00 PL		29	25	28	85	13	24	29.61	30.41	16 OVC 021				10.00				20	2	16	45	8	10	29.99	30.80																																																																																																																																																																																																																																																																																																																																																																																			
19 OVC 019			10.00		30	24	28	79	22	25	29.57	30.36	22 OVC 011				10.00				30	1	23	29	7	05	29.93	30.73																																																																																																																																																																																																																																																																																																																																																																																			
22 OVC 011			8.00		29	25	28	85	12	22	29.56	30.35	SUNRISE: 0735	JAN	27	SUNSET: 1721		24	20	23	84	8	18	29.49	30.28	SUNRISE: 0731	JAN	31	SUNSET: 1726		19	15	18	85	7	10	29.96	30.77																																																																																																																																																																																																																																																																																																																																																																									
01 SCT NC			7.00		24	20	23	84	8	18	29.49	30.28	04 SCT NC				6.00 BR				19	11	14	84	7	06	29.98	30.79																																																																																																																																																																																																																																																																																																																																																																																			
07 OVC 095			9.00		22	19	21	89	6	19	29.44	30.23	10 OVC 100				9.00				19	10	29.27	30.05	13 OVC 070				10.00				29	13	29	92	7	03	29.92	30.73																																																																																																																																																																																																																																																																																																																																																																							
16 OVC 031			10.00		25	21	24	85	5	09	29.40	30.19	19 OVC 023				9.00				21	9	20	10	29.88	22 OVC 019				6.00 RA BR				21	8	21	85	7	05	29.07	29.84																																																																																																																																																																																																																																																																																																																																																																						
22 OVC 019			7.00		33	21	29	61	7	09	29.27	30.05	SUNRISE: 0734	JAN	28	SUNSET: 1722		34	21	29	59	15	09	29.13	29.92	SUNRISE: 0731	JAN	31	SUNSET: 1726		19	15	18	85	7	10	29.96	30.77																																																																																																																																																																																																																																																																																																																																																																									
01 OVC 023			4.00 BR		34	21	29	61	15	09	29.27	30.05	04 OVC 006				4.00 BR				21	9	20	10	29.88	07 OVC 007				3.00 BR				21	8	20	89	7	04	29.85	30.65																																																																																																																																																																																																																																																																																																																																																																						
13 OVC 003			0.50 FZDZ BR		34	24	30	67	9	06	29.10	29.87	16 OVC 003				0.50 FZDZ BR				23	10	29.09	29.87	19 OVC 008				2.00 SNFZDZ BR				21	9	01	29.36	30.15	22 OVC 011				2.50 SN BR				21	8	20	91	7	05	29.07	29.84																																																																																																																																																																																																																																																																																																																																																										
22 OVC 011			4.00 BR		31	28	30	89	7	04	29.07	29.85	SUNRISE: 0733	JAN	29	SUNSET: 1723		31	29	30	89	7	04	29.07	29.85	SUNRISE: 0731	JAN	31	SUNSET: 1726		19	15	18	85	7	10	29.96	30.77																																																																																																																																																																																																																																																																																																																																																																									
01 OVC 016			10.00		21	18	20	88	0	00	29.55	30.34	04 OVC 015				10.00				18	12	29.32	30.12	07 OVC 022				9.00 SN				18	12	29.33	30.12	10 OVC 025				1.25 SN BR				18	12	29.34	30.13	13 OVC 024				10.00				18	12	29.35	30.13	16 OVC 024				10.00				18	12	29.36	30.14	19 OVC 028				5.00 SN BR				18	12	29.37	30.14	22 OVC 020				9.00 SN				18	12	29.38	30.14	SUNRISE: 0732	JAN	30	SUNSET: 1725		28	24	27	85	14	23	29.63	30.43	SUNRISE: 0731	JAN	31	SUNSET: 1726		30	25	28	82	10	24	29.63	30.42	SUNRISE: 0730	JAN	30	SUNSET: 1724		28	23	26	81	6	26	29.68	30.48	SUNRISE: 0729	JAN	29	SUNSET: 1723		30	24	28	79	9	26	29.73	30.53	SUNRISE: 0728	JAN	28	SUNSET: 1722		31	20	27	64	13	02	29.85	30.65	SUNRISE: 0727	JAN	27	SUNSET: 1721		28	21	25	78	7	05	29.92	30.72	SUNRISE: 0726	JAN	26	SUNSET: 1720		22	18	21	85	8	09	29.94	30.75	SUNRISE: 0725	JAN	25	SUNSET: 1719		28	24	27	85	14	23	29.63	30.43	SUNRISE: 0724	JAN	24	SUNSET: 1718		30	25	28	82	10	24	29.63	30.42	SUNRISE: 0723	JAN	23	SUNSET: 1717		28	23	26	81	6	26	29.68	30.48	SUNRISE: 0722	JAN	22	SUNSET: 1716		30	24	28	79	9	26	29.73	30.53	SUNRISE: 0721	JAN	21	SUNSET: 1715		23	18	22	80	29	32	30.11	7.62	13	4	23	SUNRISE: 0720	JAN	20	SUNSET: 1714		23	17	21	79	29	32	30.11	7.44	12	4	22	SUNRISE: 0719	JAN	19	SUNSET: 1713		23	17	21	81	29	31	30.11	7.06	12	4	22	SUNRISE: 0718	JAN	18	SUNSET: 1712		24	18	22	79	29	32	30.12	7.53	13	4	22	SUNRISE: 0717	JAN	17	SUNSET: 1711		25	18	23	75	29	31	30.10	7.38	14	5	23	SUNRISE: 0716	JAN	16	SUNSET: 1710		24	18	22	77	29	32	30.11	7.47	13	5	22	SUNRISE: 0715	JAN	15	SUNSET: 1709		24	18	22	79	29	32	30.12	6.97	12	4	22	SUNRISE: 0714	JAN	14	SUNSET: 1708		24	18	22	79	29	32	30.11	7.62	13	4	23	SUNRISE: 0713	JAN	13	SUNSET: 1707		23	17	21	79	29	32	30.11	7.44	12	4	22	SUNRISE: 0712	JAN	12	SUNSET: 1706		23	17	21	77	29	31	30.10	7.65	12	4	21

## SUMMARY BY HOUR

HOUR (LST)	CELOMETER	EFF CLD AMT	AVERAGES				WIND SPEED (MPH)	RESULTANT WIND (MPH)				
			Dry Bulb	DeW Point	Wet Bulb	Relative Humidity	Station	Sea Level	Visibility (miles)	Wind Speed (mph)	Direction	
01			22	17	21	81	29.29	30.08	7.43	12	5	23
02			22	17	21	81	29.29	30.08	7.31	12	6	22
03			22	18	21	83	29.30	30.09	7.65	11	6	22
04			22	18	21	83	29.29	30.08	7.15	11	6	22
05			22	18	21	85	29.29	30.08	7.01	12	5	22
06			23	19	22	84	29.30	30.09	7.40	12	6	22
07			23	18	21	83	29.31	30.10	7.20	12	5	22
08			22	18	21	82	29.31	30.11	6.85	11	5	22
09			23	18	21	81	29.32	30.12	5.80	13	6	22
10			23	18	22	79	29.33	30.12	6.15	13	6	23
11			24	18	22	77	29.34</					

JANUARY 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL		
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12				
01													01												01	0.00			
02													02												02	0.47			
03	0.16	0.16	0.12	0.04	0.01	0.02	0.03	0.01	T	T	0.01	T	02	T	T	T	T	T	T	0.04	0.14	0.03	0.01	0.06	0.18	03	0.69		
04	T	0.01	0.01	0.02	0.04	0.16	0.18	0.20	T	0.01	0.02	T	03	T	T	T	T	T	T	0.01	0.02	0.06	0.01	0.01	T	04	0.62		
05					T	0.01	T	T	T	T	T	T	04													05	0.07		
06													05	T	0.01	0.02	0.03	T	T	T	T	T	T	T	T				
07													06	T	0.01	T	0.02	0.01	0.01	0.05	0.09	T	T					06	0.20
08													07														07	0.00	
09	0.03	0.02	0.01	0.03	0.01	0.02	0.04	0.01	0.01	0.02	0.02	0.01	08	0.01	0.02	0.02	0.04	0.01	0.04	0.04	0.01	0.04	0.06	0.06	0.03	08	0.38		
10									T	T	T	T	09	0.02	0.03	T	T	T	T	T	T	T	T	T	T	09	0.28		
11													10														10	0.07	
12	0.01	0.01	T	0.03	0.02	0.03	0.06	0.02	0.02	0.02	0.02	0.02	11	T	0.03	0.12	0.03	T	0.01	0.01	T	T	0.01	0.02	0.03	11	0.26		
13	0.03	0.03	0.04	0.04	0.06	0.05	0.03	0.02	0.02	T	T	T	12	T	T	T	0.01	0.02	0.01	0.03	0.04	0.05	0.05	12	0.42				
14													13	0.01	T	T	T	T	T	T	T	T	T	T	T	13	0.34		
15	0.03	0.05	0.06	0.05	0.04	0.04	0.03	0.01	T	0.02	0.01	0.01	14	0.02	0.01	0.01	T	T	T	T	T	T	T	T	14	0.25			
16													15	0.01	0.01											15	0.37		
17													16																
18	0.02	0.08	0.03	0.01	T	T							17														16	0.02	
19	0.01	0.02	0.02	0.02	0.02								18	0.08	0.04	0.08	0.04	T	T	T						17	0.00		
20													19														18	0.41	
21													20														19	0.09	
22													21														20	0.00	
23													22														21	0.00	
24	0.03	T		T	T	T	0.04	0.01	0.05	0.19	0.03		23													22	0.32		
25													24														23	0.11	
26													25	0.01	T	T											24	0.03	
27													26	T													25	0.13	
28	T	T			T	T	T	T	T	T	T	T	27													26	0.01		
29													28	0.02	T	T	T	T	T	T	T	T	T	T	T	27	0.01		
30	T	T											29	T													28	0.08	
31													30														29	T	
													31														30	0.00	

PUBLISHED BY: NCDC, ASHEVILLE, NC.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.  
M = Missing Data.  
\* = Data distribution unknown.  
First HPD value that follows is the total accumulated amount.

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.09	0.12	0.16	0.17	0.20	0.20	0.24	0.32	0.37	0.42	0.47	0.55
ENDED: DATE	22	22	22	22	22	22	04	04	04	04	04	03
ENDED: TIME	0937	0941	0947	0950	0956	0956	0733	0745	0745	0745	0745	0207

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.



JANUARY 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

United States  
Department of Commerce

National Oceanic and  
Atmospheric Administration

National Environmental Satellite  
Data, and Information Service

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



**FEBRUARY 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42°56' N Long: 78°44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

**FEBRUARY 1999**  
**BUFFALO, NY**

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

FEBRUARY 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01													01												01	0.10		
02	0.04	0.04	T										02	T	0.01	T	T	0.01	T	T	0.06	T	0.04	0.04	0.01	01	02	0.18
03	T												03	0.01	T							T	T	T	T	03	T	0.02
04													04													04	T	
05	T	T	T	T	T	T	T	T	T	T	T	T	05													05		
06													06	0.01	T											06	0.05	
07													07													07	0.16	
08													08													08	0.00	
09													09													09	0.00	
10													10													10	0.00	
11													11	T	T	T	T	T	T	T	T	T	T	T	11	T		
12													12													12	0.20	
13	T	0.04	T										13													13	0.05	
14													14													14	0.00	
15													15													15	0.00	
16													16													16	T	
17	T	T	T	T	T	T	0.01	0.03	0.01	T	T	T	17	T	T	T	T	T	T	T	T	T	T	T	17	0.05		
18													18													18	T	
19	T	T	T	T	T	T	T	T	T	T	T	T	19	0.02	T	T	T	T	T	T	T	T	T	T	T	19	T	0.02
20													20	T	T	T	T	T	T	T	T	T	T	T	T	20		
21													21													21	T	
22													22													22	0.00	
23													23													23	0.00	
24													24													24	0.00	
25													25	0.02	T	T	T	T	T	T	T	T	T	T	T	25	0.03	
26													26													26	0.00	
27													27													27	T	
28		T					T	T	0.02	0.09	0.08	0.04	T	T												28	0.23	

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
	'+' = Heavy	'-' = Moderate	'-' = Light

## BUFFALO, NY FEBRUARY 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED	
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CEILOMETER	MN-MN CEILOMETER	SATELLITE	SATELLITE		
01	60	10					5.00	10.00
02	0	0					2.50	10.00
03	444	81					7.00	10.00
04	0	0					6.00	10.00
05	475	74					2.00	10.00
06	0	0					1.50	10.00
07	0	0					.25	10.00
08	307	50					6.00	10.00
09	354	57					8.00	10.00
10	571	92					9.00	10.00
11	196	31					10.00	10.00
12	5	1					.50	10.00
13	137	22					.25	10.00
14	530	84					9.00	10.00
15	588	93					10.00	10.00
16	435	68					10.00	10.00
17	0	0					2.00	10.00
18	8	1					2.50	10.00
19	164	25					2.00	10.00
20	159	25					.50	10.00
21	367	56					9.00	10.00
22	627	96					10.00	10.00
23	360	55					10.00	10.00
24	420	64					10.00	10.00
25	0	0					.50	10.00
26	584	88					3.00	10.00
27	565	85					3.00	10.00
28	25	4					3.00	10.00
MONTHLY AVGS							5.09	10.00
SUNSHINE (MINUTES)								
Total:	7381	Possible:	17742					
		Percent Possible:	42					
NUMBER OF DAYS WITH:								
SKY CONDITION								
CLR	PTLY	CLDY	CLOUDY		MISSING			
					28			
MINIMUM VISIBILITY (MILES)								
<= 0.25	<= 3.0	>= 7.0						
2	14	11						

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

FEBRUARY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite		OBSERVATION TIME (LST) EFF CLD AMT Oktas	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		HOUR (LST)	SATellite		OBSERVATION TIME (LST) EFF CLD AMT Oktas	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)							
					DRY BULB	DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL					
SUNRISE: 0730	FEB 01	SUNSET: 1727			22	5	18	48	5	10	29.69	30.50	01	OVC	028		SUNRISE: 0723	FEB 07	SUNSET: 1735			33	26	30	75	6	26	29.25	30.03
01 CLR NC		10.00			20	4	16	50	3	12	29.65	30.45	04	OVC	026		10.00					32	26	30	79	3	31	29.23	30.01
04 CLR NC		10.00			23	2	18	40	5	13	29.62	30.42	07	OVC	028		10.00					32	27	30	82	0	00	29.20	29.98
07 BKN 250		10.00			28	8	22	43	7	12	29.59	30.38	10	OVC	030		9.00					33	27	31	78	7	09	29.18	29.97
10 BKN 250		10.00			40	11	30	30	3	10	29.50	30.28	13	OVC	130		10.00					33	25	30	72	12	08	29.09	29.86
13 OVC 220		10.00			43	18	34	37	7	08	29.42	30.20	16	OVC	021		9.00					32	28	30	85	15	04	29.00	29.77
16 OVC 038		10.00			41	29	36	62	10	15	29.35	30.14	19	OVC	007		1.00 -SN BR					29	27	28	92	17	05	29.02	29.80
19 OVC 065		10.00 -RA			37	31	35	79	5	15	29.29	30.08	22	OVC	008		10.00					27	25	26	92	14	05	29.04	29.82
SUNRISE: 0729	FEB 02	SUNSET: 1729			37	34	36	89	6	14	29.22	30.00	01	OVC	010		SUNRISE: 0722	FEB 08	SUNSET: 1737			27	24	26	89	12	03	29.08	29.86
01 OVC 036		5.00 -RA BR			39	31	36	73	8	17	29.15	29.93	04	OVC	010		10.00					24	20	23	84	12	04	29.13	29.92
04 OVC 025		10.00			39	31	36	73	8	14	29.11	29.87	07	OVC	010		10.00					23	20	22	88	6	06	29.23	30.02
07 OVC 017		10.00			40	31	36	70	7	15	29.04	29.81	10	OVC	010		9.00					24	20	23	84	0	00	29.29	30.08
10 OVC 017		10.00			42	31	37	65	6	12	28.93	29.69	13	BKN	014		8.00					26	21	24	81	7	VR	29.31	30.10
13 OVC 037		9.00 -RA			44	41	43	89	13	19	28.84	29.60	16	OVC	016		10.00					28	23	26	81	10	23	29.31	30.11
16 OVC 017		4.00 -RA BR			41	39	40	93	20	23	28.85	29.62	19	OVC	020		8.00					28	25	27	88	7	17	29.28	30.07
19 OVC 023		7.00 -RA			41	38	40	89	24	23	28.87	29.64	22	BKN	120		6.00 BR					26	24	25	92	5	19	29.26	30.06
SUNRISE: 0728	FEB 03	SUNSET: 1730			35	34	35	96	12	22	28.98	29.74	01	BKN	120		SUNRISE: 0721	FEB 09	SUNSET: 1738			29	24	27	82	9	19	29.19	29.98
01 OVC 008		10.00 -RA			34	30	32	85	10	22	29.07	29.84	04	SCT NC			10.00					30	24	28	79	10	19	29.12	29.91
04 OVC 026		10.00			32	30	31	92	16	22	29.14	29.92	07	BKN	043		10.00					39	29	35	67	15	21	29.06	29.83
07 FEW NC		10.00			37	24	32	60	16	22	29.18	29.96	10	OVC	023		10.00					43	33	39	68	24	23	29.04	29.82
10 CLR NC		10.00			43	20	34	40	16	24	29.19	29.96	13	SCT NC			8.00					41	37	39	86	18	24	29.07	29.84
13 SCT NC		8.00			42	20	34	41	9	22	29.19	29.97	16	CLR NC			9.00					40	34	37	79	23	24	29.08	29.85
16 OVC 280		10.00			39	21	32	48	6	15	29.15	29.93	19	CLR NC			10.00					36	30	34	79	16	23	29.12	29.90
19 OVC 280		10.00			37	21	31	52	5	15	29.11	29.88	22	OVC	055		10.00					37	30	34	76	8	25	29.19	29.96
SUNRISE: 0727	FEB 04	SUNSET: 1731			42	21	34	43	12	17	29.00	29.76	01	BKN	075		SUNRISE: 0719	FEB 10	SUNSET: 1739			35	28	32	76	10	25	29.24	30.02
01 BKN 230		10.00			42	24	35	49	12	19	28.94	29.70	04	OVC	039		10.00					34	29	32	82	8	25	29.30	30.08
04 BKN 110		10.00			36	33	35	89	15	20	28.93	29.70	07	FEW NC			10.00					32	23	29	69	8	28	29.40	30.19
07 OVC 044		10.00			40	36	38	86	15	20	28.93	29.70	10	FEW NC			10.00					35	25	31	67	13	30	29.47	30.26
10 OVC 033		7.00 -RA			37	35	36	93	15	24	28.97	29.74	13	BKN	300		10.00					38	28	34	68	16	22	29.47	30.25
13 OVC 018		9.00			37	35	36	93	15	24	28.97	29.74	16	FEW NC			10.00					36	26	32	67	12	23	29.47	30.26
16 OVC 019		7.00			35	34	36	89	15	25	29.06	29.83	19	FEW NC			10.00					31	25	29	79	5	22	29.51	30.29
19 OVC 020		10.00			35	29	33	78	16	30	29.20	29.98	19	FEW NC			10.00					29	24	27	82	3	16	29.47	30.26
22 OVC 030		9.00 -SN			29	18	25	64	23	30	29.35	30.13	22	CLR NC			SUNRISE: 0718	FEB 11	SUNSET: 1741			28	24	27	85	5	10	29.46	30.24
SUNRISE: 0726	FEB 05	SUNSET: 1733			26	15	23	63	14	28	29.47	30.25	01	SCT NC			10.00					31	24	28	76	3	11	29.40	30.18
01 OVC 034		9.00 -SN			23	14	20	68	14	27	29.56	30.35	04	SCT NC			10.00					33	22	29	64	9	12	29.35	30.14
04 OVC 030		9.00 -SN			22	15	20	75	9	27	29.60	30.40	07	SCT NC			10.00					49	24	39	38	7	18	29.27	30.05
07 BKN 029		10.00			24	17	22	75	9	29	29.64	30.45	10	SCT NC			10.00	-RA				56	36	47	47	12	20	29.21	29.99
10 OVC 023		10.00			25	17	23	72	0	00	29.59	30.40	13	OVC 037			10.00					60	46	53	60	10	18	29.13	29.90
13 BKN 020		9.00			28	15	24	58	0	00	29.54	30.33	16	OVC 043			10.00					56	45	50	67	9	18	29.09	29.85
16 BKN 120		10.00			28	18	25	66	0	00	29.49	30.28	19	BKN 220			10.00					58	44	51	60	15	17	29.02	29.77
19 OVC 250		10.00			28	19	25	69	7	12	29.37	30.16	22	OVC 200			10.00					60	45	52	58	18	19	28.95	29.70
22 OVC 100		10.00			31	20	27	64	3	03	29.21	30.00	01	BKN 250			10.00					63	48	55	58	29	19	28.87	29.62
SUNRISE: 0724	FEB 06	SUNSET: 1734			34	30	32	85	9	20	29.07	29.84	07	OVC 013			10.00					39	35	37	86	24	24	28.95	29.71
01 OVC 027		7.00 -SN			34	24	30	67	10	23	29.13	29.92	04	OVC 250			10.00					33	31	32	92	21	22	29.02	29.78
04 OVC 026		10.00			34	30	32	79	12	24	29.04	29.81	10	OVC 009			6.00 -RA BR					31	29	30	92	21	24	29.06	29.82
07 OVC 055		10.00 -RA			36	33	35	89	9	26	29.08	29.85	13	OVC 009			0.50 SN					31	26	29	82	20	25	29.07	29.83
10 OVC 028		5.00 -RA BR</																											

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

FEBRUARY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite		OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)	HOUR (LST)	SATellite		OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)				
							DRY BULB	DEW POINT	WET BULB					DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	STATION	SEA LEVEL										
01	OVC	028	SUNRISE: 0715	FEB 13	SUNSET: 1743		29	24	82	22	22	29.03	29.80	01	OVC	026	SUNRISE: 0707	FEB 19	SUNSET: 1751		26	20	78	10	32	29.25	30.04		
04	BKN	020			10.00		23	17	21	78	14	27	29.05	29.83	04	OVC	030		23	18	21	81	7	35	29.25	30.04			
07	FEW	NC			10.00		17	6	14	62	17	25	29.16	29.95	07	OVC	030		10.00										
10	SCT	NC			10.00		21	7	17	54	21	25	29.22	30.01	10	OVC	013		4.00	-SN		23	17	21	78	6	33	29.28	30.07
13	OVC	034			10.00		23	13	20	65	20	26	29.23	30.03	13	OVC	026		10.00										
16	OVC	024			9.00		22	12	19	66	15	30	29.33	30.12	16	BKN	250		10.00										
19	OVC	046			8.00	-SN	22	17	20	82	10	28	29.42	30.22	19	SCT	NC		10.00										
22	BKN	042			10.00		22	10	19	60	15	31	29.50	30.29	22	FEW	NC		10.00										
			SUNRISE: 0714	FEB 14	SUNSET: 1745												SUNRISE: 0705	FEB 20	SUNSET: 1752		20	14	18	78	5	31	29.28	30.07	
01	BKN	039			11.00		20	10	17	65	6	31	29.53	30.33	01	OVC	036		10.00										
04	CLR	NC			10.00		16	7	14	67	3	29	29.56	30.36	04	SCT	NC		10.00										
07	CLR	NC			10.00		14	8	13	77	0	00	29.59	30.40	07	SCT	NC		10.00										
10	CLR	NC			10.00		19	8	16	62	3	19	29.62	30.43	10	OVC	013		0.50	SN FZFG		19	14	18	81	5	29	29.28	30.07
13	CLR	NC			10.00		25	14	22	63	12	25	29.59	30.40	13	OVC	018		1.25	-SN		23	21	22	92	6	34	29.31	30.10
16	SCT	NC			10.00		27	18	24	69	15	25	29.56	30.35	16	OVC	032		9.00	-SN		24	19	22	81	12	34	29.30	30.09
19	FEW	NC			10.00		26	20	24	78	8	22	29.53	30.33	19	SCT	NC		10.00										
22	OVC	100			10.00		25	20	23	81	10	19	29.49	30.29	22	SCT	NC		9.00										
			SUNRISE: 0713	FEB 15	SUNSET: 1746												SUNRISE: 0704	FEB 21	SUNSET: 1754		22	11	19	63	8	34	29.33	30.13	
01	CLR	NC			10.00		24	16	22	71	10	21	29.45	30.24	01	BKN	060		10.00										
04	CLR	NC			10.00		24	14	21	65	8	20	29.43	30.22	04	SCT	NC		10.00										
07	FEW	NC			10.00		27	15	23	61	12	20	29.40	30.19	07	SCT	NC		10.00										
10	CLR	NC			10.00		35	18	29	50	17	22	29.38	30.16	10	BKN	027		10.00										
13	FEW	NC			10.00		39	21	32	48	18	23	29.33	30.11	13	FEW	NC		10.00										
16	SCT	NC			10.00		41	22	34	47	16	24	29.30	30.08	16	BKN	036		10.00										
19	BKN	300			10.00		36	24	32	62	5	20	29.31	30.09	19	FEW	NC		10.00										
22	OVC	250			10.00		34	24	30	67	6	13	29.28	30.06	22	CLR	NC		10.00										
			SUNRISE: 0711	FEB 16	SUNSET: 1747												SUNRISE: 0702	FEB 22	SUNSET: 1755		14	-1	11	51	8	01	29.53	30.33	
01	CLR	NC			10.00		36	22	31	57	0	00	29.29	30.07	01	CLR	NC		10.00										
04	CLR	NC			10.00		35	22	30	59	9	19	29.26	30.03	04	CLR	NC		10.00										
07	SCT	NC			10.00		38	20	31	48	7	21	29.23	30.01	07	FEW	NC		10.00										
10	SCT	NC			10.00		47	25	38	42	9	20	29.22	30.00	10	FEW	NC		10.00										
13	SCT	NC			10.00		51	25	40	36	15	23	29.19	29.96	13	FEW	NC		10.00										
16	OVC	300			10.00		51	24	40	35	0	00	29.14	29.91	16	FEW	NC		10.00										
19	OVC	100			10.00		47	27	39	46	6	08	29.13	29.90	19	CLR	NC		10.00										
22	OVC	070			10.00	-RA	43	30	38	60	5	07	29.10	29.86	22	FEW	NC		10.00										
			SUNRISE: 0710	FEB 17	SUNSET: 1748												SUNRISE: 0701	FEB 23	SUNSET: 1756		9	1	7	70	6	11	29.66	30.47	
01	OVC	070			10.00		42	30	37	62	7	12	29.02	29.78	01	CLR	NC		10.00										
04	OVC	043			10.00		44	39	42	83	13	23	29.00	29.76	04	CLR	NC		10.00										
07	OVC	015			3.00	-RA BR	37	36	37	96	15	24	29.03	29.79	07	FEW	NC		10.00										
10	OVC	007			6.00	BR	35	33	34	93	15	23	29.09	29.86	10	OVC	250		10.00										
13	OVC	010			7.00		36	32	34	86	15	23	29.10	29.86	13	OVC	250		10.00										
16	OVC	010			6.00	BR	34	31	33	89	14	23	29.12	29.88	16	OVC	120		10.00										
19	OVC	010			7.00		33	30	32	89	16	24	29.14	29.93	19	OVC	100		10.00										
22	OVC	035			10.00		32	28	31	85	12	23	29.15	29.93	22	OVC	090		10.00										
			SUNRISE: 0708	FEB 18	SUNSET: 1750												SUNRISE: 0659	FEB 24	SUNSET: 1757		17	3	14	54	13	09	29.59	30.39	
01	OVC	014			10.00		32	28	31	85	13	23	29.16	29.94	01	SCT	NC		10.00										
04	OVC	014			9.00		32	29	31	88	9	24	29.15	29.93	04	OVC	200		10.00										
07	OVC	018			10.00		31	25	29	79	7	28	29.17	29.95	07	SCT	NC		10.00										
10	OVC	030			7.00	-SN	31	24	28	76	10	28	29.20	29.98	10	SCT	NC		10.00										
13	OVC	018			4.00	-SN	31	25	29	79	12	29	29.20	29.98	13	BKN	250		10.00										
16	OVC	030			10.00		31	19	27	61	12	29	29.19	29.98	16	BKN	060		10.00										
19	OVC	030			10.00		29	19	26	66	7	29	29.23	30.02	19	BKN	060		10.00										
22	OVC	028			10.00		28	18	25	66	9	29	29.25	30.04	22	OVC	060		10.00										

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

FEBRUARY 1999

BUF

WBAN # 14733

HOUR (LST)	SKY COVER		CEILING 100'S OF FT		OBSERVATION TIME (LST) EFF CLD AMT Okas	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)	STATION	SEA LEVEL
							DRY BULB	DEW POINT	WET BULB					
<b>SUNRISE: 0658 FEB 25 SUNSET: 1759</b>														
01	CLR	NC		10.00			28	16	24	61	6	13	29.40	30.19
04	OVC	095		10.00			28	15	24	58	7	14	29.36	30.14
07	OVC	024		9.00	-SN		29	17	25	61	7	14	29.32	30.11
10	OVC	028		2.00	-SN BR		28	24	27	85	8	11	29.31	30.09
13	OVC	008		1.50	-SN		31	28	30	89	7	07	29.26	30.05
16	OVC	012		2.00	-SN BR		33	29	31	85	8	06	29.25	30.03
19	OVC	023		5.00	-SN BR		31	28	30	89	10	03	29.31	30.09
22	OVC	049		10.00			31	18	27	59	6	03	29.34	30.12
<b>SUNRISE: 0656 FEB 26 SUNSET: 1760</b>														
01	SCT	NC		10.00			27	18	24	69	3	35	29.35	30.14
04	CLR	NC		10.00			25	17	23	72	5	32	29.36	30.15
07	CLR	NC		10.00			23	18	21	81	3	20	29.40	30.19
10	FEW	NC		10.00			33	25	30	72	9	34	29.41	30.20
13	FEW	NC		10.00			38	19	31	47	10	28	29.38	30.16
16	CLR	NC		10.00			34	25	31	70	17	24	29.37	30.15
19	OVC	005		5.00 BR			29	26	28	89	17	24	29.37	30.16
22	OVC	007		5.00 BR			30	27	29	88	12	23	29.35	30.13
<b>SUNRISE: 0655 FEB 27 SUNSET: 1801</b>														
01	BKN	006		3.00 BR			28	27	28	96	8	22	29.35	30.13
04	CLR	NC		5.00 BR			24	21	23	88	5	19	29.31	30.10
07	CLR	NC		5.00 BR			24	20	23	84	9	14	29.26	30.05
10	SCT	NC		6.00 HZ			34	24	30	67	5	14	29.24	30.02
13	SCT	NC		10.00			42	23	35	47	5	15	29.16	29.94
16	BKN	250		10.00			49	21	38	33	5	08	29.08	29.85
19	OVC	060		10.00			46	19	36	34	10	13	29.01	29.78
22	OVC	032		10.00			41	28	36	60	8	15	28.95	29.72
<b>SUNRISE: 0653 FEB 28 SUNSET: 1803</b>														
01	OVC	023		8.00			39	30	35	70	9	15	28.84	29.60
04	OVC	060		7.00			40	35	38	83	12	14	28.69	29.46
07	OVC	060		5.00 RA			42	36	39	79	12	16	28.60	29.35
10	OVC	023		5.00 -RA BR			42	40	41	92	16	19	28.60	29.35
13	OVC	029		8.00			40	36	38	86	24	24	28.64	29.40
16	OVC	150		5.00 BR			39	35	37	86	13	24	28.63	29.38
19	OVC	006		6.00 BR			36	34	35	93	13	23	28.65	29.41
22	OVC	013		10.00			35	32	34	89	15	23	28.63	29.38
<b>SUNRISE: FEB 29 SUNSET:</b>														
<b>SUNRISE: FEB 30 SUNSET:</b>														

HOUR (LST)	SKY COVER		CEILING 100'S OF FT		OBSERVATION TIME (LST) EFF CLD AMT Okas	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)	STATION	SEA LEVEL
							DRY BULB	DEW POINT	WET BULB					
<b>SUNRISE: FEB 31 SUNSET:</b>														

### 3-HOURLY OBSERVATION NOTES

Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8,  
SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibility = 8/8.

Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.

NC = No ceiling detected.

& = Original observation contained additional weather elements.

See page 3 for additional notes.

### SUMMARY BY HOUR

HOUR (LST)	CELOMETER	EFF CLD AMT	AVERAGES						RESULTANT WIND (MPH)	SPEED	DIRECTION	
			DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	STATION	SEA LEVEL				
01			29	20	26	71	29.28	30.06	9.11	9	3	21
02			29	20	26	71	29.28	30.06	9.25	8	3	21
03			29	20	26	70	29.27	30.06	9.54	9	4	21
04			28	20	26	72	29.26	30.05	9.54	9	4	21
05			28	20	26	72	29.27	30.05	8.95	9	4	22
06			28	20	25	74	29.27	30.06	9.21	9	5	22
07			27	19	25	74	29.27	30.06	9.36	9	5	21
08			27	20	25	75	29.28	30.07	8.59	9	5	21
09			29	21	26	72	29.28	30.07	8.57	10	5	22
10			31	21	28	69	29.28	30.07	8.27	11	5	22
11			32	22	29	68	29.29	30.07	8.27	11	6	24
12			33	22	29	66	29.28	30.06	8.61	12	7	24
13			34	22	30	65	29.26	30.04	8.15	11	6	24
14			34	22	30	63	29.25	30.03	8.65	12	7	24
15			35	23	30	65	29.24	30.03	8.34	11	6	25
16			35	23	30	64	29.25	30.03	8.71	11	5	25
17			34	23	30	66	29.25	30.03	8.29	11	5	26
18			33	22	29	69	29.25	30.04	7.98	10	3	25
19			32	23	29	70	29.26	30.05	8.79	10	3	24
20			31	22	28	70	29.26	30.05	9.21	10	3	25
21			31	22	28	69	29.26	30.05	9.43	10	2	23
22			31	22	28	71	29.26	30.04	9.43	10	3	23
23			30	21	27	71	29.25	30.03	9.54	10	2	22
24			30	21	27	70	29.24	30.02	9.64	10	3	20

FEBRUARY 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE       $42^{\circ} 56' N$   
LONGITUDE     $78^{\circ} 44' E$

PUBLISHED BY: NCDC, ASHEVILLE NC

**SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)**

10-MINUTE DURATION PRECIPITATION (MSDP)												
TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.02	0.03	0.04	0.05	0.07	0.10	0.11	0.11	0.13	0.16	0.19	0.22
ENDED: DATE	28	28	28	28	28	28	28	28	28	28	28	28
ENDED: TIME	0731	0731	0731	0731	0731	0731	0809	0809	0844	0844	0919	0959

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

PAGE 7

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown

First HPD value that follows is  
the total accumulated amount.



FEBRUARY 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



# **MARCH 1999**

# **LOCAL CLIMATOLOGICAL DATA**

**NOAA, National Climatic Data Center**

**BUFFALO, NY**

**GREATER BUFFALO INTL AIRPORT (BUF)**

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #0198-358X

DATE	TEMPERATURE F							DEG DAYS BASE 65°		WEATHER		SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND							
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING	0700 LST			1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	REL DIR	AVERAGE SPEED	SPEED = MPH	DIR = TENS OF DEGREES				
	1	2	3	4	5	6	7	8	9									5-SEC	2-MIN	DIR	DATE				
01	37	28	33	5	30	32	32	0	RA SN BR	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
02	33	25	29	0	22	27	36	0	SN BR		0		0.3	0.04	28.65	29.41	11.2	27	12.0	29	29	22	28	01	
03	43	28	36	7	32	35	29	0	TSSN RA SN PI, FZFG BR		T		T	T	29.00	29.78	10.7	25	13.1	31	24	25	23	02	
04	29	22	26	-3	20	24	39	0	SN FZFG BR BLSN		T		1.2	1.06	28.76	29.53	4.2	04	10.0	30	33	24	33	03	
05	29	20	25	-5	17	21	40	0	SN		4		0.4	3.1	0.34	28.96	29.74	19.2	30	20.4	41	28	32	30	04
06	24	13	19	-11	16	18	46	0	SN FG+ FZFG BR BLSN		4		0.4	T	T	29.52	30.32	4.4	05	7.5	22	06	18	06	05
07	17	3	10	-20	3	10	55	0	SN		6		1.0	9.4	0.71	29.32	30.12	16.9	04	18.4	38	02	29	03	06
08	24	-4*	10*	-21	4	10	55	0	SN		11		1.2	T	T	29.77	30.58	8.6	33	9.0	21	29	17	33	07
09	23	11	17	-14	9	17	48	0	BR		10		1.1	0.0	0.00	29.85	30.67	2.8	08	3.6	14	04	13	04	08
10	25	17	21	-11	12	19	44	0	BR		9		0.9	0.0	0.00	29.44	30.24	11.9	07	12.3	25	07	22	07	09
11	31	17	24	-8	17	23	41	0	SN		6		0.9	0.0	0.00	29.29	30.08	6.1	36	8.4	16	35	14	35	10
12	29	20	25	-7	15	22	40	0	SN		6		0.9	T	T	29.30	30.10	10.8	33	11.0	23	33	20	36	11
13	31	13	22	-11	15	22	43	0	RA		6		0.9	T	T	29.41	30.20	11.9	33	12.4	26	32	21	32	12
14	34	21	28	-5	21	26	37	0	RA		6		0.8	0.0	T	29.51	30.31	3.9	36	6.1	17	03	15	03	13
15	35	21	28	-5	20	26	37	0	BR		5		0.8	0.0	0.00	29.31	30.10	7.4	05	7.8	20	05	17	06	14
16	43	23	33	-1	25	32	32	0	RA		4		0.6	0.0	0.00	29.19	29.97	5.5	35	8.6	23	36	18	36	15
17	58	32	45	11	36	41	20	0	RA		3		0.6	0.0	0.00	29.08	29.85	17.6	24	17.9	43	24	31	23	16
18	51	34	43	8	32	35	22	0	RA DZ SN BR		3		0.0	T	28.97	29.73	12.1	22	12.3	37	24	29	24	17	
19	37	29	33	-2	24	30	32	0	RA SN PL		0		T	T	29.02	29.79	18.7	25	19.6	44*	25	34*	24	18	
20	39	25	32	-3	24	29	33	0	RA		0		0.0	0.00	29.43	30.22	11.2	30	12.0	26	32	21	31	19	
21	54	31	43	7	28	35	22	0	RA SN BR		0		T	0.12	29.05	29.82	7.9	20	10.8	26	20	23	21	21	
22	33	30	32	-4	29	31	33	0	SN FG FZFG BR		0		1.8	0.16	28.95	29.73	16.6	26	16.9	34	26	26	22		
23	40	28	34	-2	22	29	31	0	RA		1		0.0	0.00	29.27	30.05	10.9	23	12.3	30	24	23	23	23	
24	42	29	36	-1	28	33	29	0	SN HZ		0		0.0	0.00	29.20	29.98	8.4	24	11.7	30	24	22	24	24	
25	35	25	30	-7	23	28	35	0	RA		0		T	T	29.43	30.22	5.3	31	7.2	18	34	14	34	25	
26	43	25	34	-4	25	30	31	0	RA		0		0.0	0.00	29.52	30.30	1.8	34	4.3	14	32	10	35	26	
27	52	25	39	1	25	33	26	0	RA		0		0.0	0.00	29.49	30.28	3.2	04	4.6	17	06	14	04	27	
28	57	27	42	4	26	34	23	0	RA		0		0.0	0.00	29.33	30.11	4.3	21	6.2	17	21	15	21	28	
29	51	33	42	3	30	38	23	0	RA		0		0.0	0.00	29.30	30.07	12.2	24	13.1	33	24	29	24	29	
30	52	32	42	3	26	37	23	0	RA		0		0.0	0.00	29.45	30.23	9.2	23	10.0	24	21	20	22	30	
31	68*	40	54*	15	29	44	11	0	RA		0		0.0	0.00	29.29	30.05	12.7	23	13.0	32	23	28	24	31	
	38.7	23.3	31.0	■■■	22.1	28.1	33.8	0.0	< MONTHLY AVERAGES		TOTALS ->		15.8	2.43	29.27	30.06	4.5	28	10.9	<- MONTHLY AVERAGES					
	-3.0	-2.6	-2.8	■■■	<-----	-----	-----	-----	DEPARTURE FROM NORMAL		-----		- .25												
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 1.28 DATE 03-04 GREATEST 24-HR SNOWFALL: 9.4 DATE 06 GREATEST SNOW DEPTH: 11 DATE 07+												SEA LEVEL PRESSURE DATE TIME				
MONTHLY TOTAL DEPARTURE									MAXIMUM MINIMUM : 30.78 08 1120 MAXIMUM MINIMUM : 29.31 01 0453												SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3				
HEATING: 1048 81 COOLING: 0 0									NUMBER OF DAYS WITH → MAXIMUM TEMP ≥ 90: 0 MAXIMUM TEMP ≤ 32: 10 THUNDERSTORMS: 1 MINIMUM TEMP ≤ 0: 1 HEAVY FOG: 1												PRECIPITATION ≥ 0.01 INCH: 6 PRECIPITATION ≥ 0.10 INCH: 5 SNOWFALL ≥ 1.0 INCH: 4				

MARCH 1999  
BUFFALO, NY

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

MARCH 1999

BUF WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01	T	T	T	T	T	T	T	T	T	T	T	T	01	T	0.01	T	T	T	T	T	T	T	T	T	01	0.01	0.04	
02		T	0.04		0.01	0.01	0.01	0.05	0.08	0.05	0.04	0.04	02	0.07	0.11	0.14	0.06	0.01	0.01	0.02	0.02	T	0.03	0.01	0.03	02	T	0.04
03		T	0.01		0.01	0.01	T	0.01	T	T	T	T	03					T	T	T	T	T	T	T	03	0.83	1.06	
04													04									T	T	T	T	04	0.03	0.34
05													05													05		
06		T	T	T		T	T	0.02	0.04	0.05	0.03	0.01	06	0.01	0.01	T	T	T	T	0.01	T	T	T	T	T	06	0.18	0.71
07													07													07		
08													08													08		
09													09													09		
10													10													10		
11													11													11		
12													12													12		
13													13													13		
14													14													14		
15													15													15		
16		T											16													16		
17													17													17		
18													18													18		
19													19													19		
20													20													20		
21													21	0.01	T	0.01	0.01	0.01	T	0.04	0.02	0.01	T			21	0.07	0.12
22													22													22		
23													23													23		
24													24													24		
25													25													25		
26													26													26		
27													27													27		
28													28													28		
29													29													29		
30													30													30		
31													31													31		

### MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy	'-' = Moderate	'-' = Light	

## BUFFALO, NY MARCH 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)			VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	SATELLITE	CEILOMETER	SATELLITE	
01	0	0						2.00 10.00
02	415	61						8.00 10.00
03	0	0						.25 10.00
04	165	24						.75 10.00
05	109	16						3.00 10.00
06	0	0						<.25 10.00
07	675	98						9.00 10.00
08	693	100						6.00 10.00
09	55	8						10.00 10.00
10	687	90						10.00 10.00
11	588	84						6.00 10.00
12	473	67						9.00 10.00
13	589	83						10.00 10.00
14	91	13						10.00 10.00
15	713	100						6.00 10.00
16	597	83						9.00 10.00
17	600	83						7.00 10.00
18	0	0						4.00 10.00
19	123	17						9.00 10.00
20	564	77						10.00 10.00
21	210	29						3.00 10.00
22	0	0						.50 10.00
23	610	83						10.00 10.00
24	135	18						8.00 10.00
25	85	11						6.00 10.00
MONTHLY AVGS							6.79	10.00
SUNSHINE (MINUTES)								
Total: 12216 Possible: 22243 Percent Possible: 55								
NUMBER OF DAYS WITH:								
SKY CONDITION								
CLR	PTLY	CLDY	CLOUDY	MISSING				
31								
MINIMUM VISIBILITY (MILES)								
<=0.25	<=3.0	>=7.0						
2	7	19						

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

MARCH 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)												
					Dry Bulb	Dew Point	Wet Bulb		Relative Humidity (%)	Speed (mph)						Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)													
SUNRISE: 0651 MAR 01 SUNSET: 1804																																
01	OVC	009			10.00			34	32	33	92	14	24	28.58	29.34	01	OVC	032			SUNRISE: 0641	MAR 07 SUNSET: 1811										
04	OVC	003			6.00	-SN BR		33	32	33	96	10	24	28.56	29.32	04	CLR	NC			12	6	11	77	10	35	29.55	30.35				
07	OVC	005			6.00	-SN		33	32	33	96	8	25	28.56	29.32	07	SCT	NC			6	4	4	63	7	34	29.63	30.45				
10	OVC	009			6.00	BR		36	33	35	89	9	29	28.59	29.35	10	BKN	024			6	0	5	76	7	33	29.72	30.54				
13	OVC	011			7.00	-RA		36	33	35	89	10	28	28.62	29.38	13	SCT	NC			12	4	10	70	9	35	29.78	30.60				
16	OVC	015			6.00	-SN BR		33	28	31	82	16	30	28.66	29.43	16	CLR	NC			16	2	13	54	14	32	29.79	30.60				
19	OVC	024			8.00	-SN BR		30	24	28	79	13	28	28.74	29.51	19	CLR	NC			17	2	14	51	15	30	29.81	30.63				
22	OVC	013			3.00	-SN BR		28	25	27	88	13	27	28.79	29.56	22	FEW	NC			16	5	13	62	7	31	29.85	30.67				
SUNRISE: 0650 MAR 02 SUNSET: 1805																																
01	OVC	031			8.00	-SN		29	25	28	85	10	27	28.82	29.59	01	CLR	NC			10.00	-SN	MAR 08 SUNSET: 1812	9	87	0	00	29.87	30.69			
04	OVC	021			10.00			29	22	27	75	12	28	28.86	29.64	04	CLR	NC			2	-1	1	88	0	00	29.87	30.70				
07	Few	NC			10.00			25	19	23	78	13	25	28.95	29.73	07	Few	NC			-2	-5	-2	87	3	13	29.89	30.71				
10	SCT	NC			10.00			31	21	27	67	18	25	29.01	29.78	10	CLR	NC			12	5	10	73	0	00	29.94	30.76				
13	OVC	021			10.00			31	24	28	76	22	23	29.05	29.83	13	CLR	NC			9.00				23	8	19	53	6	09	29.91	30.73
16	CLR	NC			10.00			33	25	30	72	16	24	29.07	29.85	16	CLR	NC			10.00				23	7	19	50	9	06	29.82	30.63
19	OVC	200			10.00			30	22	27	72	7	21	29.12	29.90	19	Few	NC			18	6	15	60	6	05	29.78	30.60				
22	OVC	120			10.00			31	20	27	64	5	12	29.08	29.85	22	CLR	NC			14	4	12	64	6	11	29.76	30.58				
SUNRISE: 0648 MAR 03 SUNSET: 1806																																
01	OVC	065			10.00			33	21	29	61	6	06	29.04	29.81	01	BKN	250			10.00				11	4	9	73	6	10	29.69	30.51
04	OVC	036			9.00	-RASN		33	31	32	92	13	07	28.93	29.70	04	BKN	250			17	2	14	51	6	12	29.61	30.42				
07	OVC	037			9.00	-RA		33	31	32	92	13	08	28.82	29.59	07	OVC	230			18	9	16	68	9	08	29.54	30.35				
10	OVC	038			4.00	-RA		37	31	35	79	8	11	28.73	29.50	10	OVC	130			22	10	19	60	15	07	29.52	30.32				
13	OVC	040			4.00	RA		43	31	38	63	9	16	28.66	29.43	13	OVC	130			23	7	19	50	16	09	29.41	30.21				
16	OVC	033			3.00	-RA BR		43	43	43	100	0	00	28.65	29.42	16	BKN	080			23	9	19	55	14	06	29.32	30.12				
19	OVC	002			0.25	-RA BR		36	36	36	100	15	33	28.68	29.45	19	OVC	065			21	14	19	74	17	06	29.29	30.09				
22	OVC	006			2.00	-SN BR		30	29	30	96	21	34	28.70	29.47	22	OVC	090			20	15	19	81	13	05	29.28	30.08				
SUNRISE: 0646 MAR 04 SUNSET: 1807																																
01	OVC	007			1.00	-SN BR		28	27	28	96	16	34	28.66	29.42	01	OVC	090			10.00				21	10	18	62	12	05	29.25	30.05
04	OVC	011			0.75	-SN BR		24	23	24	96	20	32	28.66	29.43	04	OVC	140			10.00				21	9	18	59	10	04	29.24	30.03
07	OVC	013			0.75	-SN BR		23	21	22	92	25	31	28.66	29.44	07	BKN	280			18	9	16	68	8	02	29.28	30.08				
10	OVC	023			4.00	BLSN		25	20	23	81	23	30	28.80	29.58	10	BKN	280			22	13	19	68	9	05	29.30	30.10				
13	OVC	030			9.00			28	19	25	69	23	28	28.94	29.72	13	BKN	280			24	12	21	60	7	35	29.28	30.08				
16	SCT	NC			10.00			28	17	25	63	21	28	29.10	29.88	16	SCT	NC			24	13	21	62	12	33	29.29	30.08				
19	BKN	033			10.00			26	17	23	69	20	28	29.26	30.05	19	SCT	NC			23	12	20	63	5	31	29.31	30.10				
22	OVC	029			9.00	-SN		24	17	22	75	14	26	29.33	30.13	22	CLR	NC			23	14	20	68	8	31	29.31	30.11				
SUNRISE: 0645 MAR 05 SUNSET: 1809																																
01	Few	NC			10.00			21	16	20	81	9	25	29.39	30.18	01	BKN	220			10.00				21	14	19	74	7	33	29.30	30.10
04	CLR	NC			10.00			20	14	18	78	6	25	29.46	30.25	04	BKN	280			10.00				20	12	18	71	6	32	29.29	30.08
07	BKN	080			10.00			21	18	20	88	0	00	29.53	30.32	07	SCT	NC			10.00				20	14	18	78	7	33	29.32	30.12
10	SCT	NC			10.00			23	16	21	74	3	04	29.59	30.38	10	BKN	034			10.00				26	18	23	71	14	35	29.31	30.11
13	OVC	070			10.00			26	17	23	69	0	00	29.58	30.38	13	SCT	NC			10.00				28	17	25	63	13	33	29.30	30.09
16	OVC	055			10.00			28	18	25	66	8	02	29.56	30.35	16	FEW	NC			10.00				31	18	27	59	17	32	29.28	30.07
19	OVC	044			9.00	-SN		24	18	22	77	13	06	29.53	30.33	19	CLR	NC			10.00				28	20	25	72	14	31	29.30	30.09
22	OVC	075			10.00			23	18	21	81	16	06	29.50	30.30	22	CLR	NC			10.00				27	18	24	69	9	32	29.31	30.10
SUNRISE: 0643 MAR 06 SUNSET: 1810																																
01	OVC	027			1.50	-SN BR		20	18	19	92	20	07	29.47	30.26	01	CLR	NC			10.00				24	13	21	62	12	34	29.31	30.11
04	OVC	033			4.00	-SN BR		19	17	18	92	16	06	29.36	30.16	04	SCT	NC			10.00				22	12</td						

# OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**  
MARCH 1999

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	WBAN # 14733												
	SKY COVER	CEILING	100'S OF FT		OBSERVATION TIME (LST)	EFF CLD AMT	Oktas		DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL				
01	CLR	NC			10.00			23	14	20	68	71	35	29.50	30.29	01	BKN	041			10.00			MAR 19	SUNSET: 1826			
04	CLR	NC			10.00			19	11	17	71	7	36	29.50	30.29	04	SCT	NC			32	22	28	66	16	31	29.30	30.08
07	CLR	NC			10.00			18	11	16	74	6	33	29.55	30.35	07	SCT	NC			30	24	28	79	12	30	29.35	30.13
10	FEW	NC			10.00			26	15	23	63	10	02	29.56	30.35	10	OVC	027			29	23	27	78	10	30	29.42	30.20
13	BKN	250			10.00			30	18	26	61	6	VR	29.53	30.32	13	OVC	034			31	25	29	79	10	31	29.46	30.24
16	SCT	NC			10.00			30	18	26	61	9	05	29.50	30.29	16	OVC	034			35	24	31	64	14	27	29.44	30.22
19	OVC	250			10.00			27	16	24	63	0	00	29.49	30.28	19	OVC	038			36	26	32	67	13	28	29.44	30.22
22	OVC	250			10.00			23	16	21	74	3	18	29.46	30.26	22	OVC	034			35	25	31	67	12	30	29.48	30.26
					SUNRISE: 0631												SUNRISE: 0621											
01	OVC	230			10.00			24	17	22	75	0	00	29.44	30.23	01	FEW	NC			32	26	30	79	8	32	29.51	30.29
04	OVC	230			10.00			22	15	20	75	0	00	29.38	30.18	04	CLR	NC			28	24	27	85	6	33	29.51	30.29
07	OVC	110			10.00			22	16	20	78	0	00	29.38	30.18	07	FEW	NC			27	23	26	85	3	27	29.50	30.29
10	BKN	110			10.00			30	23	28	75	13	06	29.36	30.15	10	SCT	NC			27	24	26	89	7	26	29.51	30.30
13	OVC	110			10.00			33	24	30	70	15	04	29.31	30.10	13	SCT	NC			33	22	29	64	5	26	29.51	30.30
16	OVC	110			10.00			32	24	29	73	13	04	29.24	30.03	16	BKN	300			36	27	33	70	10	24	29.47	30.26
19	OVC	037			10.00			29	23	27	78	9	05	29.24	30.03	19	BKN	230			38	25	33	60	7	22	29.40	30.19
22	OVC	041			10.00			29	24	27	82	8	08	29.23	30.01	22	OVC	220			35	23	31	61	3	20	29.35	30.14
					SUNRISE: 0629											SUNRISE: 0619												
01	OVC	230			10.00			27	24	26	89	5	01	29.20	29.99	01	SCT	NC			31	23	28	72	5	07	29.23	30.09
04	CLR	NC			10.00			24	19	22	81	9	02	29.15	29.94	04	BKN	250			32	23	29	69	7	11	29.13	29.91
07	CLR	NC			10.00			21	18	20	88	7	36	29.17	29.97	07	OVC	100			35	22	30	59	8	14	29.08	29.85
10	CLR	NC			10.00			32	21	28	64	14	03	29.19	29.97	10	BKN	280			48	27	39	44	10	18	29.02	29.79
13	FEW	NC			10.00			34	18	29	52	12	03	29.18	29.96	13	BKN	280			53	30	43	41	10	23	28.96	29.72
16	FEW	NC			10.00			35	19	29	52	13	33	29.17	29.96	16	OVC	090			39	33	37	79	20	22	28.98	29.75
19	CLR	NC			10.00			33	17	28	52	5	28	29.18	29.97	19	OVC	018			35	34	35	96	10	22	29.03	29.80
22	CLR	NC			10.00			30	24	28	79	7	23	29.21	30.00	22	OVC	035			34	33	34	97	7	24	29.02	29.79
					SUNRISE: 0626										SUNRISE: 0617													
01	CLR	NC			10.00			27	22	25	81	6	25	29.19	29.98	01	CLR	NC			31	29	31	88	8	25	28.98	29.74
04	FEW	NC			9.00			27	27	100	12	21	29.16	29.95	04	BKN	080			32	27	30	82	14	24	28.93	29.70	
07	BKN	100			10.00			31	23	28	72	15	23	29.16	29.94	07	BKN	080			32	28	30	85	16	25	28.87	29.64
10	BKN	200			10.00			34	24	30	67	22	24	29.13	29.91	10	OVC	011			30	29	30	96	20	24	28.83	29.59
13	BKN	200			10.00			37	21	31	52	24	23	29.06	29.83	13	OVC	008			33	32	33	96	18	26	28.81	29.58
16	FEW	NC			10.00			43	25	36	49	23	23	28.96	29.73	16	OVC	010			31	28	30	89	23	27	28.93	29.70
19	FEW	NC			10.00			40	28	35	63	24	25	28.97	29.74	19	OVC	024			32	29	31	88	21	26	29.06	29.83
22	CLR	NC			10.00			40	30	36	68	18	25	29.02	29.79	22	FEW	NC			32	24	29	73	16	25	29.14	29.92
					SUNRISE: 0624										SUNRISE: 0615													
01	CLR	NC			10.00			35	32	34	89	10	22	29.06	29.83	01	FEW	NC			31	25	29	79	13	25	29.19	29.98
04	CLR	NC			10.00			35	32	34	89	14	23	29.06	29.83	04	CLR	NC			29	23	27	78	10	25	29.22	30.01
07	CLR	NC			7.00			33	31	32	92	9	21	29.08	29.85	07	FEW	NC			32	22	28	66	17	23	29.32	30.07
10	FEW	NC			10.00			46	33	40	61	16	22	29.03	29.79	10	SCT	NC			36	24	32	62	21	25	29.32	30.10
13	OVC	250			10.00			51	36	44	56	13	24	28.98	29.74	13	SCT	NC			40	22	33	49	16	24	29.28	30.06
16	OVC	280			10.00			58	38	48	48	15	23	28.90	29.66	16	SCT	NC			35	21	30	57	5	20	29.26	30.04
19	SCT	NC			10.00			44	36	40	73	12	21	28.87	29.63	19	FEW	NC			32	22	28	66	6	15	29.25	30.03
22	OVC	065			10.00			48	38	43	68	10	22	28.82	29.58	22	CLR	NC			SUNRISE: 0614							
					SUNRISE: 0622										SUNRISE: 0612													
01	OVC	080			10.00			46	41	44	83	14	23	28.84	29.59	01	SCT	NC			31	25	29	79	13	25	29.19	29.98
04	FEW	NC			10.00			39	34	37	82	21	24	28.83	29.59	04	CLR	NC			35	24	31	64	13	20	29.14	29.92
07	OVC	049			10.00			37	32	35	82	20	24	28.92	29.68	07	SCT	NC			34	27	31	76	10	21	29.15	29.93
10	OVC	060			10.00			36	31	34	82	30	24	28.97	29.73	10	OVC	020			38	32	36	76	17	23	29.16	29.94
13	OVC	030			4.00	-SN BR		35	32	34	89	29	24	29.01	29.77	13	BKN	075			41	33	38	74	12	23	29.17	29.94
16	OVC	029			9.00	-SN		35	33	34	93	18	25	29.07	29.84	16	OVC	026			39	32	36	76	16	24	29.18	29.96
19	OVC	034			10.00	DZ		35	32	34	89	16	28	29.17	29.95	19	OVC	060			36	32	34	86	5	24	29.24	30.02
22	FEW	NC			10.00			35	28	32	76	13	2															

# OBSERVATIONS AT 3-HOURLY INTERVALS

# BUFFALO, NY

MARCH 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F					WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F					WIND	PRESSURE (INCHES,HG)			
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Odds	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)		STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Odds	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL			
SUNRISE: 0610 MAR 25 SUNSET: 1833																											
01	OVC	030		10.00	30	22	27	72	12	34	29.33	30.11	01	CLR	NC		10.00	53	28	42	38	15	23	29.38	30.14		
04	OVC	035		10.00	27	20	25	75	5	35	29.36	30.14	04	SCT	NC		10.00	46	30	39	54	9	23	29.38	30.14		
07	SCT	NC		10.00	27	21	25	78	5	33	29.41	30.19	07	BKN	250		10.00	44	32	39	63	8	23	29.38	30.15		
10	BKN	029		10.00	30	21	27	69	6	36	29.44	30.23	10	SCT	NC		10.00	61	26	46	26	21	22	29.34	30.11		
13	OVC	030		10.00	31	24	28	76	9	29	29.47	30.25	13	SCT	NC		10.00	66	24	47	20	24	25	29.29	30.05		
16	BKN	038		10.00	35	22	30	59	8	29	29.45	30.24	16	BKN	250		10.00	66	29	49	25	14	25	29.20	29.97		
19	BKN	043		10.00	31	26	29	82	8	23	29.46	30.25	19	OVC	250		10.00	53	29	43	40	8	22	29.19	29.96		
22	SCT	NC		10.00	31	27	29	85	5	30	29.49	30.28	22	BKN	250		10.00	52	28	42	40	6	19	29.20	29.96		
SUNRISE: 0608 MAR 26 SUNSET: 1834																											
01	CLR	NC		10.00	27	22	25	81	6	32	29.50	30.29	01	CLR	NC		10.00	53	28	42	38	15	23	29.38	30.14		
04	CLR	NC		10.00	26	22	25	84	5	28	29.50	30.28	04	SCT	NC		10.00	46	30	39	54	9	23	29.38	30.14		
07	FEW	NC		10.00	27	24	26	89	0	00	29.54	30.33	07	BKN	250		10.00	44	32	39	63	8	23	29.38	30.15		
10	BKN	023		10.00	34	25	31	70	0	00	29.57	30.35	10	SCT	NC		10.00	61	26	46	26	21	22	29.34	30.11		
13	SCT	NC		10.00	39	26	34	60	7	VR	29.55	30.33	13	SCT	NC		10.00	66	24	47	20	24	25	29.29	30.05		
16	FEW	NC		10.00	42	26	36	53	8	02	29.50	30.28	16	BKN	250		10.00	66	29	49	25	14	25	29.20	29.97		
19	CLR	NC		10.00	38	23	32	55	5	03	29.49	30.27	19	OVC	250		10.00	53	29	43	40	8	22	29.19	29.96		
22	CLR	NC		10.00	33	27	31	78	0	00	29.50	30.29	22	BKN	250		10.00	52	28	42	40	6	19	29.20	29.96		
SUNRISE: 0606 MAR 27 SUNSET: 1835																											
01	CLR	NC		8.00	29	26	28	89	3	17	29.51	30.30	01	CLR	NC		8.00	29	27	30.05	9.27	9	3	30			
04	CLR	NC		10.00	27	24	26	89	0	00	29.51	30.30	04	SCT	NC		10.00	29	27	30.05	9.23	9	3	28			
07	CLR	NC		10.00	27	24	26	89	3	12	29.54	30.33	07	CLR	NC		10.00	29	26	30.04	8.85	9	3	28			
10	CLR	NC		10.00	41	27	35	57	7	06	29.55	30.34	10	CLR	NC		10.00	29	26	30.04	9.35	9	3	27			
13	CLR	NC		10.00	49	27	40	43	5	VR	29.51	30.29	13	CLR	NC		10.00	24	20	30.05	9.28	9	3	28			
16	CLR	NC		10.00	51	27	41	39	8	03	29.44	30.22	16	CLR	NC		10.00	21	25	30.05	8.85	13	7	26			
19	CLR	NC		10.00	43	21	35	42	7	03	29.45	30.24	19	CLR	NC		10.00	22	32	32	53	5	3	27			
22	CLR	NC		10.00	38	22	32	53	5	36	29.44	30.22	22	CLR	NC		10.00	21	26	77	29.28	30.07	8.88	10			
SUNRISE: 0605 MAR 28 SUNSET: 1836																											
01	CLR	NC		10.00	32	23	29	69	3	04	29.41	30.19	01	CLR	NC		10.00	31	22	72	29.28	30.07	8.57	11	4	29	
04	CLR	NC		10.00	29	22	27	75	3	16	29.38	30.16	04	SCT	NC		10.00	33	23	29	29	30.07	8.83	13	4	27	
07	BKN	250		10.00	28	23	26	81	3	22	29.41	30.19	07	FEW	NC		10.00	34	23	30	66	29.28	30.06	8.96	13	6	27
10	FEW	NC		10.00	43	28	37	56	0	00	29.39	30.16	10	FEW	NC		10.00	35	23	30	63	29.28	30.06	9.25	13	6	26
13	CLR	NC		10.00	54	28	43	37	6	34	29.33	30.11	13	CLR	NC		10.00	36	23	31	62	29.27	30.05	8.85	13	7	26
16	FEW	NC		10.00	50	31	42	48	13	22	29.27	30.04	16	FEW	NC		10.00	36	23	31	62	29.25	30.04	8.84	14	8	27
19	CLR	NC		10.00	40	28	35	63	9	20	29.27	30.05	19	CLR	NC		10.00	36	24	32	62	29.26	30.04	8.94	14	7	28
22	CLR	NC		10.00	34	33	37	79	7	25	29.36	30.14	22	CLR	NC		10.00	36	23	31	63	29.26	30.04	8.79	13	6	28
SUNRISE: 0603 MAR 29 SUNSET: 1837																											
01	CLR	NC		10.00	38	22	32	53	10	22	29.25	30.02	01	CLR	NC		10.00	37	26	33	72	29.28	30.07	8.57	11	4	29
04	BKN	150		10.00	37	26	33	65	10	23	29.24	30.01	04	SCT	NC		10.00	37	21	25	76	29.27	30.05	9.23	9	3	28
07	CLR	NC		10.00	37	31	35	79	9	24	29.27	30.05	07	CLR	NC		10.00	37	20	25	76	29.26	30.04	8.85	9	3	28
10	CLR	NC		10.00	49	31	41	50	14	29	29.30	30.07	10	CLR	NC		10.00	49	20	25	77	29.26	30.04	9.28	9	3	27
13	BKN	300		10.00	51	32	43	48	21	25	29.29	30.06	13	FEW	NC		10.00	51	20	25	76	29.28	30.06	8.96	13	6	27
16	OVC	090		10.00	45	32	39	61	21	24	29.29	30.07	16	FEW	NC		10.00	45	20	25	76	29.28	30.06	8.94	14	7	26
19	SCT	NC		10.00	44	32	39	63	9	24	29.31	30.09	19	CLR	NC		10.00	44	20	25	77	29.28	30.04	8.84	14	8	27
22	FEW	NC		10.00	39	33	37	79	7	25	29.36	30.14	22	CLR	NC		10.00	37	20	25	77	29.28	30.04	8.94	14	7	28
SUNRISE: 0601 MAR 30 SUNSET: 1838																											
01	CLR	NC		10.00	40	27	35	60	8	26	29.41	30.18	01	CLR	NC		10.00	34	23	30	65	29.27	30.05	8.91	12	6	28
04	CLR	NC		10.00	36	27	33	70	7	24	29.44	30.22	04	SCT	NC		10.00	32	23	29	69	29.28	30.06	9.05	10	5	28
07	CLR	NC		10.00	37	28	34	70	6	28	29.																

MARCH 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01	T	T	T	T	T		T	T	T			T	01	T	0.01	0.01	T	T	T	T	T	T	T	0.01	01	0.03	
02		T	0.03	0.04	0.01	T	0.02	0.06	0.08	0.06	0.05	0.04	02	0.09	0.12	0.14	0.06	0.02	0.01	0.02	0.03	0.02	0.06	0.06	0.08	02	T
03		T	0.04	0.05	0.04	0.05	0.06	0.01	T	T			03	0.04				T	T	T	T	T	T	T	0.08	03	1.10
04	0.07	0.02	0.04	0.05	0.04	0.05	0.06	0.01	T	T			04					T	T	T	T	T	T	T	0.34	04	
05													05					T	T	T	T	T	T	T	T	05	T
06	0.02	0.03	0.03	T	T	0.02	0.04	0.04	0.08	0.12	0.07	0.08	06	0.06	0.05	0.06	0.05	0.04	0.02	0.02	0.01	T	0.01	T	T	06	0.85
07													07													07	0.00
08													08													08	0.00
09													09													09	0.00
10													10													10	0.00
11													11													11	0.00
12													12													12	T
13													13													13	0.00
14													14													14	0.00
15													15													15	0.00
16													16													16	0.00
17													17													17	0.01
18	0.01												18	T	T											18	0.01
19													19													19	0.00
20													20													20	T
21													21													21	0.12
22													22	0.01	0.02	0.02	0.02	0.03	0.01	0.05	0.04	0.02				22	0.19
23													23													23	0.00
24													24													24	0.00
25													25													25	T
26													26													26	0.00
27													27													27	0.00
28													28													28	0.00
29													29													29	0.00
30													30													30	0.00
31													31													31	0.00

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 2.65

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.03	0.06	0.07	0.09	0.11	0.15	0.17	0.20	0.23	0.27	0.33	0.37
ENDED: DATE	06	03	03	03	03	03	03	03	03	03	03	03
ENDED: TIME	1429	1415	1420	1415	1435	1440	1457	1516	1445	1445	1445	1516

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.  
First HPD value that follows is the total accumulated amount.



MARCH 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



**APRIL 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

**APRIL 1999**  
**BUFFALO, NY**

DATE	TEMPERATURE °F						DEG DAYS BASE 65	WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND		SPEED = MPH DIR = TENS OF DEGREES							
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB			0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	5-SEC SPEED	DIR	DIR	DIR	DATE		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
01	56	50	53	13	49	51	12	0	RA DZ FG+ BR	0	0.0	0.12	29.20	29.96	7.3	22	7.6	16	22	13	24	01		
02	64	46	55	15	50	52	10	0	FG+ BR HZ	0	0.0	0.00	29.26	30.03	3.8	04	4.6	11	04	10	06	02		
03	76*	48	62*	22	52	56	3	0	TS RA BR HZ	0	0.0	T	29.17	29.92	6.2	24	8.2	25	24	22	24	03		
04	58	35	47	6	30	37	18	0	RA BR	0	0.0	0.09	29.26	30.03	15.6	06	16.7	32	06	26	07	04		
05	54	28*	41	0	28	36	24	0		0	0.0	0.00	29.49	30.27	11.3	07	11.8	25	05	21	05	05		
06	69	40	55	13	39	46	10	0	TS TSRA GR RA HZ	0	T	0.08	29.14	29.90	11.4	20	15.0	46*	20	37*	22	06		
07	52	42	47	5	35	42	18	0		0	0.0	0.00	29.26	30.02	13.3	23	14.7	32	24	25	23	07		
08	61	43	52	10	41	47	13	0	RA	0	0.0	0.05	29.08	29.84	8.9	23	12.7	39	24	28	24	08		
09	44	33	39	-4	31	36	26	0	RA PL BR	0	0.2	0.18	28.98	29.75	12.5	07	13.6	29	09	24	08	09		
10	48	32	40	-3	26	34	25	0		0	0.0	0.00	29.30	30.07	7.7	05	9.1	20	05	16	05	10		
11	45	33	39	-4	30	34	26	0	TS TSRA RA DZ SN PI, BR	0	0.1	0.37	29.07	29.84	11.8	07	12.7	29	09	25	10	11		
12	49	31	40	-4	28	35	25	0	SN BR	0	0.7	0.06	29.21	29.99	9.8	31	10.6	25	29	21	29	12		
13	52	32	42	-2	27	35	23	0		0	0.0	0.00	29.24	30.02	7.2	29	9.5	23	23	18	23	13		
14	55	34	45	0	30	38	20	0		0	0.0	0.00	29.11	29.88	9.4	23	10.2	24	23	21	23	14		
15	62	36	49	4	29	40	16	0		0	0.0	0.00	28.93	29.69	2.3	08	9.0	21	08	16	09	15		
16	46	39	43	-2	37	40	22	0	RA BR	0	0.0	0.36	28.71	29.47	5.0	21	12.0	34	24	26	23	16		
17	41	39	40	-6	39	40	25	0	RA BR	0	0.0	0.02	28.90	29.66	13.3	23	13.5	25	24	21	23	17		
18	45	36	41	-5	38	39	24	0	RA BR	0	0.0	0.01	29.16	29.93	13.7	23	13.8	29	25	23	26	18		
19	49	37	43	-4	37	40	22	0	RA	0	0.0	T	29.21	29.99	9.6	23	10.0	25	24	21	24	19		
20	53	33	43	-4	33	39	22	0		0	0.0	0.00	29.23	30.00	4.6	25	7.2	18	22	15	23	20		
21	61	36	49	2	35	43	16	0	RA	0	0.0	T	29.20	29.96	3.1	09	6.2	17	06	15	07	21		
22	50	46	48	0	47	48	17	0	RA BR	0	0.0	0.60	29.17	29.94	8.0	06	8.4	17	07	15	08	22		
23	49	35	42	-6	33	38	23	0	RA DZ BR	0	0.0	0.27	29.31	30.08	12.4	05	12.4	33	06	26	07	23		
24	48	29	39*	-9	23	33	26	0		0	0.0	0.00	29.55	30.34	4.3	32	7.8	18	29	15	31	24		
25	52	29	41	-8	29	37	24	0		0	0.0	0.00	29.41	30.18	10.4	23	10.6	24	23	20	24	25		
26	61	42	52	3	35	43	13	0		0	0.0	0.00	29.13	29.90	7.8	25	14.1	28	36	23	36	26		
27	52	35	44	-6	32	39	21	0		0	0.0	0.00	29.37	30.14	9.6	05	10.3	24	05	20	06	27		
28	59	39	49	-1	33	42	16	0		0	0.0	0.00	29.49	30.26	12.2	07	12.4	28	05	23	04	28		
29	62	38	50	0	31	43	15	0		0	0.0	0.00	29.53	30.30	8.0	04	8.6	29	04	21	05	29		
30	68	39	54	3	35	46	11	0		0	0.0	0.00	29.53	30.30	3.9	04	4.8	21	06	15	06	30		
		54.7	37.2	46.0	■■	34.7	41.0	18.9	0.0	< MONTHLY AVERAGES	TOTALS ->	1.0	2.21	29.22	29.99	0.2	20	0.6	<- MONTHLY AVERAGES					
		0.5	1.0	0.8	■■	<----- DEPARTURE FROM NORMAL ----->								- .66	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									
<b>DEGREE DAYS</b>									GREATEST 24-HR PRECIPITATION: 0.80 DATE: 22-23						SEA LEVEL PRESSURE DATE TIME									
MONTHLY TOTAL DEPARTURE									GREATEST 24-HR SNOWFALL: 0.7 DATE: 12						30.40 24 0954									
SEASON TO DATE TOTAL DEPARTURE									GREATEST SNOW DEPTH: 0 DATE:						29.37 16 0854									
HEATING: 566 -28									NUMBER OF DAYS WITH →						PRECIPITATION ≥ 0.01 INCH: 12									
COOLING: 0 0									MAXIMUM TEMP ≥ 90: 0						PRECIPITATION ≥ 0.10 INCH: 6									
									MAXIMUM TEMP ≤ 32: 6						PRECIPITATION ≥ 1.0 INCH: 0									
									MINIMUM TEMP ≤ 0: 0						SNOWFALL ≥ 1.0 INCH: 0									
									THUNDERSTORMS: 3						HEAVY FOG: 2									

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

APRIL 1999

BUF WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note 2)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01													01													01	0.12	
02													02													02	0.00	
03	T	0.02	0.04	T	0.03	T							03													03	0.09	
04													04													04	0.00	
05													05													05		
06																										06		
07																										07		
08	0.01	0.04	T											08												08	0.08	
09																										09	0.00	
10																										10	0.05	
11																										11	0.18	
12	0.03	T	0.01																							12	0.00	
13																										13	0.18	
14																										14	0.00	
15																										15	0.00	
16																										16	0.00	
17	T		T	T																						17	0.37	
18			T	T																						18	0.04	
19																										19	0.37	
20																										20	0.06	
21																										21	0.00	
22																										22	0.00	
23	0.06	0.08	0.05	0.01	0.02	0.01	0.07	0.13	0.10	0.05	T	0.01	0.06	21												23	0.60	
24																										24	0.27	
25																										25	0.00	
26																										26	0.00	
27																										27	0.00	
28																										28	0.00	
29																										29	0.00	
30																										30	0.00	

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	TC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy      '=' = Moderate      '-' = Light			

## BUFFALO, NY APRIL 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED	
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	CELIOMETER	SATELLITE		
01	0	0					.25	10.00
02	20	3					<.25	8.00
03	460	60					4.00	10.00
04	0	0					3.00	10.00
05	774	100					10.00	10.00
06	410	53					6.00	10.00
07	670	86					10.00	10.00
08	770	98					9.00	10.00
09	0	0					2.50	10.00
10	789	100					10.00	10.00
11	0	0					1.25	10.00
12	786	99					1.75	10.00
13	798	100					10.00	10.00
14	801	100					10.00	10.00
15	546	68					10.00	10.00
16	9	1					4.00	10.00
17	0	0					2.00	10.00
18	146	18					.50	10.00
19	250	31					10.00	10.00
20	370	45					7.00	10.00
21	620	76					10.00	10.00
22	0	0					.75	10.00
23	0	0					4.00	10.00
24	828	100					10.00	10.00
25	831	100					10.00	10.00
26	833	100					10.00	10.00
27	836	100					10.00	10.00
28	838	100					10.00	10.00
29	841	100					10.00	10.00
30	843	100					10.00	10.00
MONTHLY AVGS							6.54	9.93
SUNSHINE (MINUTES)								
Total: 14069 Possible: 24141 Percent Possible: 58								
NUMBER OF DAYS WITH: SKY CONDITION								
CLR PTLY CLDY CLOUDY MISSING 30								
MINIMUM VISIBILITY (MILES) <=0.25 <=3.0 >=7.0								
2 9 17								

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

**BUFFALO, NY**

APRIL 1999

BU

WBAN # 14732

PHIL 1999				BUF												WBAN # 14733														
HOUR (LST)	SATELLITE		WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		SATELLITE		TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)												
	SKY COVER	CEILING 100'S OF FT		OBSERVATION TIME (LST)	EFF CLO AMT Ohrs	VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLO AMT Ohrs	VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL			
01	BKN	090	SUNRISE: 0558	APR 01			SUNSET: 1841								SUNRISE: 0547	APR 07				SUNSET: 1848										
04	OVC	050				10.00		54	37	46	53	10	22	29.20	29.96		01	OVC	032		10.00		44	38	41	79	23	24	29.16	29.92
07	OVC	014				10.00		51	40	46	66	5	20	29.18	29.94		04	OVC	036		10.00		43	37	40	80	18	24	29.25	30.01
10	OVC	017				4.00	-RA BR	50	48	49	93	6	21	29.21	29.98		07	BKN	036		10.00		43	36	40	76	14	25	29.34	30.11
13	OVC	011				5.00	-RA BR	53	51	52	93	12	21	29.20	29.96		10	FEW	NC		10.00		48	36	43	63	21	23	29.36	30.14
16	OVC	007				9.00		56	53	54	90	9	23	29.17	29.93		13	CLR	NC		10.00		50	37	44	61	20	24	29.35	30.12
19	OVC	003				6.00	DZ BR	54	52	53	93	8	24	29.16	29.93		16	CLR	NC		10.00		50	34	43	54	20	23	29.29	30.06
22	VV	001				1.00	BR	52	52	52	100	6	25	29.19	29.96		19	SCT	NC		10.00		47	32	40	56	6	22	29.21	29.98
						0.25	FG	51	51	51	100	7	21	29.22	29.98		22	OVC	090		10.00		49	33	42	55	0	00	29.15	29.91
01	VV	001	SUNRISE: 0556	APR 02			SUNSET: 1842								SUNRISE: 0546	APR 08				SUNSET: 1849										
04	OVC	004				0.25	FG	50	50	50	100	0	0	29.23	29.99		01	OVC	060		10.00	RA	56	41	49	57	23	23	29.04	29.80
07						0.25	FG	50	50	50	100	3	20	29.25	30.01		04	FEW	NC		10.00		52	40	46	64	21	24	28.99	29.74
10	OVC	004				1.50	BR	51	51	51	100	3	07	29.29	30.05		07	CLR	NC		10.00		49	43	46	80	8	23	29.07	29.83
13	OVC	017				5.00	H2	54	53	53	97	0	0	29.30	30.07		10	CLR	NC		10.00		59	44	51	58	13	25	29.12	29.87
16	OVC	060				5.00	H2	61	54	57	78	5	36	29.27	30.03		13	FEW	NC		10.00		59	44	51	58	16	24	29.09	29.84
19	OVC	060				6.00	H2	61	53	57	75	8	04	29.24	30.00		16	BKN	300		10.00		60	41	50	50	14	23	29.09	29.84
22	OVC	060				7.00		53	48	50	83	8	05	29.25	30.01		19	BKN	300		10.00		57	34	46	42	10	31	29.10	29.86
						SUNRISE: 0554	APR 03							SUNRISE: 0544	APR 09				SUNSET: 1850											
01	OVC	055				8.00		49	44	47	83	5	08	29.22	29.98		01	BKN	250		10.00		42	35	39	76	8	07	29.10	29.86
04	OVC	055				9.00		48	42	45	80	3	05	29.23	29.99		04	OVC	250		10.00		43	31	38	63	20	08	29.03	29.79
07	OVC	060				7.00		51	46	49	83	0	0	29.24	30.00		07	OVC	085		10.00		42	28	36	58	15	07	28.96	29.72
10	SCT	NC				8.00		69	55	61	61	15	22	29.19	29.95		10	OVC	027		2.50	PLRA	37	31	35	79	14	07	28.97	29.73
13	SCT	NC				9.00		73	56	63	55	10	22	29.15	29.90		13	OVC	060		10.00		38	35	37	89	16	09	28.90	29.66
16	SCT	NC				10.00		75	56	64	52	16	25	29.12	29.86		16	OVC	031		10.00		40	35	38	83	20	04	28.88	29.65
19	OVC	100				6.00	H2	62	56	59	81	8	23	29.12	29.87		19	OVC	050		10.00		42	28	36	58	12	05	28.97	29.73
22	BKN	050				5.00	H2	62	57	59	84	0	0	29.10	29.84		22	CLR	NC		10.00		37	27	33	67	6	01	29.07	29.84
						SUNRISE: 0553	APR 04							SUNRISE: 0542	APR 10				SUNSET: 1851											
01	OVC	002				3.00	-RA BR	55	55	55	100	8	23	29.12	29.86		01	FEW	NC		10.00		34	29	32	82	8	02	29.13	29.91
04	OVC	008				6.00	-RA BR	46	44	45	93	17	07	29.16	29.92		04	CLR	NC		10.00		34	28	32	79	9	02	29.21	29.99
07	OVC	027				10.00		39	34	37	82	21	06	29.24	30.01		07	FEW	NC		10.00		35	28	32	76	7	36	29.29	30.06
10	OVC	037				10.00		39	32	36	76	17	05	29.26	30.03		10	CLR	NC		10.00		41	25	35	53	9	06	29.34	30.11
13	OVC	110				10.00		38	30	35	73	22	06	29.24	30.01		13	CLR	NC		10.00		45	25	37	46	8	03	29.34	30.11
16	OVC	090				10.00	-RA	39	22	33	50	20	06	29.28	30.05		16	CLR	NC		10.00		47	25	38	42	9	04	29.32	30.10
19	OVC	100				10.00		39	17	31	41	18	07	29.30	30.08		19	CLR	NC		10.00		43	25	36	49	9	07	29.34	30.11
22	BKN	130				10.00		37	16	30	42	13	07	29.36	30.14		22	SCT	NC		10.00		38	24	33	57	8	10	29.35	30.13
						SUNRISE: 0551	APR 05							SUNRISE: 0541	APR 11				SUNSET: 1852											
01	FEW	NC				10.00		32	18	27	56	8	05	29.43	30.22		01	CLR	NC		10.00		34	24	30	67	10	10	29.33	30.11
04	CLR	NC				10.00		30	21	27	69	6	05	29.48	30.26		04	SCT	NC		10.00		34	23	30	64	9	08	29.24	30.02
07	CLR	NC				10.00		32	25	29	75	10	06	29.55	30.33		07	OVC	220		10.00		35	25	31	67	12	08	29.19	29.96
10	CLR	NC				10.00		42	27	36	55	13	08	29.55	30.33		10	OVC	065		10.00		40	27	35	60	15	08	29.12	29.89
13	FEW	NC				10.00		49	32	42	52	17	06	29.53	30.30		13	OVC	038		8.00	-RA	41	34	38	76	16	08	28.94	29.70
16	FEW	NC				10.00		53	34	44	49	17	06	29.48	30.25		16	OVC	007		1.75	-RA BR	35	35	35	100	16	07	28.96	29.73
19	FEW	NC				10.00		47	34	41	61	15	06	29.46	30.24		19	OVC	005		1.25	DZ BR	35	35	35	100	15	07	28.93	29.70
22	CLR	NC				10.00		43	33	39	68	14	10	29.44	30.22		22	OVC	003		2.00	DZ BR	35	35	35	100	8	03	28.97	29.73
						SUNRISE: 0549	APR 06							SUNRISE: 0539	APR 12				SUNSET: 1853											
01	CLR	NC				10.00		42	30	37	62	10	10	29.42	30.19		01	OVC	003		1.75	-SN BR	32	32	32	100	9	36	29.02	29.79
04	CLR	NC				10.00		42	25	35	51	7	14	29.30	30.07		04	OVC	036		10.00		35	32	34	89	7	35	29.09	29.86
07	BKN	250				10.00		46	30	39	54	6	15	29.25	30.02		07	SCT	NC		10.00		34	30	32	85	7	31	29.18	29.96
10	BKN	250				10.00		63	42	52	47	12	18	29.13	29.90		10	SCT	NC		10.00		42	31	37	65	9	33	29.24	30.02
13	OVC	065				6.00	-RA	61	50	55	67	10	17	29.06	29.81		13	SCT	NC		10.00		46	27	38	47	17	30	29.25	30.03
16	FEW	NC				10.00		69	52	59	55	25	20	29.95	29.70		16	SCT	NC		10.00		48	26	39	42	18	31	29.24	30.02
19	SCT	NC				10.00	TS	48	42	45	80	30	23	29.00	29.76		19	SCT	NC		10.00		43	26	36	51	13	32	29.26	30.04
22	BKN	065				1																								

## OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**

APRIL 1999

BLIP

WBAN # 1473

WIND DIRECTIONS				APRIL 1999				BUF				WBAN # 14733													
HOUR (LST)	SATELLITE			TEMPERATURE °F		PRESSURE (INCHES,HG)		HOUR (LST)	SATELLITE			TEMPERATURE °F		HOUR (LST)	WBAN # 14733										
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST) EFF COLD AMT Orbs	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST) EFF COLD AMT Orbs	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL			
SUNRISE: 0537	APR 13	SUNSET: 1855										SUNRISE: 0527	APR 19	SUNSET: 1900											
01 CLR NC	10.00			35	25	31	67	6	30	29.28	30.06	01 OVC 023			10.00			40	39	40	97	10	22	29.23	30.01
04 CLR NC	10.00			34	26	31	73	8	31	29.27	30.05	04 OVC 014			10.00			40	37	39	89	7	23	29.21	29.98
07 CLR NC	10.00			36	25	32	64	9	32	29.30	30.08	07 OVC 014			10.00			41	38	40	89	7	24	29.22	30.00
10 CLR NC	10.00			43	24	36	47	13	31	29.30	30.07	10 OVC 025			10.00			43	38	41	82	10	23	29.24	30.01
13 CLR NC	10.00			49	22	38	35	13	30	29.26	30.03	13 OVC 060			10.00			46	39	43	77	15	22	29.22	29.99
16 CLR NC	10.00			49	30	41	48	14	22	29.20	29.97	16 SCT NC			10.00			48	35	42	61	16	23	29.19	29.96
19 CLR NC	10.00			40	32	37	73	7	21	29.17	29.96	19 SCT NC			10.00			43	34	39	71	9	23	29.19	29.97
22 CLR NC	10.00			36	32	34	86	6	19	29.17	29.95	22 SCT NC			10.00			40	36	38	86	6	23	29.19	29.97
SUNRISE: 0536	APR 14	SUNSET: 1856										SUNRISE: 0526	APR 20	SUNSET: 1902											
01 CLR NC	10.00			40	25	34	55	9	26	29.14	29.92	01 SCT NC			10.00			37	35	36	93	6	20	29.18	29.96
04 CLR NC	10.00			37	24	32	60	10	24	29.13	29.90	04 FEW NC			10.00			34	32	33	92	0	00	29.17	29.94
07 CLR NC	10.00			39	26	34	60	9	22	29.13	29.91	07 OVC 020			7.00			37	34	36	89	0	00	29.20	29.98
10 CLR NC	10.00			46	32	40	58	14	24	29.13	29.90	10 BKN 048			10.00			46	33	40	61	9	31	29.23	30.01
13 CLR NC	10.00			50	33	42	52	16	23	29.11	29.88	13 SCT NC			10.00			50	32	42	50	6	27	29.23	30.00
16 FEW NC	10.00			53	33	44	47	14	22	29.06	29.82	16 BKN 055			10.00			48	34	42	58	14	24	29.24	30.01
19 FEW NC	10.00			54	26	42	34	9	32	29.10	29.85	19 SCT NC			10.00			44	32	39	63	13	23	29.26	30.04
22 CLR NC	10.00			42	33	38	71	6	23	29.10	29.86	22 SCT NC			10.00			42	33	38	71	8	22	29.28	30.05
SUNRISE: 0534	APR 15	SUNSET: 1857										SUNRISE: 0524	APR 21	SUNSET: 1903											
01 CLR NC	10.00			40	32	37	73	9	22	29.07	29.83	01 BKN 140			10.00			40	32	37	73	5	19	29.26	30.03
04 CLR NC	10.00			40	32	37	73	8	22	29.04	29.80	04 BKN 140			10.00			37	31	35	79	6	15	29.25	30.02
07 BKN 200	10.00			42	33	38	71	7	21	29.05	29.81	07 SCT NC			10.00			40	32	37	73	5	17	29.26	30.04
10 BKN 200	10.00			53	32	44	45	8	21	29.02	29.78	10 BKN 250			10.00			52	33	43	49	0	00	29.24	30.01
13 BKN 130	10.00			59	27	45	29	0	00	28.94	29.70	13 FEW NC			10.00			57	33	46	41	5	VR	29.18	29.94
16 OVC 140	10.00			59	34	47	39	13	05	28.86	29.61	16 OVC 090			10.00			60	37	49	42	6	24	29.14	29.91
19 BKN 250	10.00			51	22	39	32	15	05	28.83	29.59	19 OVC 065			10.00			54	39	47	57	12	06	29.12	29.89
22 BKN 200	10.00			47	18	36	31	15	08	28.79	29.54	22 OVC 065			10.00			51	38	45	61	9	07	29.13	29.90
SUNRISE: 0532	APR 16	SUNSET: 1858										SUNRISE: 0523	APR 22	SUNSET: 1904											
01 BKN 200	10.00			45	25	37	46	13	07	28.72	29.47	01 OVC 055			10.00			50	38	44	63	9	07	29.12	29.87
04 OVC 100	10.00			44	28	37	53	13	08	28.67	29.42	04 OVC 044			10.00			49	40	45	71	7	08	29.11	29.87
07 OVC 027	7.00-RA			39	33	37	79	12	07	28.65	29.41	07 OVC 048			2.50	RA BR		46	45	46	96	5	08	29.14	29.91
10 OVC 037	10.00-RA			46	45	46	96	14	24	28.63	29.38	10 OVC 002			0.75	-RA BR		47	47	47	100	7	05	29.16	29.93
13 OVC 013	10.00-RA			45	43	44	93	12	24	28.67	29.43	13 OVC 070			4.00	-RA BR		50	50	50	100	8	05	29.18	29.95
16 BKN 250	10.00			43	40	42	89	18	23	28.72	29.48	16 OVC 004			1.00	-RA BR		50	50	50	100	10	05	29.19	29.96
19 OVC 046	10.00			42	38	40	85	10	23	28.77	29.54	19 OVC 004			2.50	BR		49	49	49	100	10	05	29.22	29.99
22 OVC 012	8.00-RA			41	40	41	96	9	22	28.79	29.55	22 OVC 050			6.00	BR		49	49	49	100	13	07	29.21	29.98
SUNRISE: 0531	APR 17	SUNSET: 1859										SUNRISE: 0521	APR 23	SUNSET: 1905											
01 OVC 030	10.00			40	38	39	93	10	21	28.77	29.54	01 OVC 033			4.00	+RA BR		48	47	47	96	15	05	29.20	29.97
04 OVC 012	10.00			40	38	39	93	10	25	28.79	29.55	04 OVC 007			7.00	-RA		45	44	45	97	22	06	29.21	29.98
07 OVC 080	10.00			40	37	39	89	12	22	28.83	29.59	07 OVC 015			10.00			38	36	37	93	20	06	29.24	30.01
10 OVC 011	8.00-RA			40	39	40	97	14	24	28.87	29.63	10 OVC 050			10.00	-RA		38	33	36	83	18	05	29.26	30.03
13 OVC 002	2.00-RA BR			40	40	40	100	14	24	28.89	29.65	13 OVC 040			10.00			37	32	35	82	10	04	29.29	30.07
16 OVC 004	8.00			40	40	40	100	14	23	28.93	29.69	16 OVC 100			10.00			43	27	37	53	12	05	29.31	30.09
19 OVC 055	4.00 BR			40	40	40	100	12	22	28.97	29.74	19 BKN 200			10.00			44	27	37	51	0	00	29.37	30.15
22 OVC 006	7.00-RA			40	40	40	100	15	23	29.02	29.79	22 CLR NC			10.00			37	28	34	70	3	35	29.46	30.24
SUNRISE: 0529	APR 18	SUNSET: 1900										SUNRISE: 0520	APR 24	SUNSET: 1906											
01 OVC 048	10.00			40	39	40	97	9	23	29.05	29.81	01 CLR NC			10.00			35	23	31	61	9	02	29.52	30.30
04 SCT NC	10.00			37	36	37	96	7	22	29.07	29.83	04 CLR NC			10.00			31	21	28	67	7	36	29.56	30.34
07 OVC 005	0.50 BR			37	37	37	100	14	23	29.12	29.89	07 BKN 250			10.00			33	19	28	56	9	02	29.59	30.38
10 BKN 005	10.00			42	40	41	92	17	23	29.15	29.93	10 FEW NC			10.00			38	21	32	51	6	VR	29.60	30.40
13 OVC 009	10.00-RA			42	40	41	92	20	24	29.17	29.94	13 CLR NC			10.00			44	21	35	40	10	33	29.57	30.35
16 OVC 042	10.00			43	40	42	89	18	25	29.19	29.96	16 BKN 250			10.00			47	22	37	37	8	27	29.53	30.31
19 OVC 008	10.00			40	38	39	93	14	23	29.22	30.00	19 FEW NC			10.00			40	26	35	58	10	24	29.52	30.30
22 OVC 016	10.00			41	38	40	89	10	23	29.23	30.01	22 CLR NC			10.00			38	27	34	65	7	25	29.53	30.32

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)		EFF CLD AMT Oktas	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION
01	CLR	NC		SUNRISE: 0518	APR 25	SUNSET: 1907						
04	CLR	NC		10.00		35	30	33	82	0	00	29.51 30.29
07	FEW	NC		10.00		30	28	29	92	5	20	29.52 30.29
10	CLR	NC		10.00		35	32	34	89	7	21	29.55 30.33
13	BKN	250		10.00		47	31	40	54	8	23	29.49 30.27
16	SCT	NC		10.00		50	24	40	36	14	23	29.43 30.20
19	FEW	NC		10.00		50	27	40	41	17	24	29.33 30.11
22	BKN	250		10.00		45	30	39	56	16	23	29.30 30.07
				SUNRISE: 0517	APR 26	SUNSET: 1908						
01	CLR	NC		10.00		46	24	37	42	15	23	29.17 29.94
04	CLR	NC		10.00		44	33	39	65	14	23	29.13 29.90
07	CLR	NC		10.00		44	38	41	79	15	25	29.12 29.89
10	FEW	NC		10.00		50	41	46	71	16	23	29.10 29.86
13	CLR	NC		10.00		53	42	48	66	15	22	29.09 29.85
16	CLR	NC		10.00		60	31	47	33	17	34	29.09 29.85
19	FEW	NC		10.00		54	31	44	42	12	36	29.13 29.90
22	CLR	NC		10.00		46	33	40	61	9	36	29.21 29.98
				SUNRISE: 0515	APR 27	SUNSET: 1910						
01	CLR	NC		10.00		42	32	38	68	9	09	29.25 30.02
04	CLR	NC		10.00		37	29	34	73	6	05	29.29 30.06
07	CLR	NC		10.00		40	31	36	70	12	05	29.35 30.13
10	FEW	NC		10.00		46	32	40	58	9	05	29.38 30.16
13	FEW	NC		10.00		49	34	42	57	7	03	29.38 30.15
16	FEW	NC		10.00		51	33	43	50	15	04	29.38 30.15
19	FEW	NC		10.00		49	33	42	55	15	07	29.40 30.17
22	CLR	NC		10.00		44	33	39	65	7	08	29.45 30.22
				SUNRISE: 0514	APR 28	SUNSET: 1911						
01	CLR	NC		10.00		42	33	38	71	10	08	29.44 30.22
04	CLR	NC		10.00		39	33	37	79	10	08	29.45 30.23
07	FEW	NC		10.00		44	34	40	68	13	07	29.51 30.28
10	CLR	NC		10.00		55	34	45	45	18	07	29.51 30.28
13	FEW	NC		10.00		58	38	48	48	14	04	29.50 30.27
16	CLR	NC		10.00		57	32	46	39	17	05	29.48 30.25
19	CLR	NC		10.00		53	29	43	40	10	07	29.48 30.25
22	CLR	NC		10.00		47	30	40	52	7	08	29.51 30.27
				SUNRISE: 0512	APR 29	SUNSET: 1912						
01	CLR	NC		10.00		41	30	37	65	7	03	29.50 30.27
04	CLR	NC		10.00		41	29	36	62	7	03	29.51 30.28
07	CLR	NC		10.00		46	34	41	63	5	08	29.56 30.32
10	FEW	NC		10.00		58	34	47	41	8	02	29.57 30.33
13	FEW	NC		10.00		61	30	47	31	13	05	29.54 30.31
16	FEW	NC		10.00		62	31	48	31	13	04	29.52 30.28
19	FEW	NC		10.00		59	29	46	32	10	05	29.50 30.27
22	CLR	NC		10.00		51	31	42	46	7	02	29.53 30.29
				SUNRISE: 0511	APR 30	SUNSET: 1913						
01	CLR	NC		10.00		45	31	39	58	0	01	29.53 30.30
04	CLR	NC		10.00		42	32	38	68	0	00	29.52 30.29
07	SCT	NC		10.00		47	33	41	59	0	00	29.56 30.33
10	BKN	300		10.00		62	38	50	41	3	VR	29.58 30.35
13	SCT	NC		10.00		67	40	53	37	12	06	29.55 30.31
16	SCT	NC		10.00		67	37	52	33	13	03	29.51 30.27
19	CLR	NC		10.00		62	35	49	37	9	06	29.50 30.26
22	CLR	NC		10.00		53	36	45	52	5	05	29.49 30.26

**BUFFALO, NY**  
**APRIL 1999**

## 3-HOURLY OBSERVATION NOTES

Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8, SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8. WV = Vertical Visibility - 8/8

Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.  
NC = No ceiling detected.

& = Original observation contained additional weather elements.  
See page 3 for additional notes.

## **SUMMARY BY HOUR**

HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)			
	CELOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	STATION	SEA LEVEL	VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED	DIRECTION
01			42	34	39	74	29.21	29.98	8.90	9	1	19
02			42	34	38	75	29.20	29.97	9.04	9	1	6
03			41	34	38	77	29.20	29.97	9.14	9	1	10
04			40	33	37	76	29.21	29.98	9.41	9	1	10
05			39	33	37	79	29.22	29.98	9.28	9	2	10
06			39	33	36	80	29.23	30.00	9.01	8	2	10
07			41	34	38	77	29.24	30.01	8.90	9	1	8
08			44	35	40	73	29.24	30.01	8.84	10	1	9
09			46	35	41	68	29.24	30.01	8.97	10	0	0
10			48	36	43	66	29.24	30.01	8.86	11	2	23
11			49	36	43	65	29.24	30.01	8.64	12	2	27
12			50	37	44	64	29.22	29.99	8.72	13	2	25
13			51	37	44	62	29.22	29.98	9.10	12	2	26
14			51	37	45	61	29.21	29.97	8.83	13	2	28
15			52	36	45	58	29.20	29.97	9.27	14	3	28
16			52	36	45	58	29.20	29.96	9.06	15	2	28
17			51	35	44	58	29.20	29.97	8.80	14	0	0
18			49	35	43	62	29.20	29.97	8.63	13	1	36
19			48	34	42	63	29.21	29.98	8.69	11	1	2
20			46	34	41	67	29.22	29.99	8.81	9	1	11
21			45	34	40	68	29.23	30.00	8.82	9	1	15
22			44	34	40	70	29.23	29.99	8.84	8	1	12
23			43	34	39	72	29.22	29.99	9.01	9	0	0
24			42	34	39	73	29.22	29.99	8.94	8	1	18

APRIL 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01					T	0.04	0.03	0.02	T	0.01	0.02	T	01			T	T	T							01	0.12	
02													02													02	0.00
03													03													03	T
04	0.01	0.02	0.02	0.02	0.02	0.02	T	T	T	T			04			T	T								04	0.11	
05													05													05	0.00
06													06	T	T	T	T									06	0.08
07													07													07	0.00
08		0.03	0.01	T									08													08	0.04
09													09	T	T											09	0.20
10													10													10	0.00
11													11	T	0.09	0.14	0.06	0.04	T	0.01	0.01	T	0.01	0.02	0.03	11	0.41
12	0.02	0.01	T										12													12	0.03
13													13													13	0.00
14													14													14	0.00
15													15													15	0.00
16													16	0.05	0.04	0.02	T								16	0.44	
17	T	T	T	T	0.08	0.08	0.08	0.03	0.01	0.02	0.01	T	17	0.01	T										17	0.04	
18													18													18	T
19													19													19	T
20													20													20	0.00
21													21													21	T
22		0.04	0.08	0.05	0.02	0.01	0.08	0.10	0.10	0.08	T	T	22	0.04	0.02	0.04									22	0.63	
23													23	0.07	T											23	0.28
24													24													24	0.00
25													25													25	0.00
26													26													26	0.00
27													27													27	0.00
28													28													28	0.00
29													29													29	0.00
30													30													30	0.00

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 2.38

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.02	0.04	0.08	0.10	0.12	0.16	0.18	0.22	0.23	0.23	0.29	0.29
ENDED: DATE	11	11	11	11	11	11	11	11	11	11	11	11
ENDED: TIME	1355	1355	1400	1404	1415	1416	1445	1450	1515	1515	1559	1559

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data. M = Missing Data.

\* = Data distribution unknown.  
First HPD value that follows is the total accumulated amount.



APRIL 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



# **MAY 1999**

# **LOCAL CLIMATOLOGICAL DATA**

NOAA, National Climatic Data Center

NOAA, National Climatic Data Center

**BUFFALO, NY**

## **GREATER BUFFALO INTL AIRPORT (BUF)**

Lat: 42° 56' N Long: 78° 44' W Elevation (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

DATE	TEMPERATURE °F							DEG DAYS BASE 65°	WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND		SPEED = MPH DIR = TENS OF DEGREES								
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING			0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	SPEED	DIR	MAXIMUM 5-SEC	2-MIN	DIR	DATE		
	1	2	3	4	5	6	7			11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
01	72	40	56	5	37	47	9	0		0		0.0	0.00	29.47	30.24	3.5	05	5.1	18	04	16	04	03	02		
02	75	45	60	8	40	51	5	0		0		0.0	0.00	29.40	30.16	7.1	06	8.1	33	05	17	05	02	02		
03	76	52	64	12	41	52	1	0	RA	0		0.0	T	29.32	30.07	8.0	09	9.3	26	09	22	10	03	02		
04	77	53	65	13	46	55	0	0		0		0.0	0.00	29.21	29.96	5.2	07	6.8	25	04	21	04	04	02		
05	82	56	69	16	55	61	0	4		0		0.0	0.00	29.10	29.85	4.9	08	7.7	24	03	20	03	05	02		
06	82	58	70	17	57	62	0	5	RA HZ	0		0.0	T	29.03	29.77	10.1	15	12.7	31	18	28	13	06	02		
07	74	58	66	12	57	60	0	1	TS RA RA BR SQ	0		0.0	0.29	29.07	29.82	4.6	15	7.1	40	21	34	21	07	02		
08	64	52	58	4	53	55	7	0	RA BR	0		0.0	0.64	29.03	29.77	9.2	21	10.7	23	23	20	23	08	02		
09	56	45	51	-3	43	47	14	0	RA BR HZ	0		0.0	0.02	29.21	29.97	13.0	24	13.6	33	22	26	24	09	02		
10	62	39	51	-4	38	45	14	0		0		0.0	0.00	29.40	30.17	2.6	28	4.5	16	31	11	33	10	02		
11	64	42	53	-2	40	47	12	0		0		0.0	0.00	29.46	30.23	7.8	06	8.5	21	02	17	03	11	02		
12	63	39	51	-4	31	43	14	0		0		0.0	0.00	29.32	30.09	8.5	05	8.9	23	06	17	05	12	02		
13	61	39*	50	-6	34	44	15	0		0		0.0	0.00	29.25	30.01	11.8	06	12.1	25	02	22	05	13	02		
14	72	43	58	2	33	46	7	0		0		0.0	0.00	29.40	30.17	7.6	07	8.5	24	05	20	04	14	02		
15	76	52	64	8	45	54	1	0		0		0.0	0.00	29.46	30.22	3.3	08	6.5	23	36	16	07	15	02		
16	77	54	66	9	44	54	0	1		0		0.0	0.00	29.42	30.18	4.4	16	6.2	16	17	14	17	16	02		
17	83	56	70	13	54	61	0	5		0		0.0	0.00	29.30	30.05	9.4	18	10.2	20	16	16	22	17	02		
18	84	57	71	14	59	63	0	6	TS TSRA RA BR	0		0.0	0.60	29.20	29.95	9.8	21	11.2	33	22	25	22	18	02		
19	59	47	53	-5	51	53	12	0	RA BR	0		0.0	0.03	29.31	30.07	8.9	24	10.8	26	25	21	24	19	02		
20	64	42	53	-5	44	49	12	0		0		0.0	0.00	29.45	30.22	4.6	23	5.8	18	25	16	24	20	02		
21	73	45	59	1	45	52	6	0		0		0.0	0.00	29.34	30.10	4.0	19	5.4	15	26	13	23	21	02		
22	76	55	66	7	53	58	0	1	RA BR	0		0.0	0.13	29.19	29.94	1.2	36	5.6	20	28	16	27	22	02		
23	70	57	64	5	55	58	1	0	RA BR	0		0.0	0.01	29.05	29.80	3.7	03	7.1	14	09	11	08	23	02		
24	60	47	54	-5	53	54	11	0	RA BR	0		0.0	0.71	28.73	29.47	12.1	22	14.0	36	23	28	23	24	02		
25	52	45	49*	-11	44	46	16	0	RA BR	0		0.0	0.31	28.83	29.58	22.1	23	22.4	47*	22	34*	24	25	02		
26	51	48	50	-10	46	48	15	0	RA DZ BR	0		0.0	0.08	29.03	29.79	12.5	25	12.8	34	27	26	24	26	02		
27	60	42	51	-9	45	49	14	0		0		0.0	0.00	29.19	29.96	12.8	23	13.0	30	24	23	24	27	02		
28	69	48	59	-2	47	53	6	0		0		0.0	0.00	29.27	30.03	12.5	23	12.7	25	24	21	22	28	02		
29	77	51	64	3	53	58	1	0	BR HZ	0		0.0	0.00	29.37	30.13	6.4	21	6.9	15	21	14	20	29	02		
30	85*	53	69	8	53	60	0	4		0		0.0	0.00	29.41	30.17	5.5	21	6.8	16	21	14	23	30	02		
31	83	59	71*	9	58	63	0	6	RA	0		0.0	T	29.26	30.01	6.6	20	7.8	25	25	18	25	31	02		
	70.3	49.0	59.7		46.9	53.2	6.2	1.1	< MONTHLY AVERAGES	TOTALS ->		0.0	2.82	29.24	30.00	3.6	22	9.3	<	MONTHLY AVERAGES						
	4.2	2.0	3.1		■■	<-----	DEPARTURE FROM NORMAL	----->				- .32														
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 0.71 DATE: 24									SEA LEVEL PRESSURE DATE TIME								
MONTHLY TOTAL DEPARTURE									GREATEST 24-HR SNOWFALL: 0.0 DATE:									MAXIMUM MINIMUM								
SEASON TO DATE TOTAL DEPARTURE									GREATEST SNOW DEPTH: 0 DATE:									30.30 01 0854								
HEATING: COOLING:	193 33	-86 14	6105 33	-583 14					NUMBER OF DAYS WITH →	MAXIMUM TEMP ≥ 90: 0	MINIMUM TEMP ≤ 32: 0							PRECEPITATION ≥ 0.01 INCH: 10								
									MAXIMUM TEMP ≤ 32: 0	MINIMUM TEMP ≥ 0: 0							PRECEPITATION ≥ 0.10 INCH: 6									
									THUNDERSTORMS: 2	HEAVY FOG: 0							SNOWFALL ≥ 1.0 INCH: 0									

**MAY 1999**  
**BUFFALO, NY**

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

MAY 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24	
01													01												01	
02													02												02	
03													03												03	
04													04												04	
05													05												05	
06																										06
07																										07
08																										08
09	0.01	T			T	0.09 0.01	0.10	0.04	0.02	0.01	0.06	0.04	0.03	01	0.07	0.02 0.01	0.20	T							01	
10																										02
11																										03
12																										04
13																										05
14																										06
15																										07
16																										08
17																										09
18																										10
19	0.02	T			0.02	T																				11
20																										12
21																										13
22																										14
23	0.01	T			0.02	0.03	0.04	0.03	0.03	0.10	0.08	0.05	0.06	T	0.08	0.02 T	0.01	T	0.56	T	T	T	0.01	0.02		15
24																										16
25	T	T	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	T	0.01	0.02	0.01	T	T	T	T	T	T	0.02	0.03	0.11	0.04
26	0.03	0.01	0.01	0.01	0.01	T	T	T	T	T	T	T	T	0.01	T	0.01	T	T	T	T	T	T	0.02	0.03	0.06	0.30
27																										21
28																										22
29																										23
30																										24
31																										25

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+ FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy      '=' = Moderate      '-' = Light			

## BUFFALO, NY MAY 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CELOMETER	MN-MN CELOMETER	SATELLITE	MINIMUM	
01	846	100				10.00	10.00
02	849	100				10.00	10.00
03	533	63				10.00	10.00
04	793	93				10.00	10.00
05	838	98				10.00	10.00
06	430	50				6.00	10.00
07	537	62				5.00	10.00
08	225	26				3.00	10.00
09	504	58				.75	10.00
10	870	100				10.00	10.00
11	818	94				10.00	10.00
12	585	67				10.00	10.00
13	760	87				10.00	10.00
14	688	78				10.00	10.00
15	533	61				10.00	10.00
16	881	100				10.00	10.00
17	883	100				10.00	10.00
18	637	72				3.00	10.00
19	490	55				3.00	10.00
20	889	100				10.00	10.00
21	784	88				10.00	10.00
22	355	40				4.00	10.00
23	170	19				4.00	10.00
24	0	0				1.00	10.00
25	0	0				5.00	10.00
26	0	0				2.50	10.00
27	901	100				8.00	10.00
28	903	100				10.00	10.00
29	904	100				5.00	10.00
30	905	100				7.00	10.00
31	431	48				7.00	10.00
MONTHLY AVGS						7.23	10.00
SUNSHINE (MINUTES)							
Total: 18942 Possible: 27238 Percent Possible: 70							
NUMBER OF DAYS WITH: SKY CONDITION							
CLR PTLY CLDY CLOUDY MISSING 31							
MINIMUM VISIBILITY (MILES) <-0.25 <=3.0 >=7.0							
0 6 19							

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

MAY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)			
					DRY BULB	DEW POINT	WET BULB		RELATIVE HUMIDITY (%)	SPEED (MPH)						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)				
SUNRISE: 0510	MAY 01	SUNSET: 1914			46	38	42	73	0	00	29.49	30.26	01	BKN	030		SUNRISE: 0502	MAY 07	SUNSET: 1921				
01 CLR NC		10.00			42	33	38	71	5	15	29.49	30.26	04	OVC	026		10.00	59	53	56	81	6	15 29.08 29.82
04 CLR NC		10.00			46	36	42	68	3	18	29.53	30.29	07	BKN	130		9.00	61	55	58	81	6	11 29.08 29.82
07 CLR NC		10.00			65	36	51	34	3	35	29.53	30.29	10	BKN	100		10.00	63	58	60	84	6	13 29.12 29.86
10 CLR NC		10.00			69	38	53	32	6	VR	29.48	30.24	13	OVC	060		10.00 - RA	71	59	64	66	7	20 29.10 29.85
13 CLR NC		10.00			70	38	54	31	14	04	29.43	30.20	16	BKN	250		10.00	66	57	61	73	18	26 29.09 29.80
16 CLR NC		10.00			64	37	51	37	7	04	29.42	30.18	19	FEW NC			10.00	65	58	61	78	10	14 29.06 29.80
19 FEW NC		10.00			58	37	48	46	6	10	29.43	30.19	22	SCT NC			10.00	68	58	62	70	7	08 29.05 29.80
22 CLR NC		10.00			SUNRISE: 0508	MAY 02	SUNSET: 1915									10.00	63	58	60	84	9	12 29.05 29.80	
01 CLR NC		10.00			49	37	43	64	8	04	29.42	30.18	01	BKN	120		SUNRISE: 0500	MAY 08	SUNSET: 1922				
04 CLR NC		10.00			48	36	43	63	5	09	29.41	30.17	04	OVC	085		10.00	63	58	60	84	12	15 29.02 29.76
07 CLR NC		10.00			55	37	47	51	7	10	29.46	30.22	07	OVC	065		7.00 - RA	62	58	60	86	6	19 28.99 29.73
10 CLR NC		10.00			70	41	55	35	8	08	29.46	30.22	10	OVC	039		5.00 - RA BR	55	59	59	96	7	15 28.99 29.73
13 FEW NC		10.00			74	43	57	33	13	07	29.42	30.18	13	OVC	030		4.00 RA BR	53	53	54	93	9	22 29.02 29.76
16 FEW NC		10.00			74	41	56	31	14	02	29.37	30.12	16	SCT NC			6.00 - RA BR	61	48	54	63	10	23 29.01 29.75
19 CLR NC		10.00			69	45	56	42	12	02	29.35	30.11	19	OVC	080		10.00	58	46	52	65	15	23 29.05 29.80
22 CLR NC		10.00			61	40	50	46	8	09	29.37	30.13	22	OVC	008		4.00 RA BR	52	51	52	97	13	22 29.09 29.84
01 CLR NC		10.00			56	38	47	51	8	11	29.36	30.11	01	OVC	003		SUNRISE: 0459	MAY 09	SUNSET: 1923				
04 CLR NC		10.00			55	37	47	51	8	13	29.36	30.11	04	OVC	001		6.00 - RA BR	51	50	51	96	12	24 29.07 29.82
07 CLR NC		10.00			57	37	47	47	7	12	29.40	30.15	07	OVC	001		2.50 - RA BR	50	48	49	93	10	24 29.09 29.84
10 SCT NC		10.00			70	38	54	31	9	08	29.38	30.14	10	OVC	028		1.50 BR	50	48	49	93	8	23 29.14 29.91
13 SCT NC		10.00			74	43	57	33	13	08	29.31	30.07	13	FEW NC			10.00	51	43	47	74	18	22 29.20 29.96
16 BKN 250		10.00			71	45	57	39	13	06	29.25	30.01	16	FEW NC			10.00	54	43	49	67	24	23 29.23 29.99
19 OVC 100		10.00			66	44	54	45	8	07	29.25	30.01	19	CLR NC			10.00	53	40	47	61	23	23 29.26 30.02
22 OVC 080		10.00			64	43	53	46	7	12	29.25	30.01	22	CLR NC			10.00	50	39	45	66	15	24 29.28 30.05
01 BKN 110		10.00			60	44	52	56	6	16	29.23	29.98	01	CLR NC			SUNRISE: 0458	MAY 10	SUNSET: 1924				
04 SCT NC		10.00			56	45	50	67	5	04	29.23	29.99	04	CLR NC			10.00	44	35	40	71	5	28 29.34 30.11
07 FEW NC		10.00			60	46	53	60	3	13	29.26	30.01	07	CLR NC			10.00	41	35	38	79	3	26 29.35 30.12
10 BKN 095		10.00			70	43	56	38	5	03	29.24	29.99	10	CLR NC			10.00	45	37	41	74	3	18 29.39 30.16
13 BKN 250		10.00			74	45	58	36	6	VR	29.20	29.95	13	FEW NC			10.00	53	35	45	51	7	28 29.42 30.19
16 SCT NC		10.00			76	48	60	37	12	05	29.17	29.92	16	SCT NC			10.00	58	41	50	54	3	VR 29.40 30.16
19 FEW NC		10.00			68	45	56	44	7	05	29.17	29.92	19	SCT NC			10.00	61	39	50	44	8	32 29.40 30.17
22 CLR NC		10.00			63	48	55	58	7	09	29.16	29.91	22	CLR NC			10.00	59	40	50	49	3	02 29.40 30.17
01 CLR NC		10.00			59	51	55	75	7	09	29.14	29.89	01	CLR NC			SUNRISE: 0457	MAY 11	SUNSET: 1925				
04 CLR NC		10.00			57	52	54	83	3	11	29.12	29.88	04	CLR NC			10.00	47	41	44	80	3	VR 29.47 30.24
07 CLR NC		10.00			62	53	57	73	5	14	29.14	29.89	07	SCT NC			10.00	44	41	43	89	5	05 29.47 30.24
10 CLR NC		10.00			74	54	62	50	0	00	29.12	29.88	10	SCT NC			10.00	49	42	46	77	8	09 29.50 30.27
13 SCT NC		10.00			80	54	64	41	0	00	29.08	29.82	13	BKN 300			10.00	59	44	51	58	10	05 29.51 30.27
16 BKN 300		10.00			80	60	67	51	15	03	29.06	29.80	16	SCT NC			10.00	62	46	54	56	12	04 29.48 30.25
19 OVC 300		10.00			74	59	65	60	14	06	29.08	29.82	19	BKN 300			10.00	63	43	53	48	13	05 29.44 30.21
22 BKN 300		10.00			68	58	62	70	9	06	29.08	29.82	22	BKN 300			10.00	56	36	47	47	10	04 29.43 30.19
01 CLR NC		10.00			59	54	56	83	7	20	29.06	29.80	01	CLR NC			SUNRISE: 0456	MAY 12	SUNSET: 1927				
04 OVC 200		10.00			60	53	56	78	6	15	29.06	29.80	04	CLR NC			10.00	45	30	39	56	6	08 29.40 30.17
07 OVC 120		10.00			64	55	59	73	7	14	29.09	29.83	07	BKN 250			10.00	40	31	36	70	7	02 29.38 30.14
10 OVC 250		10.00			76	60	66	58	13	13	29.06	29.79	10	FEW NC			10.00	48	27	39	44	6	08 29.39 30.16
13 OVC 250		10.00			81	58	67	46	16	14	28.97	29.71	13	SCT NC			10.00	58	32	46	38	14	05 29.37 30.13
16 OVC 220		10.00			80	59	67	49	23	13	28.95	29.68	16	OVC 130			10.00	62	31	48	31	9	05 29.34 30.10
19 BKN 300		6.00 HZ			70	58	63	66	16	17	28.98	29.72	19	OVC 200			10.00	60	29	46	31	14	04 29.27 30.04
22 OVC 043		8.00			67	58	62	73	14	21	29.05	29.79	22	OVC 120			10.00	56	30	44	37	12	05 29.24 30.01

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

**BUFFALO, NY**  
**MAY 1999**

BLUF

WBAN # 14733

HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F			PRESSURE (INCHES,HG)	SATellite	TEMPERATURE °F			PRESSURE (INCHES,HG)				
					Dry Bulb	Dew Point	Wet Bulb			Wind Speed (MPH)	Direction Tens of Deg	Station					
	Sky Cover	Ceiling	100's of ft	OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)				OBSERVATION TIME (LST)	EFF CLD AMT Oktas	VISIBILITY (MILES)					
01	CLR	NC		SUNRISE: 0455	MAY 13	SUNSET: 1928			01	OVC	050		SUNRISE: 0449	MAY 19	SUNSET: 1934		
04	CLR	NC		10.00		46 31 40 56 5 10 29.25 30.01		01	OVC	040	10.00 -RA		58 57 57 97 8 20 29.22 29.97				
07	CLR	NC		10.00		41 32 37 70 9 06 29.23 30.00		04	OVC	004	10.00 -RA		58 55 56 90 10 22 29.20 29.96				
10	FEW	NC		10.00		47 33 41 59 14 06 29.26 30.02		07	OVC	011	4.00 BR		54 53 53 97 12 23 29.24 30.00				
13	SCT	NC		10.00		55 35 46 47 10 05 29.24 30.01		10	OVC		9.00		54 50 52 87 9 26 29.30 30.06				
16	BKN	250		10.00		61 36 49 39 14 05 29.22 29.98		13	FEW	NC	10.00		58 49 53 72 18 22 29.32 30.08				
19	OVC	250		10.00		59 35 48 41 17 06 29.21 29.98		16	SCT	NC	10.00		57 50 53 78 15 23 29.34 30.10				
22	BKN	250		10.00		55 36 46 49 15 05 29.25 30.02		19	FEW	NC	10.00		55 51 53 87 9 23 29.36 30.13				
				SUNRISE: 0454	MAY 14	SUNSET: 1929			22	FEW	NC	10.00		53 46 49 77 7 35 29.41 30.18			
01	BKN	200		10.00		50 33 42 52 13 07 29.30 30.07		01	CLR	NC	SUNRISE: 0448	MAY 20	SUNSET: 1935				
04	SCT	NC		10.00		44 32 39 63 7 04 29.33 30.09		04	CLR	NC	10.00		47 43 45 86 3 02 29.43 30.20				
07	SCT	NC		10.00		50 32 42 50 9 07 29.38 30.14		07	FEW	NC	10.00		45 42 44 90 0 00 29.45 30.22				
10	BKN	280		10.00		63 32 48 31 5 VR 29.43 30.19		10	SCT	NC	10.00		48 43 46 83 5 20 29.49 30.25				
13	BKN	300		10.00		71 32 52 24 6 VR 29.41 30.17		13	FEW	NC	10.00		57 47 52 69 9 25 29.50 30.26				
16	BKN	300		10.00		69 31 51 24 20 05 29.41 30.17		16	SCT	NC	10.00		62 47 54 58 8 26 29.47 30.24				
19	BKN	200		10.00		64 31 49 29 9 07 29.43 30.19		19	FEW	NC	10.00		63 47 54 56 13 22 29.45 30.21				
22	BKN	200		10.00		56 39 48 53 8 09 29.46 30.22		22	CLR	NC	10.00		60 44 52 56 7 23 29.42 30.19				
				SUNRISE: 0452	MAY 15	SUNSET: 1930						SUNRISE: 0447	MAY 21	SUNSET: 1936			
01	BKN	200		10.00		54 39 47 57 5 10 29.46 30.22		01	CLR	NC	10.00		48 45 47 89 6 17 29.41 30.17				
04	SCT	NC		10.00		53 41 47 64 7 15 29.47 30.23		04	CLR	NC	10.00		45 43 44 93 5 17 29.39 30.16				
07	BKN	200		10.00		55 43 49 64 3 10 29.50 30.26		07	BKN	300	10.00		52 45 48 77 6 19 29.41 30.18				
10	BKN	300		10.00		68 44 55 42 3 VR 29.52 30.28		10	SCT	NC	10.00		66 46 55 49 5 20 29.49 30.15				
13	BKN	200		10.00		74 43 57 33 3 VR 29.48 30.23		13	BKN	300	10.00		71 43 56 36 7 22 29.32 30.08				
16	BKN	140		10.00		71 48 58 44 15 36 29.43 30.19		16	OVC	300	10.00		72 45 57 38 9 24 29.28 30.04				
19	BKN	180		10.00		70 48 58 46 14 08 29.41 30.16		19	OVC	250	10.00		68 43 55 41 5 23 29.27 30.03				
22	FEW	NC		10.00		62 47 54 58 8 08 29.42 30.18		22	OVC	250	10.00		61 45 53 56 6 14 29.26 30.01				
				SUNRISE: 0451	MAY 16	SUNSET: 1931						SUNRISE: 0446	MAY 22	SUNSET: 1937			
01	CLR	NC		10.00		57 46 51 67 7 16 29.43 30.19		01	BKN	200	10.00		56 47 51 72 7 15 29.23 29.98				
04	BKN	170		10.00		56 43 49 62 8 19 29.47 30.22		04	BKN	200	10.00		55 47 51 74 6 14 29.19 29.94				
07	SCT	NC		10.00		59 43 51 56 8 16 29.50 30.26		07	OVC	150	10.00		60 50 55 70 5 14 29.20 29.95				
10	BKN	300		10.00		68 43 55 41 8 15 29.49 30.24		10	OVC	200	10.00		72 52 60 50 0 00 29.19 29.95				
13	SCT	NC		10.00		73 43 57 34 10 10 29.43 30.19		13	OVC	130	10.00		75 54 63 48 6 36 29.16 29.91				
16	SCT	NC		10.00		77 43 58 30 3 VR 29.38 30.13		16	OVC	070	10.00		67 56 60 68 8 32 29.18 29.93				
19	SCT	NC		10.00		73 44 57 36 6 04 29.36 30.11		19	OVC	060	7.00 -RA		62 57 59 84 6 02 29.18 29.94				
22	CLR	NC		10.00		63 47 54 56 6 19 29.38 30.13		22	OVC	075	6.00 -RA BR		60 58 59 93 9 33 29.18 29.93				
				SUNRISE: 0450	MAY 17	SUNSET: 1932						SUNRISE: 0445	MAY 23	SUNSET: 1938			
01	CLR	NC		10.00		60 45 52 58 10 17 29.35 30.10		01	OVC	090	4.00 -RA BR		59 58 58 96 10 36 29.14 29.89				
04	CLR	NC		10.00		58 47 52 67 9 16 29.36 30.12		04	OVC	100	5.00 BR		58 56 57 93 7 04 29.12 29.88				
07	BKN	090		10.00		61 49 54 65 10 17 29.38 30.13		07	BKN	120	9.00		58 54 56 87 9 02 29.12 29.88				
10	OVC	300		10.00		74 54 62 50 10 19 29.35 30.11		10	OVC	110	10.00		61 53 57 75 7 01 29.12 29.86				
13	SCT	NC		10.00		81 59 67 47 7 VR 29.29 30.04		13	OVC	200	10.00		65 55 59 70 7 03 29.07 29.82				
16	SCT	NC		10.00		83 60 68 46 13 22 29.25 30.00		16	OVC	200	10.00		69 56 61 63 7 34 29.02 29.76				
19	FEW	NC		10.00		79 58 66 49 8 21 29.22 29.97		19	OVC	140	9.00		63 57 59 81 6 23 28.98 29.73				
22	CLR	NC		10.00		73 55 62 53 13 17 29.23 29.97		22	OVC	085	5.00 BR		59 56 57 90 5 20 28.93 29.67				
				SUNRISE: 0449	MAY 18	SUNSET: 1933						SUNRISE: 0444	MAY 24	SUNSET: 1939			
01	SCT	NC		10.00		67 54 59 63 12 18 29.25 29.99		01	OVC	140	7.00		59 56 57 90 5 11 28.83 29.58				
04	SCT	NC		10.00		65 54 59 68 13 17 29.20 29.95		04	OVC	085	3.00 -RA BR		60 59 59 96 5 17 28.76 29.50				
07	BKN	250		10.00		68 57 61 68 10 18 29.22 29.97		07	OVC	042	1.00 -RA BR		60 58 59 93 10 15 28.68 29.42				
10	SCT	NC		10.00		77 61 67 58 12 20 29.22 29.96		10	OVC	006	2.50 RA BR		57 56 56 96 10 23 28.65 29.40				
13	SCT	NC		10.00		83 62 69 49 10 23 29.18 29.92		13	OVC	006	2.50 RA BR		56 55 55 97 15 24 28.65 29.39				
16	OVC	070		10.00		83 60 68 46 0 00 29.12 29.85		16	BKN	045	10.00		53 49 51 86 21 23 28.71 29.46				
19	OVC	055		7.00 -RA		62 61 61 96 10 21 29.19 29.94		19	OVC	017	10.00 -RA		51 48 50 89 21 23 28.76 29.51				
22	OVC	027		10.00		59 57 58 93 13 23 29.23 29.98		22	OVC	033	10.00 -RA		50 48 49 93 20 23 28.77 29.52				

# OBSERVATIONS AT 3-HOURLY INTERVALS

# BUFFALO, NY

MAY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES.HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES.HG)														
	SKY COVER	CEILING	100'S OF FT		OBSERVATION TIME (LST)	EFF CLD AMT	VISIBILITY (MILES)		DRY BULB	DEW POINT	WET BULB	SKY COVER	CEILING	100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT	VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED MPH	DIRECTION TENS OF DEG	STATION	SEA LEVEL									
01	OVC	028						SUNRISE: 0444	MAY 25	SUNSET: 1940			01	CLR	NC					SUNRISE: 0440	MAY 31	SUNSET: 1945												
04	OVC	022						10.00	-RA	47	44	46	90	21	23	28.77	29.52	04	FEW	NC				10.00	62	56	59	81	3	15	29.35	30.10		
07	OVC	028						6.00	+RA BR	47	44	46	90	23	21	28.75	29.51	07	SCT	NC				10.00	60	54	57	80	7	15	29.32	30.06		
10	OVC	023						10.00		46	44	45	93	14	25	28.78	29.53	10	SCT	NC				10.00	67	56	61	68	6	16	29.31	30.06		
13	OVC	047						10.00	-RA	46	43	45	89	22	24	28.83	29.59	13	OVC	180				10.00	82	55	66	40	13	23	29.28	30.03		
16	OVC	040						10.00	-RA	51	43	47	74	25	24	28.86	29.62	16	OVC	130				8.00	79	58	66	49	8	23	29.26	30.01		
19	OVC	017						10.00		49	46	47	90	23	23	28.85	29.61	19	OVC	110				10.00	73	60	65	64	10	22	29.24	30.00		
22	OVC	024						10.00		49	44	47	83	25	24	28.87	29.63	22	OVC	110				8.00	69	59	63	70	7	21	29.21	29.96		
								SUNRISE: 0443	MAY 26	SUNSET: 1941																								
01	OVC	033						10.00	-RA	49	46	47	90	21	25	28.88	29.63	01	CLR	NC				10.00	62	56	59	81	3	15	29.35	30.10		
04	OVC	019						10.00	-RA	48	45	47	89	14	25	28.90	29.66	04	FEW	NC				10.00	60	54	57	80	7	15	29.32	30.06		
07	OVC	018						10.00		49	45	47	86	14	25	28.96	29.71	10	SCT	NC				10.00	67	56	61	68	6	16	29.31	30.06		
10	OVC	011						10.00	DZ	50	47	48	89	12	23	29.01	29.77	13	OVC	180				10.00	82	55	66	40	13	23	29.28	30.03		
13	OVC	013						2.50	-RA BR	50	48	49	93	16	24	29.05	29.81	16	OVC	130				8.00	79	58	66	49	8	23	29.26	30.01		
16	OVC	013						10.00		50	47	48	89	16	23	29.08	29.84	19	OVC	110				10.00	73	60	65	64	10	22	29.24	30.00		
22	OVC	050						10.00		51	47	49	86	14	26	29.11	29.87	22	OVC	110				10.00	69	59	64	73	7	15	29.18	29.93		
								SUNRISE: 0442	MAY 27	SUNSET: 1942																								
01	FEW	NC						10.00		47	44	46	90	6	25	29.17	29.94	01	FEW	NC				10.00	54	46	50	76	29.24	30.00	9.48	8	3	18
04	CLR	NC						8.00		43	42	43	97	8	20	29.16	29.93	04	SCT	NC				10.00	54	45	49	75	29.23	29.99	9.58	7	4	18
07	SCT	NC						10.00		51	40	46	66	13	24	29.20	29.97	10	SCT	NC				10.00	52	45	49	78	29.23	29.99	9.19	7	4	18
10	SCT	NC						10.00		55	46	50	72	14	23	29.21	29.97	13	FEW	NC				10.00	59	47	53	64	29.24	29.99	9.08	7	4	17
16	FEW	NC						10.00		59	45	52	60	18	25	29.18	29.94	16	FEW	NC				10.00	59	45	48	80	29.24	30.00	9.10	7	4	17
19	CLR	NC						10.00		56	44	50	65	16	24	29.19	29.95	22	CLR	NC				10.00	53	46	49	77	29.21	29.98	9.08	8	4	16
								SUNRISE: 0441	MAY 28	SUNSET: 1943																								
01	FEW	NC						10.00		52	47	49	83	8	21	29.21	29.97	01	SCT	NC				10.00	59	47	53	66	29.27	30.02	9.13	8	3	19
04	SCT	NC						10.00		51	46	49	83	8	22	29.22	29.99	04	BKN	250				10.00	62	47	54	61	29.27	30.02	9.77	8	3	20
07	BKN	250						10.00		56	48	52	75	9	22	29.27	30.03	10	SCT	NC				10.00	64	47	55	57	29.27	30.02	9.53	9	4	22
10	SCT	NC						10.00		62	49	55	62	17	23	29.30	30.06	13	CLR	NC				10.00	66	47	56	55	29.26	30.02	9.84	10	4	20
16	CLR	NC						10.00		67	49	57	53	18	23	29.29	30.05	16	CLR	NC				10.00	68	47	57	52	29.25	30.01	9.68	11	4	21
19	BKN	250						10.00		68	47	57	47	15	24	29.28	30.03	22	SCT	NC				10.00	66	44	54	45	29.26	30.02	9.08	8	4	17
								SUNRISE: 0441	MAY 29	SUNSET: 1943																								
01	FEW	NC						10.00		58	48	53	70	5	23	29.30	30.06	01	SCT	NC				10.00	54	46	50	76	29.24	30.00	9.48	8	3	19
04	SCT	NC						10.00		52	48	50	86	6	18	29.32	30.08	04	FEW	NC				10.00	62	47	54	61	29.27	30.02	9.77	8	3	20
07	FEW	NC						10.00		61	52	56	72	6	20	29.36	30.12	10	Few	NC				10.00	64	47	55	57	29.27	30.02	9.53	9	4	22
10	FEW	NC						10.00		73	53	61	50	7	23	29.40	30.15	13	CLR	NC				10.00	75	55	63	50	29.21	29.39	9.39	10	4	22
13	CLR	NC						10.00		75	55	63	50	10	21	29.39	30.15	16	FEW	NC				10.00	77	54	63	45	29.22	29.38	9.14	12	4	22
16	FEW	NC						10.00		77	54	63	45	10	22	29.38	30.14	19	Few	NC				10.00	72	55	62	55	29.23	29.37	9.13	12	4	22
19	FEW	NC						10.00		72	55	62	55	6	23	29.37	30.13	22	CLR	NC				10.00	60	54	57	80	29.21	29.41	9.16	12	4	24
22	CLR	NC						7.00		60	54	57	80	7	21	29.41	30.16																	
								SUNRISE: 0440	MAY 30	SUNSET: 1944																								
01	CLR	NC						7.00		57	53	55	87	6	16	29.41	30.17	01	CLR	NC				10.00	65	47	56	55	29.22	29.97	9.52	11	2	22
04	CLR	NC						10.00		54	50	52	87	7	17	29.43	30.19	04	SCT	NC				10.00	63	47	55	59	29.22	29.98	9.65	10	2	22
07	CLR	NC						10.00		63	53	57	70	7	19	29.46	30.22	10	CLR	NC				10.00	77	52	62	42	29.23	29.47	9.52	9	2	21
10	CLR	NC						10.00		77	52	62	42	9	23	29.47	30.22	13	CLR	NC				10.00	80	52	63	38	29.23	29.45	9.20	9	3	19
13																																		

MAY 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	0.00	
02													02												02	0.00	
03													03												03	0.00	
04													04												04	0.00	
05													05												05	0.00	
06													06												06	0.00	
07													07	0.10	0.02	0.17										07	0.29
08													08	0.08											08	0.65	
09	T	T			T	0.08	0.12	0.02	0.02	T	0.07	0.05	0.02	09												09	0.01
10					T	0.01							10													10	0.00
11													11													11	0.00
12													12													12	0.00
13													13													13	0.00
14													14													14	0.00
15													15													15	0.00
16													16													16	0.00
17													17													17	0.00
18													18													18	0.56
19	0.01	T	T	0.02	T	T							19													19	0.03
20													20													20	0.00
21													21													21	0.00
22													22													22	0.13
23	0.01	T	0.03	0.03	0.04	0.03	0.05	0.04	0.15	0.01	0.10	0.02	23													23	0.01
24													24	0.04	0.04	0.02	0.01	0.02	0.04	0.01	T	0.03				24	0.73
25	0.01		0.02	0.04	0.01	0.01	0.02	0.01	0.01	0.04			25													25	0.37
26	0.03	0.01	0.02	0.01	T	T	T	T	T	T	T	T	26	T	0.01	T	T									26	0.08
27													27													27	0.00
28													28													28	0.00
29													29													29	0.00
30													30													30	0.00
31													31													31	T

PUBLISHED BY: NCDC, ASHEVILLE, NC.

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data. M = Missing Data.

\* = Data distribution unknown.  
First HPD value that follows is the total accumulated amount.

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.14	0.21	0.26	0.30	0.39	0.50	0.54	0.54	0.54	0.54	0.54	0.54
ENDED: DATE	18	18	18	18	18	18	18	18	18	18	18	18
ENDED: TIME	1729	1734	1735	1736	1736	1741	1751	1751	1751	1751	1751	1751

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.



MAY 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19



**JUNE 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

**BUFFALO, NY**  
**JUNE 1999**

DATE	TEMPERATURE °F						DEG DAYS BASE 65°		WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND		SPEED = MPH DIR = TENS OF DEGREES				DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING		0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	SPEED	DIR	DIR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
										DEPTH	WATER EQUIV	SNOW FALL	WATER EQUIV	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	8010	8011	8012	8013	8014	8015	8016	8017	8018	8019	8020	8021	8022	8023	8024	8025	8026	8027	8028	8029	8030	8031	8032	8033	8034	8035	8036	8037	8038	8039	8040	8041	8042	8043	8044	8045	8046	8047	8048	8049	8050	8051	8052	8053	8054	8055	8056	8057	8058	8059	8060	8061	8062	8063	8064	8065	8066	8067	8068	8069	8070	8071	8072	8073	8074	8075	8076	8077	8078	8079	8080	8081	8082	8083	8084	8085	8086	8087	8088	8089	8090	8091	8092	8093	8094	8095	8096	8097	8098	8099	80100	80101	80102	80103	80104	80105	80106	80107	80108	80109	80110	80111	80112	80113	80114	80115	80116	80117	80118	80119	80120	80121	80122	80123	80124	80125	80126	80127	80128	80129	80130	80131	80132	80133	80134	80135	80136	80137	80138	80139	80140	80141	80142	80143	80144	80145	80146	80147	80148	80149	80150	80151	80152	80153	80154	80155	80156	80157	80158	80159	80160	80161	80162	80163	80164	80165	80166	80167	80168	80169	80170	80171	80172	80173	80174	80175	80176	80177	80178	80179	80180	80181	80182	80183	80184	80185	80186	80187	80188	80189	80190	80191	80192	80193	80194	80195	80196	80197	80198	80199	80200	80201	80202	80203	80204	80205	80206	80207	80208	80209	80210	80211	80212	80213	80214	80215	80216	80217	80218	80219	80220	80221	80222	80223	80224	80225	80226	80227	80228	80229	80230	80231	80232	80233	80234	80235	80236	80237	80238	80239	80240	80241	80242	80243	80244	80245	80246	80247	80248	80249	80250	80251	80252	80253	80254	80255	80256	80257	80258	80259	80260	80261	80262	80263	80264	80265	80266	80267	80268	80269	80270	80271	80272	80273	80274	80275	80276	80277	80278	80279	80280	80281	80282	80283	80284	80285	80286	80287	80288	80289	80290	80291	80292	80293	80294	80295	80296	80297	80298	80299	80300	80301	80302	80303	80304	80305	80306	80307	80308	80309	80310	80311	80312	80313	80314	80315	80316	80317	80318	80319	80320	80321	80322	80323	80324	80325

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

JUNE 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01	T	T	0.03	T	T	T	T	0.01	T	0.05	0.10	0.01	01	T	0.11	0.13	0.01	T	0.25	T						01	0.19	
02													02													02	0.50	
03													03													03	0.01	
04													04													04	0.00	
05													05													05	0.00	
06													06													06	0.00	
07													07													07	0.00	
08													08													08	0.00	
09													09													09	0.00	
10													10													10	T	
11													11													11	0.00	
12													12													12	0.00	
13													13													13	0.00	
14													14													14	0.29	
15													15	0.05	0.02	0.14										15	0.00	
16													16													16	0.00	
17													17													17	0.03	
18													18													18	0.00	
19													19													19	0.00	
20													20													20	0.00	
21													21													21	0.00	
22													22													22	0.00	
23													23													23	0.00	
24													24													24	0.00	
25													25													25	0.22	
26													26													26	0.00	
27													27													27	0.04	
28													28													28	0.06	
29													29													29	0.59	
30	0.04	0.02	T	T	0.25	0.26	0.06	T					30													30	0.00	

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+ FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy    '=' = Moderate    '-' = Light			

## BUFFALO, NY JUNE 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CELIOMETER	MN-MN SATELLITE	CELIOMETER	SATELLITE	
01	0	0					2.50 10.00
02	160	18					1.00 10.00
03	25	3					5.00 10.00
04	912	100					6.00 10.00
05	708	78					10.00 10.00
06	558	61					4.00 10.00
07	814	89					2.50 10.00
08	880	96					6.00 10.00
09	916	100					8.00 10.00
10	700	76					9.00 10.00
11	888	97					8.00 10.00
12	919	100					9.00 10.00
13	834	91					10.00 10.00
14	225	24					4.00 10.00
15	310	34					10.00 10.00
16	610	66					10.00 10.00
17	70	8					10.00 10.00
18	893	97					5.00 10.00
19	444	48					10.00 10.00
20	755	82					10.00 10.00
21	877	95					10.00 10.00
22	900	98					10.00 10.00
23	618	67					10.00 10.00
24	156	17					7.00 10.00
25	413	45					1.00 10.00
26	921	100					8.00 10.00
27	210	23					3.00 10.00
28	570	62					4.00 10.00
29	288	31					2.50 10.00
30	473	51					10.00 10.00
MONTHLY AVGS							6.85 10.00
SUNSHINE (MINUTES)							
Total: 17047 Possible: 27515 Percent Possible: 62							
NUMBER OF DAYS WITH: SKY CONDITION							
CLR PTLY CLDY CLOUDY MISSING 30							
MINIMUM VISIBILITY (MILES) <= 0.25 <= 3.0 >= 7.0							
0 6 17							

## OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**

JUNE 1999

BLW

WBAN # 1473

SATELLITE				JUNE 1999								BUF				WBAN # 14733											
HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST) EFF CLD AMT Orbs	WEATHER				TEMPERATURE °F		WIND		PRESSURE (INCHES,HG)		SATellite	OBSERVATION TIME (LST)	EFF CLD AMT Orbs	WEATHER				TEMPERATURE °F		WIND		PRESSURE (INCHES,HG)		
				DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
01	OVC	110		SUNRISE: 0439	JUN 01	SUNSET: 1946						01	CLR	NC		SUNRISE: 0437	JUN 07	SUNSET: 1950									
04	OVC	060		8.00 -RA		68	62	64	81	9 17	29.16	29.90	01	SCT	NC	5.00 BR	72	69	70	91	8 23	29.30	30.05				
07	OVC	100		7.00 -RA		66	63	64	90	9 21	29.16	29.91	04	SCT	NC	4.00 BR	69	66	67	90	7 22	29.27	30.02				
10	OVC	026		9.00 2.50 -RA BR		69	62	65	78	17 20	29.14	29.90	07	CLR	NC	4.00 HZ	74	68	70	82	12 23	29.29	30.03				
13	OVC	031		6.00 HZ		65	64	64	97	10 21	29.17	29.92	10	FEW	NC	4.00 HZ	76	68	71	77	17 22	29.29	30.04				
16	OVC	031		8.00		68	65	66	90	12 21	29.16	29.92	13	CLR	NC	4.00 HZ	79	70	73	74	15 22	29.24	29.99				
19	OVC	033		9.00		73	65	68	76	12 21	29.14	29.89	16	SCT	NC	9.00	81	65	70	58	16 23	29.19	29.93				
22	OVC	100		8.00		71	64	67	79	14 19	29.15	29.90	19	FEW	NC	10.00	80	63	69	56	14 23	29.13	29.87				
				SUNRISE: 0439	JUN 02	SUNSET: 1947						22	CLR	NC	10.00	74	63	67	69	15 23	29.14	29.88					
01	OVC	034		7.00		68	64	66	87	8 19	29.13	29.88	01	SCT	NC	SUNRISE: 0437	JUN 08	SUNSET: 1951									
04	OVC	037		6.00 BR		67	63	64	87	8 20	29.12	29.86	04	CLR	NC	10.00	70	62	65	76	14 24	29.12	29.87				
07	OVC	029		6.00 HZ		70	65	67	84	12 20	29.12	29.86	07	BKN	065	10.00	63	61	62	93	10 22	29.13	29.88				
10	OVC	028		9.00		75	67	70	76	13 19	29.09	29.83	10	BKN	044	10.00	69	61	64	76	12 23	29.15	29.90				
13	OVC	032		7.00		78	68	71	71	14 19	29.04	29.78	13	FEW	NC	10.00	77	62	68	60	9 24	29.15	29.90				
16	BKN	038		6.00 HZ		72	67	69	84	3 VR	28.98	29.72	16	SCT	NC	10.00	78	62	68	58	16 24	29.16	29.90				
19	BKN	100		10.00		63	60	61	90	13 21	29.00	29.74	19	BKN	065	10.00	76	61	67	60	21 24	29.14	29.89				
22	SCT	NC		10.00		62	58	60	86	14 24	29.02	29.76	22	FEW	NC	10.00	71	61	65	71	9 22	29.13	29.88				
				SUNRISE: 0438	JUN 03	SUNSET: 1948						01	CLR	NC	SUNRISE: 0436	JUN 09	SUNSET: 1952										
01	OVC	006		6.00 BR		60	57	58	90	12 23	29.06	29.80	01	CLR	NC	8.00	63	60	61	90	5 25	29.18	29.93				
04	OVC	009		10.00		59	56	57	90	14 24	29.10	29.84	04	BKN	250	10.00	62	57	59	84	5 32	29.23	29.98				
07	OVC	009		5.00 -RA BR		58	55	56	90	9 24	29.17	29.93	07	BKN	250	10.00	64	59	61	84	6 03	29.28	30.03				
10	OVC	016		10.00		58	54	56	87	14 24	29.22	29.98	10	SCT	NC	10.00	71	61	65	71	3 36	29.31	30.06				
13	OVC	025		10.00		58	55	56	90	10 24	29.24	30.00	13	SCT	NC	10.00	78	62	68	58	7 VR	29.29	30.03				
16	OVC	020		10.00		59	52	55	78	9 33	29.29	30.05	16	FEW	NC	10.00	79	65	70	62	7 VR	29.29	30.04				
19	BKN	044		10.00		58	49	53	72	9 33	29.32	30.08	19	SCT	NC	10.00	76	58	65	54	6 06	29.30	30.05				
22	FEW	NC		10.00		54	48	51	80	5 25	29.37	30.13	22	SCT	NC	10.00	70	60	64	71	7 10	29.33	30.08				
				SUNRISE: 0438	JUN 04	SUNSET: 1948						01	CLR	NC	SUNRISE: 0436	JUN 10	SUNSET: 1952										
01	CLR	NC		10.00		50	48	49	93	3 18	29.37	30.14	01	OVC	110	10.00	68	60	63	76	7 13	29.33	30.08				
04	CLR	NC		6.00 BR		47	47	47	100	3 21	29.39	30.16	04	OVC	150	10.00	66	60	62	81	8 12	29.33	30.09				
07	SCT	NC		10.00		53	50	51	89	0 00	29.45	30.21	07	BKN	110	10.00	69	63	65	81	6 08	29.38	30.13				
10	BKN	300		10.00		63	44	53	50	6 11	29.44	30.20	10	CLR	NC	10.00	80	66	71	62	3 VR	29.38	30.13				
13	FEW	NC		10.00		69	41	54	36	8 06	29.44	30.20	13	FEW	NC	10.00	87	68	74	53	6 10	29.37	30.11				
16	BKN	250		10.00		69	42	55	38	6 34	29.41	30.17	16	FEW	NC	10.00	87	69	75	55	8 06	29.33	30.08				
19	SCT	NC		10.00		66	40	53	39	5 02	29.39	30.15	19	FEW	NC	10.00	84	68	73	59	10 10	29.33	30.08				
22	CLR	NC		10.00		58	42	50	56	5 09	29.40	30.16	22	CLR	NC	10.00	75	66	69	74	8 17	29.38	30.12				
				SUNRISE: 0437	JUN 05	SUNSET: 1949						01	CLR	NC	SUNRISE: 0436	JUN 11	SUNSET: 1953										
01	FEW	NC		10.00		52	41	47	66	7 13	29.39	30.15	01	CLR	NC	8.00	69	65	66	87	9 16	29.39	30.14				
04	BKN	220		10.00		51	40	46	66	7 15	29.38	30.14	04	CLR	NC	10.00	66	61	63	84	8 15	29.41	30.15				
07	BKN	220		10.00		59	46	52	62	9 17	29.41	30.17	07	CLR	NC	9.00	69	62	65	78	9 17	29.45	30.19				
10	SCT	NC		10.00		72	52	60	50	12 19	29.40	30.15	10	CLR	NC	10.00	78	65	70	64	0 00	29.44	30.19				
13	OVC	220		10.00		76	51	62	42	9 19	29.38	30.13	13	CLR	NC	10.00	86	69	74	57	12 08	29.40	30.14				
16	BKN	250		10.00		79	55	64	44	9 21	29.34	30.09	16	SCT	NC	10.00	88	68	74	52	3 VR	29.37	30.11				
19	BKN	250		10.00		75	56	64	52	5 22	29.32	30.07	19	FEW	NC	10.00	85	67	73	55	9 18	29.35	30.09				
22	FEW	NC		10.00		68	57	62	68	6 18	29.32	30.07	22	CLR	NC	10.00	75	65	69	71	13 17	29.40	30.15				
				SUNRISE: 0437	JUN 06	SUNSET: 1950						01	CLR	NC	SUNRISE: 0436	JUN 12	SUNSET: 1953										
01	BKN	130		10.00		67	59	62	76	9 19	29.33	30.08	01	CLR	NC	10.00	70	63	66	79	9 17	29.42	30.16				
04	SCT	NC		10.00		69	60	64	73	10 19	29.32	30.06	04	CLR	NC	10.00	67	61	63	81	9 16	29.42	30.16				
07	BKN	200		10.00		74	63	67	69	13 21	29.35	30.09	07	CLR	NC	10.00	70	59	63	68	8 15	29.44	30.18				
10	OVC	250		7.00		77	68	71	74	14 24	29.35	30.09	10	CLR	NC	10.00	80	60	67	51	0 00	29.44	30.18				
13	OVC	250		6.00 HZ		80	71	74	74	23 24	29.32	30.06	13	CLR	NC	10.00	86	63	71	46	5 VR	29.41	30.15				
16	OVC	250		8.00		82	71	74	69	17 24	29.29	30.04	16	CLR	NC	10.00	89	56	68	33	7 VR	29.35	30.09				
19	BKN	250		6.00 HZ		75	68	70	79	12 22	29.27	30.02	19	FEW	NC	10.00	85	52	65	32	8 17	29.36	30.11				
22	SCT	NC		6.00 HZ		73	68	70	84	7 23	29.29	30.04	22	CLR	NC	10.00	74	54	62	50	8 16	29.38	30.12				

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

JUNE 1999

BUF

WBAN # 14733

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Okas.	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Okas.	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)			
						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
01	CLR	NC			SUNRISE: 0436	JUN 13	SUNSET: 1954	10.00	69 50 58 51	5 15	29.38 30.12	01	FEW	NC					SUNRISE: 0436	JUN 19	SUNSET: 1956	10.00	55 51 53 87	7 19	29.59 30.36	10.00	30.36
04	CLR	NC						10.00	65 55 59 70	3 16	29.36 30.11	04	FEW	NC						52 50 51 93	6 17	29.59 30.36	10.00	30.36			
07	CLR	NC						10.00	70 61 64 73	8 18	29.39 30.13	07	FEW	NC						58 52 55 81	5 18	29.63 30.40	10.00	30.40			
10	CLR	NC						10.00	79 64 69 60	9 19	29.36 30.11	10	SCT	NC						70 53 60 55	3 17	29.62 30.39	10.00	30.39			
13	SCT	NC						10.00	84 64 71 51	10 14	29.32 30.06	13	BKN	085						73 52 61 48	0 00	29.60 30.37	10.00	30.37			
16	SCT	NC						10.00	83 64 71 53	7 20	29.27 30.01	16	OVC	065						75 54 63 48	8 01	29.58 30.34	10.00	30.34			
19	SCT	NC						10.00	80 63 69 56	7 17	29.24 29.98	19	OVC	200						70 52 60 53	8 04	29.57 30.33	10.00	30.33			
22	CLR	NC						10.00	73 64 67 74	6 17	29.23 29.98	22	OVC	150						66 50 57 56	7 08	29.57 30.32	10.00	30.32			
01	SCT	NC			SUNRISE: 0436	JUN 14	SUNSET: 1954	10.00	69 62 65 78	7 14	29.17 29.92	01	OVC	150						60 52 56 75	5 16	29.57 30.32	10.00	30.32			
04	BKN	250						10.00	68 60 63 76	8 16	29.13 29.88	04	BKN	085						59 51 55 75	6 15	29.56 30.32	10.00	30.32			
07	OVC	150						10.00	71 62 65 73	13 17	29.09 29.83	07	BKN	150						62 52 56 70	6 16	29.59 30.34	10.00	30.34			
10	OVC	080	6.00	-RA BR				10.00	69 65 66 87	20 21	29.08 29.82	10	SCT	NC						74 53 62 48	8 22	29.57 30.32	10.00	30.32			
13	BKN	020	6.00	BR				10.00	69 67 68 93	14 20	29.04 29.78	13	BKN	090						74 52 61 46	5 VR	29.55 30.30	10.00	30.30			
16	OVC	022						10.00	66 61 63 84	17 30	29.08 29.82	16	BKN	065						77 53 63 44	6 07	29.50 30.25	10.00	30.25			
19	SCT	NC						10.00	68 54 60 61	13 30	29.13 29.88	19	SCT	NC						72 55 62 55	12 05	29.49 30.24	10.00	30.24			
22	CLR	NC						10.00	61 53 57 75	10 30	29.20 29.96	22	BKN	250						67 54 59 63	7 07	29.51 30.26	10.00	30.26			
01	BKN	055			SUNRISE: 0436	JUN 15	SUNSET: 1955	10.00	58 53 55 84	10 28	29.23 29.98	01	BKN	150						63 54 58 73	5 10	29.50 30.26	10.00	30.26			
04	BKN	065						10.00	53 45 49 74	9 29	29.28 30.03	04	SCT	NC						60 53 56 78	3 18	29.51 30.27	10.00	30.27			
07	BKN	026						10.00	50 42 46 74	14 27	29.33 30.09	07	CLR	NC						64 55 59 73	3 18	29.54 30.30	10.00	30.30			
10	OVC	034						10.00	53 45 49 74	10 30	29.38 30.14	10	CLR	NC						73 56 63 55	3 VR	29.54 30.29	10.00	30.29			
13	OVC	050						10.00	57 41 49 55	10 26	29.39 30.15	13	SCT	NC						79 55 65 44	10 03	29.49 30.24	10.00	30.24			
16	BKN	065						10.00	59 43 51 56	8 26	29.40 30.16	16	SCT	NC						80 56 65 44	13 04	29.45 30.20	10.00	30.20			
19	SCT	NC						10.00	57 35 47 44	9 35	29.42 30.18	19	CLR	NC						76 53 62 45	10 06	29.45 30.20	10.00	30.20			
22	CLR	NC						10.00	52 40 46 64	0 00	29.45 30.22	22	CLR	NC						68 52 59 57	6 08	29.46 30.21	10.00	30.21			
01	CLR	NC			SUNRISE: 0436	JUN 16	SUNSET: 1955	10.00	45 40 43 83	3 15	29.43 30.20	01	CLR	NC						61 50 55 67	6 12	29.45 30.20	10.00	30.20			
04	SCT	NC						10.00	42 39 41 89	5 14	29.43 30.20	04	FEW	NC						56 48 52 75	7 13	29.44 30.20	10.00	30.20			
07	SCT	NC						10.00	50 41 46 71	3 15	29.45 30.22	07	SCT	NC						65 54 59 68	6 17	29.47 30.22	10.00	30.22			
10	SCT	NC						10.00	59 39 49 48	5 VR	29.43 30.20	10	FEW	NC						77 54 63 45	0 00	29.47 30.22	10.00	30.22			
13	SCT	NC						10.00	64 40 52 41	3 VR	29.39 30.16	13	SCT	NC						82 51 64 34	7 04	29.42 30.17	10.00	30.17			
16	BKN	140						10.00	64 43 53 46	12 02	29.37 30.13	16	CLR	NC						83 54 65 37	9 34	29.38 30.13	10.00	30.13			
19	OVC	150						10.00	61 37 49 41	10 01	29.35 30.11	19	SCT	NC						77 57 65 50	9 04	29.36 30.11	10.00	30.11			
22	OVC	110						10.00	57 40 49 53	6 05	29.36 30.12	22	SCT	NC						69 56 61 63	7 11	29.35 30.11	10.00	30.11			
01	OVC	100			SUNRISE: 0436	JUN 17	SUNSET: 1956	10.00	55 42 49 62	0 00	29.35 30.11	01	SCT	NC						61 50 55 67	6 16	29.34 30.09	10.00	30.09			
04	OVC	100						10.00	54 42 48 64	3 05	29.35 30.11	04	BKN	090						63 54 58 73	7 17	29.33 30.08	10.00	30.08			
07	OVC	080						10.00	55 43 49 64	7 02	29.37 30.13	07	OVC	090						68 56 61 66	5 18	29.37 30.12	10.00	30.12			
10	OVC	060	10.00	-RA				10.00	54 48 51 80	0 00	29.40 30.16	10	BKN	280						79 57 65 47	12 21	29.34 30.08	10.00	30.08			
13	OVC	060						10.00	58 45 51 62	3 16	29.40 30.16	13	BKN	300						83 53 65 36	9 17	29.28 30.03	10.00	30.03			
16	BKN	080						10.00	60 46 53 60	7 09	29.40 30.16	16	BKN	250						85 52 65 32	6 23	29.23 29.98	10.00	29.98			
19	BKN	040						10.00	59 46 52 62	13 27	29.43 30.19	19	BKN	250						81 52 64 37	5 22	29.22 29.97	10.00	29.97			
22	SCT	NC						10.00	53 50 51 89	5 29	29.46 30.22	22	BKN	250						71 60 64 68	5 12	29.22 29.97	10.00	29.97			
01	CLR	NC			SUNRISE: 0436	JUN 18	SUNSET: 1956	10.00	50 48 49 93	3 28	29.47 30.24	01	SCT	NC						65 54 59 68	6 16	29.34 29.96	10.00	29.96			
04	CLR	NC						8.00	47 46 46 97	0 00	29.49 30.26	04	BKN	090						69 54 60 59	7 15	29.19 29.93	10.00	29.93			
07	CLR	NC						5.00	53 50 51 89	3 20	29.54 30.30	07	BKN	250						71 56 62 59	9 16	29.19 29.94	10.00	29.94			
10	SCT	NC						10.00	62 49 55 62	7 VR	29.56 30.32	10	OVC	250						80 60 67 51	12 20	29.18 29.93	10.00	29.93			
13	FEW	NC						10.00	66 48 46 52	15 24	29.54 30.31	13	OVC	250						84 62 70 48	12 23	29.17 29.92	10.00	29.92			
16	FEW	NC						10.00	66 49 57 54	15 23	29.54 30.30	16	OVC	130						82 64 70 55	6 22	29.13 29.88	10.00	29.88			
19	SCT	NC						10.00	63 49 55 60	13 24	29.54 30.30	19	OVC	140						79 65 70 62	8 15	29.12 29.87	10.00	29.87			
22	SCT	NC						10.00	61 53 57 75	7 22	29.57 30.33</																

# OBSERVATIONS AT 3-HOURLY INTERVALS

## BUFFALO, NY

JUNE 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)						
	SKY COVER	CEILING	100'S OF FT		OBSERVATION TIME (LST)	EFFECT CLD AMT	Other		VISIBILITY (MILES)	Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)	Speed (mph)	Direction Tens of Deg	Station	Sea Level	Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)	Speed (mph)	Direction Tens of Deg	Station	Sea Level	
SUNRISE: 0437 JUN 25 SUNSET: 1958																										
01	OVC	110							8.00	72	66	68	82	9	20	29.12	29.85									
04	OVC	080							5.00	-RA BR	69	67	68	93	8	21	29.11	29.84								
07	OVC	014							1.00	RA BR	66	64	65	93	5	33	29.14	29.89								
10	OVC	034							3.00	-RA BR	67	66	66	97	6	16	29.16	29.91								
13	BKN	090							10.00		75	69	71	82	8	24	29.16	29.91								
16	SCT	NC							10.00		80	67	71	64	10	20	29.14	29.88								
19	CLR	NC							10.00		76	64	68	67	8	22	29.15	29.90								
22	CLR	NC							10.00		68	63	65	84	6	22	29.19	29.94								
SUNRISE: 0438 JUN 26 SUNSET: 1958																										
01	CLR	NC							8.00		64	62	63	93	5	21	29.19	29.94								
04	CLR	NC							10.00		60	58	59	93	5	17	29.20	29.95								
07	SCT	NC							10.00		67	60	63	79	5	19	29.23	29.98								
10	FEW	NC							10.00		80	60	67	51	6	22	29.25	30.00								
13	SCT	NC							10.00		84	59	68	43	3	VR	29.22	29.96								
16	FEW	NC							10.00		85	57	67	39	7	VR	29.18	29.93								
19	SCT	NC							10.00		83	58	67	43	5	35	29.17	29.92								
22	SCT	NC							10.00		75	62	67	64	9	10	29.18	29.93								
SUNRISE: 0438 JUN 27 SUNSET: 1958																										
01	BKN	300							10.00		69	59	63	70	6	10	29.15	29.89								
04	BKN	250							10.00		67	59	62	76	6	14	29.12	29.87								
07	OVC	200							10.00		73	64	67	74	7	14	29.13	29.87								
10	OVC	250							10.00		85	70	75	61	12	22	29.12	29.85								
13	OVC	095							10.00		89	70	76	53	17	25	29.09	29.82								
16	OVC	250							6.00	-RA	81	73	75	77	8	20	29.07	29.80								
19	OVC	100							3.00	BR	76	73	74	91	9	15	29.02	29.75								
22	SCT	NC							7.00		75	72	73	90	5	15	29.00	29.73								
SUNRISE: 0438 JUN 28 SUNSET: 1958																										
01	OVC	032							6.00	-TSRA BR	72	71	71	97	8	25	28.99	29.72								
04	OVC	024							4.00	BR	72	71	71	97	7	21	28.97	29.70								
07	OVC	007							5.00	BR	72	71	71	97	10	25	28.97	29.70								
10	BKN	250							8.00		77	71	73	82	12	24	28.97	29.70								
13	BKN	250							10.00		80	69	73	69	14	26	28.93	29.67								
16	SCT	NC							10.00		82	68	73	63	9	24	28.90	29.64								
19	SCT	NC							10.00		77	66	70	69	9	23	28.87	29.60								
22	OVC	150							7.00		73	68	70	84	6	20	28.86	29.59								
SUNRISE: 0439 JUN 29 SUNSET: 1958																										
01	OVC	120							10.00		72	66	68	82	8	14	28.79	29.52								
04	OVC	011							2.50	-TSRA BR	69	68	68	96	6	29	28.73	29.46								
07	OVC	013							10.00		71	70	70	96	14	21	28.74	29.47								
10	OVC	017							10.00		73	68	70	84	14	27	28.79	29.53								
13	OVC	023							10.00		68	58	62	70	15	31	28.91	29.65								
16	BKN	039							10.00		69	55	61	61	14	32	28.98	29.72								
19	FEW	NC							10.00		67	50	57	55	13	30	29.05	29.79								
22	CLR	NC							10.00		60	50	55	70	6	27	29.13	29.88								
SUNRISE: 0439 JUN 30 SUNSET: 1958																										
01	CLR	NC							10.00		56	48	52	75	7	29	29.18	29.94								
04	CLR	NC							10.00		53	48	50	83	3	24	29.20	29.96								
07	FEW	NC							10.00		58	50	54	75	3	19	29.23	29.99								
10	BKN	150							10.00		64	51	57	63	5	VR	29.24	30.00								
13	OVC	150							10.00		69	54	60	59	9	08	29.24	29.99								
16	BKN	250							10.00		71	52	60	51	5	VR	29.23	29.98								
19	BKN	250							10.00		70	58	63	66	7	07	29.20	29.96								
22	SCT	NC							10.00		62	57	59	84	7	07	29.22	29.98								

JUNE 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12			
01	T	0.01	T	0.01	T	T		T	0.06	0.10	0.01	T	01													01	0.19	
02					T	T		T	0.10	0.10	T		02													02	0.50	
03														03													03	T
04														04													04	0.00
05														05													05	0.00
06														06													06	0.00
07														07													07	0.00
08														08													08	0.00
09														09													09	0.00
10														10													10	0.00
11														11													11	0.00
12														12													12	0.00
13														13													13	0.00
14														14	0.03	0.06	0.06									14	0.24	
15														15													15	0.00
16														16													16	0.00
17														17	0.01												17	0.03
18														18													18	0.00
19														19													19	0.00
20														20													20	0.00
21														21													21	0.00
22														22													22	0.00
23														23													23	0.00
24														24													24	0.00
25					T	T	0.02	0.01	0.11	T	0.01	0.26	0.01		25												25	0.42
26														26													26	0.00
27														27													27	0.04
28	0.06	0.01	T	T	0.24	0.26	0.06	0.01	T						28												28	0.08
29														29													29	0.56
30														30													30	0.00

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 2.06

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.22	0.24	0.24	0.25	0.29	0.31	0.44	0.49	0.51	0.52	0.56	0.56
ENDED: DATE	02	02	02	02	02	29	29	29	29	29	29	29
ENDED: TIME	1720	1720	1720	1724	1728	0430	0430	0453	0512	0517	0600	0600

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.

First HPD value that follows is the total accumulated amount.



JUNE 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA – National Weather Service / Department Of Transportation – Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19



**JULY 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42°56' N Long: 78°44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

DATE	TEMPERATURE °F								DEG DAYS BASE 65°	WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES				DATE		
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING			0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM 5-SEC	MAXIMUM 2-MIN		
											DEPTH	WATER EQUIV	SNOW FALL	WATER EQUIV	11	12	13	14	15	16	17	18	19
01	88	58	73	3	64	67	0	8			0	0.0	T	29.10	29.84	10.5	19	12.7	34	21	28	22	01
02	80	67	74	4	64	68	0	9	RA	RA BR	0	0.0	0.01	29.20	29.95	11.8	24	12.3	28	22	23	22	02
03	89	63	76	6	67	70	0	11	HZ		0	0.0	0.00	29.30	30.05	8.8	22	10.0	37	24	31	24	03
04	86	75	81	11	72	75	0	16			0	0.0	0.00	29.26	30.01	15.4	24	15.6	31	25	25	24	04
05	85	74	80	10	72	74	0	15			0	0.0	0.00	29.22	29.96	15.5	23	15.7	32	24	25	24	05
06	84	70	77	7	69	72	0	12	TS RA BR HZ		0	0.0	T	29.11	29.85	13.5	24	14.4	37	24	30	23	06
07	79	62	71	0	56	62	0	6	RA		0	0.0	0.01	29.19	29.93	12.2	25	13.7	37	24	29	24	07
08	74	57	66	-5	54	59	0	1	TS TSRA RA		0	0.0	0.06	29.23	29.97	8.0	27	9.8	23	25	18	25	08
09	80	61	71	0	60	64	0	6	RA BR HZ		0	0.0	0.07	29.03	29.78	10.0	22	12.9	38	23	29	24	09
10	71	58	65	-6	52	58	0	0	RA		0	0.0	0.01	29.17	29.92	10.6	31	11.9	25	30	21	30	10
11	75	54	65*	-6	49	57	0	0			0	0.0	0.00	29.44	30.20	2.8	28	5.1	16	25	14	26	11
12	83	54*	69	-2	51	59	0	4			0	0.0	0.00	29.45	30.21	4.1	11	6.8	20	01	18	02	12
13	82	60	71	0	55	61	0	6			0	0.0	0.00	29.39	30.14	4.0	20	5.7	15	14	11	21	13
14	86	61	74	3	56	63	0	9			0	0.0	0.00	29.36	30.11	4.9	22	6.7	20	24	14	27	14
15	84	66	75	4	64	69	0	10	HZ		0	0.0	0.00	29.34	30.08	12.2	23	12.7	31	24	25	25	15
16	86	67	77	6	69	72	0	12	BR HZ		0	0.0	0.00	29.35	30.10	11.2	23	11.6	29	25	23	23	16
17	88	70	79	8	71	73	0	14	BR HZ		0	0.0	0.00	29.34	30.08	10.7	23	11.1	26	24	22	24	17
18	86	70	78	6	70	73	0	13	TS BR HZ		0	0.0	0.00	29.33	30.07	6.6	22	7.2	16	25	15	24	18
19	78	65	72	0	65	67	0	7	RA BR		0	0.0	0.43	29.27	30.01	2.7	30	4.0	16	30	14	30	19
20	81	63	72	0	59	64	0	7	FG+ BR		0	0.0	0.00	29.36	30.11	6.8	06	7.8	22	02	17	04	20
21	79	61	70	-2	59	64	0	5			0	0.0	0.00	29.31	30.06	2.5	19	4.8	13	21	10	27	21
22	87	69	78	6	69	71	0	13	RA BR HZ		0	0.0	0.01	29.22	29.97	3.6	23	7.0	18	25	15	23	22
23	86	69	78	6	69	72	0	13	RA FG+ BR HZ		0	0.0	0.01	29.18	29.92	8.9	22	9.2	20	22	16	22	23
24	84	66	75	3	69	71	0	10	TS TSRA RA BR		0	0.0	0.19	29.06	29.80	9.1	24	10.6	33	31	28	30	24
25	86	67	77	5	65	68	0	12	TS RA		0	0.0	0.07	29.04	29.78	6.4	26	9.8	26	33	22	32	25
26	83	64	74	2	64	68	0	9			0	0.0	0.00	29.10	29.84	7.8	24	8.5	22	24	20	24	26
27	87	70	79	8	64	69	0	14	RA		0	0.0	0.00	29.15	29.89	6.6	27	8.5	24	25	20	24	27
28	90	66	78	7	59	66	0	13			0	0.0	0.03	29.09	29.83	6.1	24	7.1	24	25	20	24	28
29	84	69	77	6	66	69	0	12			0	0.0	0.00	28.96	29.70	11.3	24	12.1	24	22	20	25	29
30	90*	71	81*	10	69	72	0	16	TS TSRA RA BR		0	0.0	0.00	28.94	29.67	8.0	23	9.8	24	25	21	25	30
31	89	68	79	8	68	71	0	14			0	0.0	0.10	28.97	29.71	9.1	22	11.1	54*	31	41*	31	31
	83.5	65.0	74.3		63.2	67.4	0.0	9.6	< MONTHLY AVERAGES	TOTALS ->	0.0	1.00	29.21	29.95	2.9	21	9.9	< - MONTHLY AVERAGES					
	3.3	3.1	3.2		■■	<-----	DEPARTURE FROM NORMAL	----->	-2.08	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3													
<b>DEGREE DAYS</b>								GREATEST 24-HR PRECIPITATION: 0.43 DATE: 19		SEAS LEVEL PRESSURE DATE TIME													
MONTHLY TOTAL DEPARTURE								GREATEST 24-HR SNOWFALL: 0.0 DATE:		MAXIMUM MINIMUM		30.27	12	0654									
TOTAL DEPARTURE								GREATEST SNOW DEPTH: 0 DATE:		MAXIMUM MINIMUM		29.59	30	0254									
HEATING:	0	-5	0	-5				NUMBER OF DAYS WITH →	MAXIMUM TEMP ≥ 90: 2	MINIMUM TEMP ≤ 32: 0	PRECIPITATION ≥ 0.01 INCH: 12												
COOLING:	297	103	495	196					MAXIMUM TEMP ≤ 32: 0	MINIMUM TEMP ≤ 0: 0	PRECIPITATION ≥ 0.10 INCH: 3												
									THUNDERSTORMS: 6	HEAVY FOG: 2	SNOWFALL ≥ 10 INCH: 0												

JULY 1999

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

JULY 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	Water Equiv.	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24				
01													01							T	T				01	T			
02	0.01	T	T										02												02	0.01			
03													03												03	0.00			
04													04												04	0.00			
05													05												05	0.00			
06													06												06	T			
07													07												07	0.01			
08	T		T	0.03	0.03	T	0.01	T	T	0.01	T		08												08	0.06			
09													09	0.02	0.02	0.02										09	0.07		
10													10												10	0.01			
11													11												11	0.00			
12													12												12	0.00			
13													13												13	0.00			
14													14												14	0.00			
15													15												15	0.00			
16													16												16	0.00			
17													17												17	0.00			
18													18												18	0.00			
19													19												19	0.43			
20													20												20	0.00			
21													21												21	0.00			
22													22												22	0.01			
23													23												23	0.01			
24													24												24	0.19			
25	T	0.01	T	0.01	0.04	T	T						25	0.01											25	0.07			
26													26												26	0.00			
27													27												27	0.00			
28													28												28	0.03			
29													29												29	0.00			
30													30												30	0.00			
31													31	T											31	0.10			

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)  
 T = Trace precipitation amount  
 + = also occurs on earlier date  
 FG+ = Heavy fog, visibility .25 miles or less  
 BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		

Intensity (as indicated on pages 4 to 6):  
 '+' = Heavy    '-' = Moderate    '=' = Light

## BUFFALO, NY JULY 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	CELOMETER	SATELLITE	
01	420	46					7.00 10.00
02	710	77					6.00 10.00
03	314	34					6.00 10.00
04	812	89					7.00 10.00
05	915	100					7.00 10.00
06	340	37					5.00 10.00
07	826	90					10.00 10.00
08	555	61					5.00 10.00
09	52	8					1.00 10.00
10	460	51					10.00 10.00
11	883	97					10.00 10.00
12	902	99					10.00 10.00
13	625	69					10.00 10.00
14	892	99					9.00 10.00
15	847	94					4.00 10.00
16	851	94					3.00 6.00
17	729	81					3.00 8.00
18	560	62					3.00 10.00
19	37	4					1.50 10.00
20	575	64					.25 10.00
21	85	10					7.00 10.00
22	500	56					4.00 10.00
23	620	70					.25 10.00
24	515	58					3.00 10.00
25	476	54					10.00 10.00
26	711	80					9.00 10.00
27	835	95					10.00 10.00
28	880	100					8.00 10.00
29	605	69					10.00 10.00
30	799	91					10.00 10.00
31	110	13					6.00 10.00
MONTHLY AVGS							6.29 9.81
SUNSHINE (MINUTES)							
Total:	18441	Possible:	27863				
Percent Possible: 66							
NUMBER OF DAYS WITH: SKY CONDITION							
CLR	PTLY	CLDY	CLOUDY	MISSING			
31							
MINIMUM VISIBILITY (MILES)							
<=0.25	<=3.0	>=7.0					
2	8	16					

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
JULY 1999

BUF

WBAN # 14733

HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F				WIND	PRESSURE (INCHES.HG)		HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F				WIND	PRESSURE (INCHES.HG)												
					DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)		SPEED (MPH)	DIRECTION TENS OF DEG	STATION					DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	STATION													
01	SCT	NC			10.00				59	56	57	90	6	11	29.21	29.97	01	CLR	NC					SUNRISE: 0443	JUL 07	SUNSET: 1956								
04	SCT	NC			10.00				58	56	57	93	5	18	29.21	29.96	04	CLR	NC						68	54	60	61	7	26	29.17	29.91		
07	CLR	NC			10.00				66	61	63	84	6	17	29.20	29.96	07	CLR	NC						65	54	59	68	7	26	29.19	29.94		
10	OVC	250			9.00				76	65	69	69	7	13	29.16	29.91	10	FEW	NC						69	54	60	59	12	26	29.22	29.97		
13	OVC	080			7.00				84	68	73	59	16	18	29.08	29.81	13	FEW	NC						76	52	62	43	18	30	29.23	29.97		
16	OVC	060			8.00				86	67	73	53	20	19	28.99	29.72	16	FEW	NC						77	56	64	48	20	23	29.21	29.96		
19	OVC	150			10.00				83	65	71	55	23	21	28.96	29.70	19	FEW	NC						78	54	64	43	18	24	29.16	29.91		
22	OVC	042			10.00				75	67	70	76	18	21	29.03	29.77	22	FEW	NC						74	56	63	54	20	24	29.12	29.87		
					SUNRISE: 0440																			70	61	64	73	7	27	29.15	29.90			
01	OVC	020			9.00	-RA			73	69	70	87	13	23	29.07	29.80	01	BKN	110						10.00									
04	OVC	012			9.00				71	69	70	94	12	24	29.09	29.82	04	BKN	090						10.00									
07	BKN	013			8.00				71	67	68	87	9	25	29.14	29.88	07	SCT	NC						62	53	57	73	9	29	29.23	29.98		
10	FEW	NC			10.00				75	65	69	71	15	25	29.19	29.93	10	SCT	NC						69	50	58	51	9	31	29.26	30.01		
13	SCT	NC			10.00				78	60	67	54	21	24	29.23	29.97	13	BKN	300						73	49	59	43	7	33	29.26	30.01		
16	SCT	NC			10.00				78	61	67	56	21	23	29.25	29.99	16	BKN	160						71	54	61	55	16	22	29.24	30.00		
19	SCT	NC			10.00				75	63	67	66	10	24	29.26	30.01	19	OVC	140						70	56	62	61	14	25	29.21	29.97		
22	FEW	NC			10.00				70	63	66	79	7	20	29.31	30.06	22	OVC	110						68	57	61	68	7	30	29.20	29.96		
					SUNRISE: 0441																			SUNRISE: 0444	JUL 08	SUNSET: 1956								
01	SCT	NC			10.00				66	60	62	81	6	17	29.31	30.06	01	OVC	095						10.00									
04	CLR	NC			10.00				64	58	60	81	6	16	29.33	30.08	04	OVC	042						66	54	59	65	3	23	29.23	29.98		
07	BKN	065			10.00				69	60	64	73	5	19	29.37	30.12	07	OVC	100						65	56	60	73	8	15	29.16	29.92		
10	BKN	200			10.00				82	63	70	53	12	23	29.33	30.07	10	BKN	060						62	54	57	75	9	13	29.13	29.88		
13	OVC	250			10.00				85	70	75	61	10	23	29.33	30.08	13	OVC	024						71	57	63	61	7	20	29.04	29.78		
16	BKN	150			10.00				88	71	76	57	15	23	29.26	30.01	16	OVC	140						73	65	68	76	18	23	29.02	29.76		
19	OVC	150			9.00				80	70	73	71	10	24	29.26	30.01	19	BKN	150						78	69	72	74	25	24	28.94	29.68		
22	OVC	200			7.00				81	73	75	77	12	21	29.26	30.00	22	BKN	013						6.00	HZ	76	69	71	79	12	22	28.90	29.64
					SUNRISE: 0441																			SUNRISE: 0445	JUL 09	SUNSET: 1955								
01	OVC	200			9.00				82	73	76	74	18	24	29.24	29.98	01	CLR	NC						66	54	59	65	3	23	29.23	29.98		
04	OVC	095			8.00				76	71	73	85	20	24	29.25	30.00	04	BKN	100						10.00									
07	FEW	NC			7.00				77	72	74	85	14	23	29.28	30.03	07	BKN	024						69	60	63	73	8	15	29.16	29.70		
10	SCT	NC			8.00				80	73	75	79	16	23	29.30	30.04	10	BKN	033						63	60	61	90	16	30	29.07	29.81		
13	CLR	NC			7.00				82	74	76	77	18	24	29.29	30.03	13	BKN	050						66	54	59	65	14	33	29.15	29.90		
16	CLR	NC			9.00				83	73	76	72	20	24	29.26	30.00	16	SCT	NC						66	53	59	63	14	31	29.21	29.96		
19	CLR	NC			10.00				81	72	75	74	16	24	29.24	29.98	19	FEW	NC						69	51	59	53	12	32	29.23	29.98		
22	CLR	NC			8.00				77	70	72	79	10	23	29.25	29.99	22	CLR	NC						68	47	57	47	9	34	29.26	30.01		
					SUNRISE: 0442																			SUNRISE: 0446	JUL 11	SUNSET: 1955								
01	CLR	NC			10.00				75	70	72	84	9	23	29.25	29.99	01	CLR	NC						10.00									
04	FEW	NC			10.00				74	71	72	91	10	23	29.24	29.98	04	CLR	NC						56	48	52	75	5	33	29.36	30.11		
07	SCT	NC			9.00				76	71	73	85	18	23	29.25	30.00	07	CLR	NC						56	51	53	84	6	31	29.39	30.15		
10	SCT	NC			8.00				81	73	75	77	16	23	29.26	30.01	10	FEW	NC						61	53	57	75	3	VR	29.44	30.20		
13	FEW	NC			7.00				83	74	77	74	23	23	29.23	29.98	13	FEW	NC						69	48	57	47	10	33	29.47	30.22		
16	SCT	NC			7.00				84	74	77	72	22	23	29.18	29.93	16	SCT	NC						73	46	58	38	7	VR	29.47	30.23		
19	CLR	NC			8.00				80	73	75	79	13	24	29.16	29.91	19	FEW	NC						75	47	59	37	7	28	29.45	30.20		
22	FEW	NC			8.00				77	72	74	85	13	23	29.17	29.91	22	CLR	NC						71	50	59	47	8	26	29.45	30.21		
					SUNRISE: 0443																			SUNRISE: 0447	JUL 12	SUNSET: 1954								
01	CLR	NC			8.00				76	72	73	88	10	23	29.15	29.89	01	CLR	NC						10.00									
04	CLR	NC			7.00				75	71	72	88	13	23	29.14	29.88	04	CLR	NC						55	49	52	80	0	00	29.50	30.25		
07	BKN	047			6.00	BR			76	72	73	88	17	23	29.12	29.86	07	CLR	NC						61	49	54	65	6	13	29.51	30.27		
10	BKN	085			10.00				81	72	75	74	21	24	29.10	29.84																		

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

**BUFFALO, NY**  
**JULY 1999**

BUJ

WBAN # 1473

HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		SATellite			WEATHER			TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)					
					Dry Bulb	DeW Point	Wet Bulb	Relative Humidity (%)	Speed (MPH)	Direction Tens of Deg	Station	Sea Level	Dry Bulb	DeW Point				Wet Bulb	Relative Humidity (%)	Speed (MPH)	Direction Tens of Deg	Station	Sea Level					
	SKY COVER	CEILING	100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Orbas	VISIBILITY (MILES)																						
SUNRISE: 0448	JUL 13	SUNSET: 1954			63	52	57	68	7	17	29.42	30.16	01	BKN	100	SUNRISE: 0453	JUL 19	SUNSET: 1950			71	68	69	90	5	19	29.27	30.02
01	SCT	NC	10.00		63	53	57	75	6	19	29.42	30.17	04	BKN	080	10.00	72	70	71	94	0	00	29.25	30.00				
04	BKN	080	10.00		61	53	57	75	10	18	29.43	30.19	07	OVC	036	10.00	70	66	67	87	7	33	29.27	30.02				
07	CLR	NC	10.00		65	55	59	70	9	25	29.42	30.17	10	OVC	130	10.00	76	61	67	60	7	30	29.27	30.01				
10	CLR	NC	10.00		73	55	62	53	0	00	29.35	30.13	13	OVC	060	10.00	76	60	66	58	7	28	29.25	30.00				
13	SCT	NC	10.00		78	53	63	42	3	VR	29.38	30.13	16	OVC	028	4.00 -RA BR	66	65	65	96	0	00	29.27	30.02				
16	BKN	075	10.00		78	54	64	43	0	00	29.34	30.09	19	OVC	006	7.00	66	66	66	100	5	19	29.23	29.98				
19	SCT	NC	10.00		79	56	65	45	6	32	29.34	30.09	22	BKN	080	6.00 BR	66	66	66	100	0	00	29.26	30.01				
22	CLR	NC	10.00		69	59	63	70	0	00	29.36	30.11																
SUNRISE: 0449	JUL 14	SUNSET: 1953			64	57	60	78	5	15	29.37	30.11	01	FEW	NC	SUNRISE: 0454	JUL 20	SUNSET: 1949			64	64	64	100	0	00	29.29	30.03
01	FEW	NC	10.00		64	56	59	78	5	14	29.36	30.11	04	VV	001	3.00 BR	64	64	64	100	0	00	29.31	30.06				
04	SCT	NC	10.00		63	57	62	68	8	18	29.39	30.14	07	OVC	005	0.25 FG	64	64	64	100	7	06	29.35	30.11				
07	CLR	NC	10.00		68	57	62	68	6	42	29.40	30.14	10	BKN	029	10.00	73	66	69	79	9	07	29.39	30.14				
10	CLR	NC	10.00		79	54	64	42	8	22	29.38	30.13	13	BKN	300	10.00	79	55	65	44	15	03	29.38	30.13				
13	FEW	NC	10.00		82	53	65	37	8	24	29.32	30.06	16	SCT	NC	10.00	79	53	64	41	13	06	29.37	30.12				
16	CLR	NC	10.00		84	53	65	35	8	24	29.32	30.06	19	FEW	NC	10.00	75	52	62	45	9	06	29.36	30.11				
19	SCT	NC	9.00		80	55	65	42	9	25	29.32	30.06	22	OVC	200	10.00	67	52	58	59	7	10	29.37	30.12				
SUNRISE: 0449	JUL 15	SUNSET: 1952			69	61	64	76	6	19	29.34	30.08	01	OVC	110	SUNRISE: 0455	JUL 21	SUNSET: 1948			63	51	56	65	6	13	29.37	30.12
01	SCT	NC	10.00		68	58	62	70	8	20	29.33	30.07	04	BKN	250	10.00	62	51	56	67	5	09	29.36	30.11				
04	CLR	NC	10.00		73	62	66	69	8	21	29.35	30.09	07	BKN	055	10.00	64	52	57	65	3	06	29.36	30.11				
07	SCT	NC	10.00		81	65	70	58	17	23	29.34	30.09	10	OVC	130	10.00	71	56	62	59	5	11	29.34	30.09				
10	FEW	NC	10.00		82	64	70	55	17	24	29.34	30.09	13	BKN	130	10.00	76	63	68	64	8	23	29.31	30.06				
13	CLR	NC	8.00		83	66	72	57	20	24	29.32	30.07	16	OVC	150	10.00	78	64	69	62	7	21	29.28	30.03				
16	SCT	NC	6.00 HZ		83	66	72	57	20	24	29.32	30.07	19	OVC	150	10.00	77	65	69	66	7	22	29.26	30.01				
19	CLR	NC	4.00 HZ		78	68	71	71	13	24	29.32	30.07	22	BKN	090	10.00	73	65	68	76	5	18	29.23	29.98				
SUNRISE: 0450	JUL 16	SUNSET: 1952			71	65	67	81	7	20	29.34	30.08	01	OVC	120	SUNRISE: 0456	JUL 22	SUNSET: 1947			69	66	67	90	0	00	29.23	29.98
01	CLR	NC	6.00 HZ		71	65	67	81	7	20	29.34	30.08	04	OVC	041	6.00 BR	70	67	68	90	5	17	29.21	29.96				
04	CLR	NC	5.00 BR		68	65	66	90	6	19	29.35	30.09	07	OVC	042	6.00 BR	70	67	68	90	3	08	29.23	29.97				
07	BKN	300	4.00 HZ		75	69	71	82	10	22	29.36	30.11	10	BKN	042	7.00	77	69	72	77	6	01	29.23	29.98				
10	CLR	NC	4.00 HZ		81	74	76	79	12	23	29.37	30.11	13	SCT	NC	9.00	83	68	73	61	8	34	29.23	29.97				
13	SCT	NC	4.00 HZ		85	72	76	65	16	24	29.37	30.11	16	BKN	044	7.00	83	70	74	65	13	25	29.22	29.96				
16	CLR	NC	5.00 HZ		84	70	74	63	20	23	29.36	30.11	19	SCT	NC	6.00 HZ	77	71	73	82	13	23	29.21	29.96				
19	SCT	NC	5.00 HZ		80	69	73	69	12	23	29.34	30.08	22	BKN	006	4.00 BR	74	72	73	94	9	22	29.23	29.98				
SUNRISE: 0451	JUL 17	SUNSET: 1951			75	67	70	76	8	20	29.34	30.09	01	FEW	NC	SUNRISE: 0457	JUL 23	SUNSET: 1946			72	71	71	97	5	20	29.23	29.98
01	CLR	NC	6.00 HZ		72	66	68	82	6	20	29.34	30.08	04	OVC	002	5.00 BR	70	70	70	100	7	22	29.22	29.96				
04	CLR	NC	5.00 HZ		72	67	69	84	5	19	29.33	30.08	07	BKN	005	0.75 BR	72	71	71	97	7	19	29.24	29.99				
07	CLR	NC	4.00 HZ		79	70	73	74	8	23	29.36	30.10	10	FEW	NC	2.00 BR	79	70	73	74	13	22	29.24	29.98				
10	CLR	NC	5.00 HZ		82	72	75	72	14	24	29.36	30.11	13	SCT	NC	8.00	83	68	73	61	14	24	29.21	29.95				
13	SCT	NC	7.00		87	73	77	63	16	24	29.34	30.09	16	BKN	250	10.00	83	65	72	51	12	24	29.14	29.88				
16	SCT	NC	8.00		86	73	77	65	15	25	29.32	30.06	19	OVC	200	9.00	79	69	72	72	13	22	29.12	29.85				
19	BKN	250	6.00 HZ		81	72	75	74	10	24	29.33	30.07	22	BKN	150	10.00	78	68	71	71	8	22	29.09	29.82				
SUNRISE: 0452	JUL 18	SUNSET: 1950			76	71	73	85	8	21	29.33	30.07	01	SCT	NC	SUNRISE: 0458	JUL 24	SUNSET: 1945			73	70	71	90	7	20	29.08	29.81
01	CLR	NC	6.00 HZ		73	67	69	81	6	20	29.34	30.08	04	SCT	NC	6.00 BR	71	70	70	96	5	15	29.07	29.80				
04	CLR	NC	6.00 HZ		71	66	68	84	3	21	29.33	30.08	07	OVC	026	10.00	75	71	72	88	12	27	29.06	29.80				
07	CLR	NC	4.00 BR		75	72	73	90	10	22	29.36	30.10	10	OVC	021	10.00	76	69	71	79	13	24	29.09	29.82				
10	SCT	NC	7.00		80	73	75	79	10	22	29.36	30.11	13	FEW	NC	10.00	82	71	74	69	14	24	29.08	29.81				
13	SCT	NC	10.00		85	72	76	65	8	25	29.33	30.08	16	CLR	NC	10.00	83	69	74	63	15	23	29.03	29.76				
16	BKN	150	10.00		82	71	74	69	9	25	29.31	30.06	19	SCT	NC	10.00	78	71	73	79	14	24	29.01	29.75				
19	SCT	NC	10.00		81	71	74	72	6	25	29.30	30.04	22	BKN	110	10.00	68	64	66	87	12	21	29.06	29.80				

# OBSERVATIONS AT 3-HOURLY INTERVALS

# BUFFALO, NY

JULY 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)							
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT	OBS	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT	OBS	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
01	CLR	NC			10.00									01	CLR	NC			10.00								
04	CLR	NC			10.00									04	Few	NC			10.00								
07	FEW	NC			10.00									07	OVC	250			10.00								
10	BKN	095			10.00									10	OVC	150			10.00								
13	BKN	065			10.00	TS								13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	BKN	080			10.00									19	OVC	250			9.00								
22	FEW	NC			10.00									22	OVC	070			10.00								
					SUNRISE: 0458	JUL 25		SUNSET: 1945										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	CLR	NC			10.00									01	CLR	NC			10.00								
04	CLR	NC			10.00									04	Few	NC			10.00								
07	SCT	NC			9.00									07	OVC	250			10.00								
10	FEW	NC			10.00									10	OVC	150			10.00								
13	SCT	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	BKN	250			10.00									19	OVC	250			9.00								
22	OVC	150			10.00									22	OVC	070			10.00								
					SUNRISE: 0459	JUL 26		SUNSET: 1944										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	CLR	NC			10.00									01	CLR	NC			10.00								
04	CLR	NC			10.00									04	Few	NC			10.00								
07	SCT	NC			9.00									07	OVC	250			10.00								
10	FEW	NC			10.00									10	OVC	150			10.00								
13	SCT	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	BKN	250			10.00									19	OVC	250			9.00								
22	OVC	150			10.00									22	OVC	070			10.00								
					SUNRISE: 0500	JUL 27		SUNSET: 1943										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	OVC	140			10.00									01	CLR	NC			10.00								
04	OVC	110			10.00									04	Few	NC			10.00								
07	CLR	NC			10.00									07	OVC	250			10.00								
10	FEW	NC			10.00									10	OVC	150			10.00								
13	Few	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	SCT	NC			10.00									19	OVC	250			10.00								
22	SCT	NC			10.00									22	OVC	070			10.00								
					SUNRISE: 0501	JUL 28		SUNSET: 1942										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	BKN	060			10.00									01	CLR	NC			10.00								
04	BKN	060			10.00									04	Few	NC			10.00								
07	CLR	NC			10.00									07	OVC	250			10.00								
10	SCT	NC			10.00									10	OVC	150			10.00								
13	Few	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	SCT	NC			10.00									19	OVC	250			10.00								
22	OVC	250			10.00									22	OVC	070			10.00								
					SUNRISE: 0502	JUL 29		SUNSET: 1941										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	OVC	140			10.00									01	CLR	NC			10.00								
04	SCT	NC			10.00									04	Few	NC			10.00								
07	SCT	NC			10.00									07	OVC	250			10.00								
10	SCT	NC			10.00									10	OVC	150			10.00								
13	BKN	250			10.00									13	OVC	055			10.00								
16	BKN	250			10.00									16	OVC	120			10.00								
19	SCT	NC			10.00									19	OVC	250			10.00								
22	SCT	NC			10.00									22	OVC	070			10.00								
					SUNRISE: 0503	JUL 30		SUNSET: 1939										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	CLR	NC			10.00									01	CLR	NC			10.00								
04	BKN	080			10.00									04	Few	NC			10.00								
07	CLR	NC			10.00									07	OVC	250			10.00								
10	BKN	026			10.00									10	OVC	150			10.00								
13	SCT	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00									16	OVC	120			10.00								
19	BKN	250			10.00									19	OVC	250			10.00								
22	SCT	NC			10.00									22	OVC	070			10.00								
					SUNRISE: 0503	JUL 30		SUNSET: 1939										SUNRISE: 0505	JUL 31		SUNSET: 1938						
01	CLR	NC			10.00									01	CLR	NC			10.00								
04	BKN	080			10.00									04	Few	NC			10.00								
07	CLR	NC			10.00									07	OVC	250			10.00								
10	BKN	026			10.00									10	OVC	150			10.00								
13	SCT	NC			10.00									13	OVC	055			10.00								
16	SCT	NC			10.00																						

JULY 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	T	
02	0.01	T	T										02												02	0.01	
03													03												03	0.00	
04													04												04	0.00	
05													05												05	0.00	
06													06												06		
07													07												07		
08	T		T	0.04	0.01	T	T	T	T	T			08												08	0.02	
09			T	T									09	0.02	0.01	0.03										09	0.05
10													10												10	T	
11													11												11	0.00	
12													12												12	0.00	
13													13												13	0.00	
14													14												14	0.00	
15													15												15	0.00	
16													16												16	0.00	
17													17												17	0.00	
18													18												18	0.00	
19													19												19	0.36	
20													20	T	0.04	0.08	0.16	0.08								20	0.00
21													21												21	0.00	
22	0.01	T		T									22												22	0.01	
23													23												23	T	
24			0.01	0.04									24												24	0.25	
25													25	0.02											25	0.04	
26													26												26	0.00	
27													27												27	0.00	
28													28												28	0.03	
29													29												29	0.00	
30													30												30	0.00	
31													31												31	0.09	

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 0.92

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.06	0.10	0.12	0.14	0.19	0.20	0.20	0.23	0.25	0.25	0.30	0.32
ENDED: DATE	24	24	24	24	24	24	24	19	19	19	19	19
ENDED: TIME	2012	2015	2018	2024	2033	2045	2045	1720	1730	1730	1730	1730

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.

First HPD value that follows is the total accumulated amount.



JULY 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA – National Weather Service / Department Of Transportation – Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



**AUGUST 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

**BUFFALO, NY**  
**AUGUST 1999**

DATE	TEMPERATURE °F									WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND		SPEED = MPH DIR = TENS OF DEGREES				DATE
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING	COOLING	0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	DIR	MAXIMUM 5-SEC SPEED	DIR			
									DEPTH	WATER EQUIV	SNOW FALL	WATER EQUIV	17	18	19	20	21	22	23	24			
1	83	65	74	3	62	66	0	9															
01	83	65	74	3	62	66	0	9															
02	77	62	70	-1	57	62	0	5															
03	77	58	68	-3	55	61	0	3															
04	75	63	69	-2	61	64	0	4															
05	76	60	68	-3	59	62	0	3															
06	78	54	66	-5	56	60	0	1															
07	79	52	66	-4	56	60	0	1															
08	78	58	68	-2	61	63	0	3															
09	70	53	62	-8	51	56	3	0															
10	71	58	65	-5	56	59	0	0															
11	75	62	69	-1	63	65	0	4															
12	82	62	72	2	63	66	0	7															
13	84	70	77*	7	66	69	0	12															
14	74	57	66	-4	60	62	0	1															
15	76	54	65	-5	53	59	0	0															
16	82	53	68	-1	54	60	0	3															
17	81	67	74	5	64	68	0	9															
18	74	62	68	0	59	62	0	3															
19	77	58	68	0	57	61	0	3															
20	66	59	63	-5	61	62	2	0															
21	74	58	66	-2	57	61	0	1															
22	77	53	65	-3	58	61	0	0															
23	81	57	69	1	58	63	0	4															
24	84*	66	75	7	63	67	0	10															
25	78	68	73	5	63	67	0	8															
26	73	65	69	2	66	67	0	4															
27	78	64	71	4	67	68	0	6															
28	79	67	73	6	68	70	0	8															
29	69	55	62	-5	47	54	3	0															
30	68	50	59*	-8	48	53	6	0															
31	77	47*	62	-4	50	55	3	0															
	76.5	59.3	67.9	■■	58.7	62.4	0.5	3.6	< MONTHLY AVERAGES	TOTALS ->			0.0	4.38	29.22	29.97	1.5	25	7.8	<- MONTHLY AVERAGES			
	-1.4	-.8	-1.1	■■	<-----	DEPARTURE FROM NORMAL	----->						0.21	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									
<b>DEGREE DAYS</b>									GREATEST 24-HR PRECIPITATION: 1.27 DATE: 19-20									SEA LEVEL PRESSURE DATE TIME					
MONTHLY TOTAL DEPARTURE									GREATEST 24-HR SNOWFALL: 0.0 DATE:									MAXIMUM MINIMUM					
SEASON TO DATE TOTAL DEPARTURE									GREATEST SNOW DEPTH: 0 DATE:									30.35 31 0754					
HEATING:	17	0	17	-5					NUMBER OF DAYS WITH →	MAXIMUM TEMP ≥ 90: 0	MINIMUM TEMP ≤ 32: 0							29.62 13 1854					
COOLING:	112	-29	607	167						MAXIMUM TEMP ≤ 32: 0	MINIMUM TEMP ≤ 0: 0							PRECIPITATION ≥ 0.01 INCH: 12					
										THUNDERSTORMS: 4	HEAVY FOG: 1							PRECIPITATION ≥ 0.10 INCH: 7					
																		SNOWFALL ≥ 1.0 INCH: 0					

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

AUGUST 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24	
01													01													01
02													02													02
03													03													03
04	T	T	T	T									04	0.05	0.19	0.01										04
05													05													05
06													06	0.01												06
07													07													07
08	0.07	0.06	0.03				T	T	0.13	T	0.01		08													08
09							T	T					09													09
10							T						10													10
11													11													11
12													12													12
13													13													13
14													14													14
15													15													15
16													16													16
17													17													17
18													18													18
19													19													19
20	0.05			T	0.01				0.04	0.06			20	0.01	T	0.36	T	0.54	0.01	0.07	0.03	T	T	0.02	0.06	20
21													21													21
22													22													22
23													23													23
24													24													24
25													25													25
26							T	0.15	0.32	0.02	T	T	T	T	0.15	0.25	0.01			T					26	
27													27													27
28													28													28
29													29													29
30													30													30
31													31													31

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy    ' ' = Moderate    '-' = Light			

## BUFFALO, NY AUGUST 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED	
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CELIOMETER	MN-MN CELIOMETER	SATELLITE	SATELLITE		
01	845	97					7.00	10.00
02	643	74					10.00	10.00
03	866	100					10.00	10.00
04	128	15					2.50	10.00
05	280	33					4.00	10.00
06	504	59					10.00	10.00
07	608	71					6.00	10.00
08	305	36					2.50	10.00
09	593	70					10.00	10.00
10	15	2					5.00	10.00
11	295	35					2.50	10.00
12	799	95					2.50	10.00
13	305	36					4.00	10.00
14	98	11					9.00	10.00
15	798	95					8.00	10.00
16	623	75					10.00	10.00
17	640	77					7.00	10.00
18	204	25					10.00	10.00
19	42	5					9.00	10.00
20	0	0					5.00	10.00
21	453	55					6.00	10.00
22	729	89					6.00	10.00
23	666	82					7.00	10.00
24	135	17					2.00	10.00
25	115	14					6.00	10.00
26	10	1					1.50	10.00
27	276	34					3.00	9.00
28	275	34					2.50	10.00
29	404	51					10.00	10.00
30	764	96					10.00	10.00
31	794	100					10.00	10.00
MONTHLY AVGS							6.39	9.97
SUNSHINE (MINUTES)								
Total: 13212 Possible: 25845 Percent Possible: 51								
NUMBER OF DAYS WITH: SKY CONDITION								
CLR PTLY CLDY CLOUDY MISSING 31								
MINIMUM VISIBILITY (MILES) <=0.25 <=3.0 >=7.0 0 8 15								

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
AUGUST 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite		OBSERVATION TIME (LST)	EFF CLD AMT	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		HOUR (LST)	SATellite		OBSERVATION TIME (LST)	EFF CLD AMT	VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)							
							DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL							DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL					
<b>SUNRISE: 0506 AUG 01 SUNSET: 1937</b>																																	
01	FEW	NC			10.00		74	72	73	94	7	26	29.00	29.73	01	CLR	NC						10.00	57	54	55	90	3	18	29.25	30.01		
04	CLR	NC			9.00		70	68	69	93	6	28	29.05	29.78	04	BKN	250						10.00	53	51	52	93	5	14	29.27	30.03		
07	SCT	NC			10.00		71	64	67	79	6	28	29.10	29.84	07	BKN	250						10.00	56	53	54	90	5	19	29.30	30.06		
10	FEW	NC			10.00		77	61	67	58	9	34	29.12	29.86	10	FEW	NC						10.00	69	52	59	55	0	00	29.29	30.05		
13	FEW	NC			10.00		81	55	65	41	10	30	29.15	29.89	13	SCT	NC						10.00	76	50	61	40	6	VR	29.24	30.00		
16	FEW	NC			10.00		81	59	67	47	15	35	29.15	29.90	16	OVC	250						10.00	78	58	66	50	9	25	29.17	29.92		
19	FEW	NC			10.00		78	57	65	48	8	35	29.18	29.92	19	OVC	120						10.00	75	57	64	54	3	21	29.12	29.87		
22	SCT	NC			10.00		70	57	62	64	8	01	29.23	29.98	22	OVC	070						10.00	65	63	64	93	6	16	29.11	29.85		
<b>SUNRISE: 0507 AUG 02 SUNSET: 1936</b>																																	
01	SCT	NC			10.00		65	59	61	81	3	24	29.27	30.01	01	OVC	043						4.00	-RA	BR	65	64	64	97	3	08	29.05	29.79
04	FEW	NC			10.00		62	58	60	86	7	29	29.27	30.02	04	OVC	040						6.00	BR	66	65	65	96	9	18	28.95	29.69	
07	SCT	NC			10.00		66	60	62	81	8	31	29.31	30.06	07	OVC	020						2.50	-RA	BR	69	69	69	100	8	28	28.94	29.67
10	BKN	065			10.00		71	60	64	68	7	36	29.33	30.08	10	OVC	010						9.00			67	65	66	93	7	31	28.99	29.73
13	BKN	055			10.00		75	58	65	55	9	34	29.32	30.07	13	BKN	060						10.00			75	64	68	69	9	30	28.99	29.73
16	FEW	NC			10.00		77	53	63	44	10	36	29.33	30.08	16	BKN	065						10.00			73	58	64	59	21	34	29.04	29.78
19	SCT	NC			10.00		73	53	61	50	7	02	29.34	30.09	19	FEW	NC						10.00			65	56	60	73	14	33	29.10	29.84
22	SCT	NC			10.00		66	55	60	68	3	05	29.36	30.11	22	CLR	NC						10.00			59	51	55	75	7	35	29.15	29.91
<b>SUNRISE: 0508 AUG 03 SUNSET: 1935</b>																																	
01	SCT	NC			10.00		61	55	58	81	0	00	29.36	30.12	01	FEW	NC						10.00			56	51	53	84	5	33	29.16	29.92
04	CLR	NC			10.00		59	55	57	87	0	00	29.38	30.13	04	CLR	NC						10.00			53	50	51	89	6	28	29.18	29.93
07	CLR	NC			10.00		64	58	60	81	3	22	29.40	30.16	07	FEW	NC						10.00			59	53	56	81	7	31	29.20	29.96
10	FEW	NC			10.00		72	52	60	50	10	34	29.40	30.16	10	SCT	NC						10.00			65	50	57	59	13	34	29.21	29.97
13	SCT	NC			10.00		77	54	63	45	12	26	29.38	30.13	13	SCT	NC						10.00			66	49	57	54	9	34	29.20	29.96
16	FEW	NC			10.00		76	54	63	47	12	25	29.34	30.09	16	BKN	060						10.00			68	48	57	49	12	30	29.15	29.91
19	SCT	NC			10.00		73	56	63	55	13	25	29.32	30.07	19	BKN	065						10.00			65	52	58	63	9	25	29.14	29.90
22	FEW	NC			10.00		70	57	62	64	5	22	29.31	30.06	22	SCT	NC						10.00			61	53	57	75	3	11	29.14	29.90
<b>SUNRISE: 0509 AUG 04 SUNSET: 1934</b>																																	
01	OVC	065			10.00	-RA	67	56	61	68	3	22	29.28	30.03	01	OVC	150						10.00			60	52	56	75	7	14	29.14	29.89
04	OVC	060			10.00		65	56	60	73	7	14	29.23	29.98	04	OVC	070						10.00			59	54	56	83	7	16	29.11	29.85
07	OVC	100			10.00		65	54	59	68	8	19	29.22	29.97	07	OVC	070						10.00			61	54	57	78	5	12	29.10	29.85
10	OVC	028			9.00	-RA	68	65	66	90	7	30	29.20	29.95	10	OVC	070						10.00			65	51	57	61	12	20	29.10	29.84
13	OVC	028			4.00	-TSRA	70	67	68	90	0	00	29.13	29.88	13	OVC	065						10.00			66	53	59	63	9	18	29.05	29.80
16	BKN	055			10.00		73	66	69	79	16	21	29.10	29.84	16	OVC	065						10.00			69	54	60	59	9	19	29.01	29.76
19	OVC	029			10.00		72	66	68	82	13	25	29.08	29.83	19	OVC	048						10.00			67	57	61	71	6	12	29.00	29.75
22	BKN	100			10.00		66	61	63	84	3	34	29.09	29.83	22	OVC	048						5.00	RA	BR	64	61	62	90	3	13	29.00	29.75
<b>SUNRISE: 0510 AUG 05 SUNSET: 1932</b>																																	
01	FEW	NC			10.00		63	61	62	93	0	00	29.08	29.83	01	OVC	070						6.00	BR		63	62	62	97	6	13	28.98	29.72
04	FEW	NC			8.00		61	60	60	97	0	00	29.07	29.81	04	OVC	034						6.00	BR		64	63	63	96	3	32	28.99	29.73
07	BKN	065			5.00	HZ BR	63	62	62	97	0	00	29.10	29.84	07	OVC	046						3.00	BR		64	63	63	96	3	20	29.04	29.78
10	BKN	100			10.00		71	60	64	68	8	31	29.09	29.83	10	SCT	NC						8.00			70	63	66	79	0	00	29.09	29.83
13	SCT	NC			10.00		76	57	64	52	13	28	29.09	29.83	13	BKN	049						10.00			71	64	67	79	12	24	29.12	29.86
16	BKN	039			10.00		73	59	64	62	9	25	29.10	29.84	16	OVC	037						10.00			73	64	67	74	9	26	29.13	29.88
19																																	

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

**BUFFALO, NY**  
**AUGUST 1999**

BUI

WBAN # 1473

NOAA'S PRECIPITATION INTERVALS										AUGUST 1999										BUF WBAN # 14733													
HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F			PRESSURE (INCHES,HG)	WIND	SATellite	SATELLITE			WEATHER	TEMPERATURE °F			PRESSURE (INCHES,HG)	WIND	SATellite	SATELLITE												
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)		EFF CLD AMT	VISIBILITY (MILES)	DRY BULB		DEW POINT		WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)		EFF CLD AMT	VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL			
01	OVC	140			SUNRISE: 0518	AUG 13	SUNSET: 1922		71	63	66	76	6	15	29.14	29.89	01	BKN	120			SUNRISE: 0525	AUG 19	SUNSET: 1913		61	58	59	90	0	00	29.24	29.99
04	OVC	110							72	66	68	82	6	14	29.10	29.83	04	SCT	NC							58	57	57	97	6	18	29.23	29.99
07	OVC	095							72	64	67	76	8	17	29.04	29.78	07	BKN	150							61	58	59	90	5	15	29.27	30.03
10	OVC	110							71	65	67	81	9	17	29.03	29.77	10	OVC	150							70	58	63	66	5	VR	29.28	30.03
13	OVC	110							78	63	68	80	16	19	28.95	29.69	13	OVC	130							75	53	62	46	7	VR	29.25	30.01
16	FEW	NC							84	66	72	55	18	22	28.90	29.63	16	OVC	130							73	59	64	62	16	04	29.25	30.00
19	SCT	NC							77	69	72	77	18	24	28.89	29.63	19	OVC	130							69	55	61	61	10	05	29.25	30.01
22	BKN	130							75	71	72	88	13	25	28.92	29.66	22	OVC	070							67	54	59	63	7	14	29.27	30.02
					SUNRISE: 0519	AUG 14	SUNSET: 1920																										
01	BKN	110							74	70	71	88	8	24	28.93	29.67	01	OVC	060							61	58	59	90	8	07	29.25	30.01
04	OVC	027							69	67	68	93	9	34	28.98	29.71	04	OVC	100							61	59	60	93	9	07	29.22	29.97
07	OVC	005							62	60	61	93	15	35	29.05	29.79	07	OVC	049							60	60	60	100	7	02	29.25	30.00
10	OVC	011							64	59	61	84	9	01	29.12	29.86	10	OVC	012							64	62	63	93	8	07	29.25	30.01
13	OVC	013							63	59	61	87	12	03	29.16	29.91	13	OVC	049							65	63	64	93	6	02	29.24	29.99
16	OVC	017							65	58	61	78	12	01	29.19	29.94	16	OVC	032							64	63	63	96	13	04	29.24	30.00
22	CLR	NC							64	57	60	78	6	04	29.21	29.97	19	OVC	033							63	62	62	97	16	11	29.24	30.00
					SUNRISE: 0520	AUG 15	SUNSET: 1919																										
01	SCT	NC							58	56	57	93	0	00	29.30	30.06	01	BKN	048							59	59	59	100	7	04	29.25	30.01
04	CLR	NC							56	55	55	97	0	00	29.31	30.07	04	OVC	030							60	59	59	96	7	06	29.24	30.00
07	CLR	NC							61	59	60	93	7	35	29.37	30.13	07	OVC	095							60	59	59	96	10	07	29.27	30.03
10	BKN	041							70	52	60	53	9	05	29.41	30.16	10	BKN	150							66	60	62	81	12	07	29.29	30.05
13	SCT	NC							74	51	61	45	6	VR	29.38	30.13	13	SCT	NC							72	56	62	57	14	11	29.29	30.04
16	FEW	NC							74	53	62	48	9	35	29.38	30.14	16	FEW	NC							72	55	62	55	12	05	29.28	30.03
19	CLR	NC							70	49	58	47	7	34	29.41	30.16	19	CLR	NC							68	57	62	68	6	04	29.28	30.03
22	CLR	NC							63	53	57	70	0	00	29.44	30.19	22	SCT	NC							62	57	59	84	3	01	29.29	30.04
					SUNRISE: 0522	AUG 16	SUNSET: 1917																										
01	CLR	NC							56	51	53	84	6	14	29.43	30.18	01	Few	NC							58	56	57	93	0	00	29.29	30.05
04	CLR	NC							54	51	52	90	7	15	29.46	30.22	04	CLR	NC							55	53	54	93	5	19	29.30	30.06
07	Few	NC							57	51	54	81	3	18	29.48	30.24	07	CLR	NC							57	54	55	90	3	21	29.34	30.09
10	BKN	160							71	52	60	51	0	00	29.52	30.27	10	SCT	NC							70	60	64	71	0	00	29.33	30.08
13	BKN	300							76	51	62	42	3	VR	29.45	30.20	13	BKN	045							75	56	64	52	6	VR	29.30	30.05
16	SCT	NC							81	54	65	39	6	VR	29.37	30.12	16	SCT	NC							75	60	66	60	10	24	29.28	30.03
19	BKN	190							74	56	63	54	10	23	29.34	30.09	19	SCT	NC							71	61	65	71	8	23	29.28	30.04
22	BKN	150							71	59	64	66	8	24	29.31	30.06	22	CLR	NC							65	61	63	87	5	21	29.29	30.04
					SUNRISE: 0523	AUG 17	SUNSET: 1916																										
01	SCT	NC							67	60	63	79	6	20	29.27	30.02	01	CLR	NC							61	60	60	97	5	16	29.30	30.06
04	BKN	130							73	60	65	64	12	23	29.22	29.97	04	CLR	NC							58	58	58	100	6	17	29.29	30.05
07	SCT	NC							74	61	66	64	14	22	29.19	29.93	07	CLR	NC							61	57	59	87	5	16	29.31	30.07
10	BKN	100							78	66	70	67	18	23	29.16	29.90	10	Few	NC							75	58	65	55	5	VR	29.31	30.06
13	OVC	040							79	69	72	72	20	24	29.12	29.87	13	SCT	NC							80	54	64	41	5	33	29.27	30.02
16	Few	NC							78	69	72	74	21	24	29.11	29.85	16	BKN	280							81	53	64	38	3	03	29.24	29.99
19	BKN	070							78	60	67	54	13	32	29.12	29.87	19	BKN	250							74	61	66	64	8	03	29.23	29.98
22	OVC	095							70	61	64	73	5	35	29.16	29.90	22	BKN	250							68	62	64	81	6	10	29.24	29.99
					SUNRISE: 0524	AUG 18	SUNSET: 1914																										
01	BKN	075							66	59	62	78	7	34	29.15	29.90	01	OVC	110							66	57	61	73	7	13	29.23	29.98
04	BKN	014							63	60	61	90	5	31	29.16	29.91	04	OVC	110							67	57	61	71	7	12	29.20	29.95
07	SCT	NC							63	60	61	90	7	34	29.19	29.94	07	BKN	110							69	59	63	70	7	15	29.22	29.97
10	OVC	033							67	59	62	76	8	01	29.22	29.98	10	BKN	150							74	64	68	71	5	18	29.23	29.98
13	OVC	040							71	57	63	61	9	30	29.21	29.96	13	BKN	150							83	65	68	71	5	VR	29.19	29.94
16	BKN	047							72	58	63	61	6	29	29.21	29.97	16	OVC	060							77	70	72	79	9	04	29.16	29.91
19	BKN	250							70	57	62	64	5	34	29.22	29.9																	

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
AUGUST 1999

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES.HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES.HG)			
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)		DEW POINT	WET BULB	RELATIVE HUMIDITY (%)		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
01	BKN	130		SUNRISE: 0531	AUG 25	SUNSET: 1903	69 66 67 90	5 12	29.22	29.96	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	OVC	130					69 64 66 84	7 14	29.20	29.95	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	BKN	095					71 62 65 73	7 16	29.21	29.96	07	FEW	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	BKN	110					76 62 67 62	10 17	29.23	29.98	10	FEW	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	OVC	110					76 62 67 62	10 18	29.22	29.97	13	CLR	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	OVC	150					77 63 68 62	7 07	29.18	29.93	16	CLR	NC			10.00	76 50 61	40	5 VR	29.48	30.24		
19	OVC	060					76 62 67 62	9 14	29.17	29.92	19	FEW	NC			10.00	69 53 60	57	9 02	29.46	30.22		
22	OVC	150					71 63 66 76	9 13	29.18	29.92	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
				SUNRISE: 0532	AUG 26	SUNSET: 1902																	
01	OVC	120					68 63 65 84	7 08	29.17	29.92	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	OVC	075					68 63 65 84	6 07	29.14	29.89	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	OVC	024					65 65 65 100	7 10	29.16	29.91	07	FEW	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	BKN	070					70 66 67 87	10 09	29.15	29.90	10	FEW	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	OVC	050					70 66 67 87	12 08	29.13	29.88	13	CLR	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	OVC	031					71 69 70 94	9 09	29.10	29.84	16	CLR	NC			10.00	76 50 61	40	5 VR	29.48	30.24		
19	OVC	150					70 67 68 90	8 07	29.10	29.84	19	FEW	NC			10.00	69 53 60	57	9 02	29.46	30.22		
22	BKN	200					68 67 67 96	5 06	29.11	29.85	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
				SUNRISE: 0534	AUG 27	SUNSET: 1859																	
01	CLR	NC					66 65 65 96	6 12	29.11	29.85	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	OVC	007					65 64 64 97	7 16	29.11	29.85	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	BKN	008					65 64 64 97	6 17	29.13	29.88	07	FEW	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	BKN	013					71 66 68 84	6 24	29.15	29.90	10	CLR	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	SCT	NC					77 67 70 71	8 27	29.13	29.88	13	CLR	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	OVC	200					71 69 70 94	10 22	29.13	29.88	16	CLR	NC			10.00	76 50 61	40	5 VR	29.48	30.24		
19	SCT	NC					71 68 69 90	8 23	29.12	29.88	19	FEW	NC			10.00	69 53 60	57	9 02	29.46	30.22		
22	CLR	NC					70 67 68 90	10 23	29.14	29.89	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
				SUNRISE: 0535	AUG 28	SUNSET: 1857																	
01	OVC	008					71 69 70 94	9 23	29.14	29.88	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	SCT	NC					70 68 69 93	8 23	29.13	29.88	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	OVC	013					70 68 69 93	10 22	29.15	29.90	07	FEW	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	OVC	008					74 71 72 91	13 24	29.16	29.91	10	CLR	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	BKN	250					77 70 72 79	15 25	29.14	29.89	13	CLR	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	SCT	NC					77 69 72 77	16 24	29.12	29.85	16	CLR	NC			10.00	76 50 61	40	5 VR	29.48	30.24		
19	SCT	NC					74 70 71 88	14 24	29.11	29.85	19	FEW	NC			10.00	69 53 60	57	9 02	29.46	30.22		
22	SCT	NC					71 70 70 96	8 31	29.13	29.88	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
				SUNRISE: 0536	AUG 29	SUNSET: 1855																	
01	CLR	NC					65 43 53 45	8 31	29.16	29.91	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	CLR	NC					59 40 50 49	6 25	29.17	29.92	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	CLR	NC					60 50 55 70	7 29	29.21	29.96	07	FEW	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	SCT	NC					67 52 58 59	8 35	29.26	30.01	10	CLR	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	BKN	080					68 53 59 59	16 35	29.32	30.07	13	CLR	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	BKN	055					67 50 57 55	16 34	29.34	30.10	16	CLR	NC			10.00	76 50 61	40	5 VR	29.48	30.24		
19	BKN	065					62 47 54 58	13 36	29.39	30.15	19	FEW	NC			10.00	69 53 60	57	9 02	29.46	30.22		
22	Few	NC					56 46 46 51	7 36	29.45	30.21	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
				SUNRISE: 0537	AUG 30	SUNSET: 1853																	
01	CLR	NC					53 46 50 77	7 02	29.48	30.24	01	CLR	NC			10.00	51 47 49	86	3 10	29.53	30.29		
04	CLR	NC					51 46 49 83	6 01	29.50	30.26	04	CLR	NC			10.00	49 46 47	90	5 11	29.54	30.30		
07	Few	NC					53 48 50 83	7 03	29.54	30.30	07	Few	NC			10.00	51 47 49	86	3 11	29.57	30.34		
10	SCT	NC					62 49 55 62	12 05	29.56	30.32	10	SCT	NC			10.00	67 49 57	53	6 14	29.57	30.32		
13	SCT	NC					66 48 56 52	14 03	29.55	30.31	13	SCT	NC			10.00	74 49 60	41	6 03	29.52	30.28		
16	Few	NC					67 49 57 53	9 05	29.53	30.29	16	Few	NC			10.00	69 53 60	57	9 02	29.46	30.22		
19	CLR	NC					61 47 54 60	8 06	29.54	30.30	19	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		
22	CLR	NC					55 48 51 77	3 06	29.54	30.30	22	CLR	NC			10.00	61 54 57	78	3 06	29.46	30.22		

HOUR (LST)	CELOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES.HG)		WIND SPEED (MPH)	DIRECTION	RESULTANT WIND (MPH)
							STATION	SEA LEVEL			
01			63	58	60	85	29.21	29.96	8.97	5	1 16
02			63	58	60	86	29.20	29.95	9.00	5	2 19
03			62	58	59	86	29.20	29.95	8.97	5	2 18
04			62	58	59	89	29.20	29.95	8.94	6	2 18
05			61	58</td							

AUGUST 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	0.00	
02													02												02	0.00	
03													03												03	0.00	
04	T	T	T	T	T								04	0.09	0.20											04	0.44
05													05												05	0.02	
06													06												06	T	
07													07												07	0.18	
08	0.07	0.06	0.04										08												08	0.34	
09													09												09	0.00	
10													10												10	0.05	
11													11												11	0.00	
12													12												12	0.00	
13													13		T	T									13	0.03	
14													14												14	0.00	
15													15												15	0.00	
16													16												16	0.00	
17													17	-											17	0.00	
18													18												18	0.00	
19													19												19	0.10	
20	0.02		0.01	0.01		0.04	0.04			T			T	0.01	T	0.24	0.19	0.43	0.01	0.07	0.04				T	0.02	
21													21												21	0.00	
22													22												22	0.00	
23													23												23	0.00	
24													24		T	T	0.02	0.52	0.03	T					24	0.57	
25													25												25	T	
26													26	T	0.11	T									26	0.45	
27													27	0.01	0.60	T									27	0.61	
28													28												28	0.00	
29													29												29	0.00	
30													30												30	0.00	
31													31												31	0.00	

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 3.90

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.28	0.42	0.44	0.49	0.56	0.60	0.61	0.62	0.63	0.76	0.86	0.86
ENDED: DATE	27	27	27	27	27	27	27	20	20	20	20	20
ENDED: TIME	1412	1415	1415	1426	1426	1435	1435	1623	1630	1630	1630	1630

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data. M = Missing Data.

\* = Data distribution unknown.  
First HPD value that follows is the total accumulated amount.



AUGUST 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA – National Weather Service / Department Of Transportation – Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

United States  
Department of Commerce

National Oceanic and  
Atmospheric Administration

National Environmental Satellite  
Data, and Information Service

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19



# **SEPTEMBER 1999**

# **LOCAL CLIMATOLOGICAL DATA**

## **NOAA, National Climatic Data Center**

**BUFFALO, NY**

## **GREATER BUFFALO INTL AIRPORT (BUF)**

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

SEPTEMBER 1999  
BUFFALO, NY

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

SEPTEMBER 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24	
01													01													01
02													02													02
03													03													03
04													04													04
05													05													05
06													06													06
07	0.87	T	0.36	T	0.14	0.02	T	T	0.01	T	T	0.01	0.01	T	T	0.01	T	0.01	T	T	T	T	T	0.03	06	
08													07													07
09													08													08
10													09													09
11													10													10
12													11													11
13													12													12
14													13													13
15													14													14
16													15													15
17													16													16
18													17													17
19													18													18
20													19													19
21													20													20
22													21													21
23													22													22
24													23													23
25													24													24
26													25													25
27													26													26
28													27													27
29													28													28
30	0.04	0.02	0.03	0.01	0.05	0.02	T						29	0.25	T	0.02									29	
													30													30

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)  
 T = Trace precipitation amount  
 + = also occurs on earlier date  
 FG+ = Heavy fog, visibility .25 miles or less  
 BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+ FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy      '=' = Moderate      '-' = Light			

## BUFFALO, NY SEPTEMBER 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED	
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS CEILOMETER	MN-MN CEILOMETER	SATELLITE	SATELLITE		
01	791	100					10.00	10.00
02	788	100					9.00	10.00
03	786	100					6.00	10.00
04	345	44					4.00	10.00
05	160	21					10.00	10.00
06	150	19					5.00	10.00
07	0	0					1.00	9.00
08	432	56					1.25	10.00
09	30	4					3.00	7.00
10	661	86					8.00	10.00
11	425	56					10.00	10.00
12	731	100					10.00	10.00
13	33	4					1.75	10.00
14	720	95					5.00	10.00
15	675	90					10.00	10.00
16	32	4					10.00	10.00
17	688	95					10.00	10.00
18	743	100					8.00	10.00
19	702	95					9.00	10.00
20	162	22					1.50	10.00
21	50	7					8.00	10.00
22	663	91					10.00	10.00
23	704	97					10.00	10.00
24	105	14					4.00	10.00
25	417	58					10.00	10.00
26	720	100					10.00	10.00
27	178	25					6.00	10.00
28	560	78					8.00	10.00
29	165	23					4.00	10.00
30	345	49					3.00	10.00
MONTHLY AVGS							6.85	9.87
SUNSHINE (MINUTES)								
Total: 12961 Possible: 22454 Percent Possible: 58								
NUMBER OF DAYS WITH: SKY CONDITION								
CLR PTLY CLDY CLOUDY MISSING 30								
MINIMUM VISIBILITY (MILES) <=0.25 <=3.0 >=7.0								
0 6 17								

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
SEPTEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)							
	SKY COVER	CEILING	100'S OF FT		OBsERVATION TIME (LST)	EFF CLD AMT	OKtas		VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL		
01	CLR	NC			SUNRISE: 0539					57	52	54	83	3	11	29.46	30.21	01	VV	008			SUNRISE: 0545				
04	CLR	NC			10.00					55	49	52	80	5	11	29.45	30.21	04	OVC	008			1.00 +RA BR				
07	CLR	NC			10.00					56	48	52	75	3	12	29.47	30.23	07	OVC	005			6.00 -RA BR				
10	FEW	NC			10.00					72	50	60	46	3	05	29.47	30.23	10	OVC	007			1.25 -RA BR				
13	SCT	NC			10.00					80	50	63	35	0	00	29.43	30.19	13	OVC	007			4.00 DZ BR				
16	SCT	NC			10.00					82	52	64	35	0	00	29.39	30.14	16	OVC	006			2.00 -RA BR				
19	SCT	NC			10.00					72	53	61	52	7	02	29.38	30.14	19	OVC	019			2.00 -RA BR				
22	SCT	NC			10.00					66	53	59	63	6	10	29.40	30.15	22	OVC	022			3.00 BR				
					SUNRISE: 0540																						
01	FEW	NC			10.00					60	57	58	90	5	15	29.39	30.14	01	OVC	010			5.00 BR				
04	FEW	NC			10.00					58	55	56	90	7	15	29.39	30.14	04	OVC	008			3.00 BR				
07	FEW	NC			10.00					60	56	58	86	0	00	29.41	30.16	07	OVC	050			1.75 BR				
10	SCT	NC			10.00					76	59	65	56	0	00	29.40	30.15	10	BKN	080			5.00 HZ				
13	SCT	NC			10.00					83	55	66	38	0	00	29.37	30.12	13	BKN	085			10.00 BR				
16	FEW	NC			10.00					84	58	68	41	7	24	29.32	30.07	16	CLR	NC			76	61	67	60	10
19	CLR	NC			10.00					77	59	66	54	6	04	29.32	30.08	19	FEW	NC			9.00 BR				
22	CLR	NC			10.00					69	58	62	68	5	18	29.34	30.09	22	CLR	NC			6.00 HZ				
					SUNRISE: 0541																						
01	CLR	NC			10.00					61	57	59	87	5	18	29.34	30.09	01	BKN	095			6.00 BR				
04	CLR	NC			7.00					59	56	57	90	5	14	29.33	30.09	04	SCT	NC			6.00 BR				
07	CLR	NC			6.00 BR					59	55	57	87	3	12	29.36	30.11	07	BKN	130			6.00 HZ				
10	FEW	NC			10.00					77	60	66	56	0	00	29.37	30.12	10	OVC	095			5.00 HZ				
13	FEW	NC			10.00					83	56	66	40	0	00	29.33	30.08	13	OVC	075			5.00 BR				
16	FEW	NC			10.00					86	60	69	42	6	01	29.30	30.04	16	OVC	200			6.00 BR				
19	SCT	NC			10.00					78	56	65	47	5	05	29.30	30.06	19	BKN	200			4.00 BR				
22	BKN	250			10.00					72	60	65	66	6	12	29.31	30.06	22	BKN	085			3.00 BR				
					SUNRISE: 0542																						
01	BKN	250			7.00					66	61	63	84	3	07	29.30	30.05	01	OVC	200			8.00				
04	SCT	NC			6.00 BR					65	61	63	87	3	11	29.32	30.07	04	SCT	NC			10.00				
07	BKN	250			7.00					67	59	62	76	6	10	29.35	30.10	07	SCT	NC			9.00				
10	OVC	250			10.00					78	62	68	58	6	10	29.36	30.11	10	SCT	NC			10.00				
13	OVC	250			10.00					85	57	67	39	7	10	29.34	30.09	13	BKN	055			10.00				
16	OVC	160			10.00					83	61	69	48	8	07	29.32	30.07	16	SCT	NC			10.00				
19	OVC	160			10.00					79	65	70	62	9	10	29.32	30.07	19	SCT	NC			10.00				
22	OVC	130			10.00					74	63	67	69	7	13	29.33	30.07	22	BKN	090			10.00				
					SUNRISE: 0543																						
01	OVC	130			10.00					70	59	63	68	7	14	29.33	30.08	01	OVC	090			10.00				
04	OVC	130			10.00					69	58	62	68	7	15	29.33	30.07	04	BKN	100			10.00				
07	OVC	230			10.00					69	62	65	78	7	13	29.34	30.09	07	BKN	049			10.00				
10	OVC	150			10.00					76	66	69	72	7	12	29.33	30.08	10	SCT	NC			10.00				
13	OVC	200			10.00					83	63	70	51	5	07	29.30	30.04	13	SCT	NC			10.00				
16	OVC	150			10.00					81	64	70	57	12	06	29.26	30.00	16	OVC	055			10.00				
19	BKN	160			10.00					76	64	68	67	10	07	29.23	29.98	19	FEW	NC			10.00				
22	OVC	110			10.00					74	65	68	74	6	10	29.22	29.97	22	CLR	NC			10.00				
					SUNRISE: 0544																						
01	OVC	095			10.00					74	66	69	76	7	12	29.20	29.94	01	CLR	NC			10.00				
04	OVC	100			10.00					71	68	69	90	7	11	29.17	29.92	04	CLR	NC			10.00				
07	OVC	070			10.00					71	68	69	90	6	13	29.17	29.91	07	CLR	NC			10.00				
10	OVC	150			10.00					77	68	71	74	13	17	29.16	29.90	10	CLR	NC			10.00				
13	BKN	150			9.00					81	69	73	67	8	21	29.12	29.86	13	CLR	NC			10.00				
16	OVC	055			9.00					83	67	72	59	0	00	29.07	29.81	16	FEW	NC			10.00				
19	BKN	100			8.00					79	69	72	72	8	10	29.08	29.82	19	BKN	300			10.00				
22	OVC	110			9.00 -RA					72	65	67	79	7	19	29.08	29.82	22	BKN	300			10.00				
					SUNRISE: 0545																						
01	VV	008																									
04	OVC	008																									
07	OVC	005					</td																				

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
SEPTEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	SATELLITE	WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES.HG)		HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	SATELLITE	TEMPERATURE °F			WIND		PRESSURE (INCHES.HG)				
						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL					DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL		
01	FEW	NC		SUNRISE: 0552	SEP 13	10.00	70	53	60	55	10	17	29.26	30.01	01	CLR	NC	SUNRISE: 0558	SEP 19	53	50	51	89	3	14	29.32	30.08
04	SCT	NC				10.00	68	50	58	53	9	17	29.23	29.98	04	CLR	NC			50	48	49	93	6	15	29.30	30.06
07	BKN	140				10.00	69	50	58	51	12	19	29.23	29.98	07	CLR	NC			52	47	49	83	7	16	29.32	30.08
10	OVC	130				10.00	72	53	61	52	17	21	29.25	30.00	10	CLR	NC			69	53	60	57	7	19	29.31	30.07
13	OVC	055				10.00	70	57	62	64	13	20	29.25	29.99	13	CLR	NC			74	46	58	37	6	21	29.26	30.01
16	OVC	027		1.75 RA BR			63	62	62	97	10	21	29.25	30.01	16	FEW	NC			74	47	59	38	5	26	29.22	29.98
19	OVC	090		4.00 BR			63	62	62	97	8	17	29.23	29.98	19	OVC	260			67	48	57	51	5	22	29.20	29.96
22	OVC	028				7.00	65	61	63	87	10	21	29.25	30.01	22	BKN	150			60	50	55	70	6	17	29.18	29.94
				SUNRISE: 0553	SEP 14	6.00 BR	64	62	63	93	8	20	29.26	30.01	01	CLR	NC	SUNRISE: 0560	SEP 20	58	52	55	81	6	17	29.15	29.90
01	BKN	065				6.00 BR	63	60	61	90	5	19	29.24	29.99	04	CLR	NC			58	53	55	84	6	18	29.11	29.86
04	OVC	075				5.00 BR	62	59	60	90	0	00	29.28	30.03	07	CLR	NC			63	52	57	68	14	20	29.11	29.85
07	SCT	NC				10.00	68	55	60	63	10	22	29.30	30.05	10	OVC	090			69	55	61	14	22	29.09	29.83	
10	FEW	NC				10.00	71	49	59	46	13	24	29.29	30.04	13	OVC	060			65	58	61	78	17	20	29.08	29.83
13	FEW	NC				10.00	69	54	60	59	13	23	29.26	30.01	16	OVC	019	4.00 -RA BR		59	58	58	96	8	32	29.09	29.84
16	FEW	NC				10.00	65	51	57	61	13	24	29.29	30.05	19	OVC	032	7.00 -RA		54	53	53	97	6	32	29.15	29.91
19	BKN	065				10.00	60	49	54	67	6	26	29.34	30.10	22	OVC	023			52	49	50	89	10	36	29.21	29.97
				SUNRISE: 0554	SEP 15	6.00 BR	56	49	52	77	3	20	29.36	30.11	01	OVC	013	SUNRISE: 0601	SEP 21	48	46	47	93	9	36	29.24	30.00
01	CLR	NC				10.00	50	49	49	96	5	17	29.37	30.13	04	OVC	025			47	45	46	93	5	34	29.25	30.01
04	FEW	NC				10.00	51	48	50	89	5	15	29.39	30.15	07	OVC	024			47	42	45	83	8	36	29.28	30.05
07	CLR	NC				10.00	66	45	55	47	0	00	29.39	30.15	10	BKN	027			51	41	46	69	13	02	29.30	30.07
10	FEW	NC				10.00	71	42	56	35	3	02	29.36	30.11	13	OVC	040			51	38	45	61	8	01	29.30	30.07
13	SCT	NC				10.00	70	42	55	37	6	19	29.33	30.09	16	BKN	038			51	39	45	64	9	35	29.27	30.04
16	BKN	075				10.00	65	44	54	47	5	06	29.32	30.08	19	SCT	NC			48	37	43	66	3	32	29.28	30.05
19	BKN	200				10.00	59	50	54	72	6	13	29.31	30.06	22	SCT	NC			46	38	42	73	7	32	29.27	30.03
				SUNRISE: 0555	SEP 16	6.00 BR	56	49	52	77	3	12	29.30	30.06	01	FEW	NC	SUNRISE: 0602	SEP 22	44	38	41	79	7	33	29.24	30.01
01	BKN	250				10.00	54	49	51	83	0	00	29.26	30.02	04	SCT	NC			41	38	40	83	6	34	29.21	29.98
04	OVC	250				10.00	55	47	51	74	7	03	29.24	30.00	07	SCT	NC			44	39	42	83	6	33	29.24	30.01
07	OVC	130				10.00	62	53	57	73	12	03	29.24	30.00	10	BKN	036			51	37	45	59	12	35	29.23	30.00
10	OVC	090				10.00	62	53	57	73	13	05	29.20	29.96	13	SCT	NC			56	39	48	53	8	33	29.19	29.95
13	BKN	100				10.00	62	53	57	73	14	01	29.17	29.93	16	FEW	NC			58	41	49	54	13	24	29.14	29.90
16	OVC	140				10.00	60	50	55	70	15	35	29.17	29.93	19	FEW	NC			55	46	50	72	9	25	29.12	29.88
19	BKN	130				10.00	57	50	53	78	12	35	29.20	29.96	22	BKN	250			54	43	48	67	12	27	29.12	29.88
				SUNRISE: 0556	SEP 17	6.00 BR	53	48	50	83	8	32	29.21	29.97	01	CLR	NC	SUNRISE: 0603	SEP 23	48	44	46	86	7	19	29.10	29.85
01	CLR	NC				10.00	51	45	48	80	8	31	29.22	29.98	04	FEW	NC			49	45	47	86	8	21	29.06	29.82
04	FEW	NC				10.00	53	45	49	74	8	32	29.29	30.05	07	FEW	NC			53	48	50	83	12	22	29.05	29.81
07	BKN	031				10.00	59	47	53	64	16	34	29.35	30.11	10	SCT	NC			65	57	60	76	24	24	29.04	29.79
10	SCT	NC				10.00	64	45	54	50	14	32	29.36	30.11	13	FEW	NC			68	57	61	68	24	23	29.02	29.77
13	FEW	NC				10.00	67	45	55	45	14	32	29.34	30.10	16	FEW	NC			69	47	57	45	25	24	29.00	29.74
16	CLR	NC				10.00	61	46	53	58	6	30	29.35	30.11	19	FEW	NC			65	51	57	61	9	22	29.01	29.76
19	CLR	NC				10.00	56	47	51	72	0	00	29.37	30.13	22	CLR	NC			58	48	53	70	9	17	29.02	29.76
				SUNRISE: 0557	SEP 18	6.00 BR	50	47	48	89	3	18	29.39	30.15	01	CLR	NC	SUNRISE: 0604	SEP 24	59	43	51	56	12	20	28.99	29.73
01	CLR	NC				10.00	48	45	47	89	3	17	29.39	30.15	04	SCT	NC			58	42	50	56	6	21	28.98	29.72
04	CLR	NC				10.00	48	45	47	89	5	17	29.42	30.18	07	OVC	090			57	43	50	60	8	21	29.00	29.75
07	CLR	NC				10.00	62	52	56	70	6	27	29.42	30.17	10	OVC	035	-RA		58	55	56	90	6	20	29.03	29.78
10	SCT	NC				10.00	67	50	58	55	8	20	29.38	30.14	13	OVC	018			61	55	58	81	14	23	29.04	29.78
13	SCT	NC				10.00	68	51	58	55	6	24	29.32	30.08	16	OVC	037			63	54	58	73	15	24	29.05	29.79
16	SCT	NC				10.00	63	51	56	65	3	23	29.31	30.07	19	OVC	043			56	54	55	93	0	00	29.09	29.84
19	FEW	NC				10.00	57	52	54	83	5	15	29.33	30.09	22	OVC	031			55	53	54	93	8	03	29.15	29.91

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

# **BUFFALO, NY**

**SEPTEMBER 1999**

SEPTEMBER 1999

BU 15

WBAN # 14733

### 3-HOURLY OBSERVATION NOTES

Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8, SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8. VV = Vertical Visibility = 8/8.

Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.  
NC = No ceiling detected.

& = Original observation contained additional weather elements.  
See page 3 for additional notes.

## SUMMARY BY HOUR

HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)			
	CEILOMETER	EFF OLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	STATION	SEA LEVEL	VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED	DIRECTION
01			59	54	56	83	29.23	29.98	8.90	7	3	16
02			59	54	56	84	29.23	29.98	8.78	7	3	17
03			58	53	56	85	29.22	29.97	8.88	6	2	16
04			58	53	55	85	29.22	29.98	9.07	6	3	17
05			58	53	55	85	29.23	29.98	9.00	6	2	16
06			58	53	55	84	29.23	29.99	8.95	6	3	17
07			59	53	56	82	29.24	30.00	8.63	6	3	19
08			62	53	57	75	29.25	30.00	8.96	7	3	20
09			65	55	59	72	29.25	30.00	9.15	8	3	22
10			68	55	60	66	29.25	30.00	9.37	10	4	23
11			69	54	60	61	29.25	30.00	9.60	9	5	24
12			70	54	61	59	29.24	29.99	9.60	9	5	24
13			71	54	61	58	29.23	29.98	9.43	10	5	23
14			71	54	61	57	29.22	29.97	9.57	10	5	23
15			71	54	61	57	29.21	29.96	9.13	9	5	23
16			71	54	61	58	29.20	29.96	9.06	10	5	25
17			70	54	61	60	29.20	29.96	9.03	9	5	24
18			69	55	61	63	29.21	29.96	8.93	9	3	24
19			66	55	60	68	29.21	29.96	8.83	7	2	22
20			65	55	60	72	29.22	29.97	8.87	7	2	18
21			64	55	59	74	29.22	29.98	9.07	7	3	18
22			62	54	58	76	29.22	29.97	9.23	8	3	18
23			61	54	57	77	29.22	29.98	9.07	7	3	18
24			60	53	56	79	29.22	29.97	8.87	7	3	18

**SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)**

SEPTEMBER 1999  
BUFFALO, NY

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	0.00	
02													02												02	0.00	
03													03												03	0.00	
04													04												04	0.00	
05													05												05	0.00	
06													06												06	0.07	
07	1.00	0.31	0.17	0.03	T	T	T	T	T	T	T	T	07	T	T	T	0.11	0.08	0.01	T	T	T	T	07	0.07		
08					0.03	0.18	0.04						08												08	1.79	
09													09	0.01	T										09	0.25	
10													10												10	0.23	
11													11												11	0.00	
12													12												12	0.00	
13													13												13	0.22	
14													14												14	T	
15													15												15	0.00	
16													16												16	0.00	
17													17												17	0.00	
18													18												18	0.00	
19													19												19	0.00	
20													20	0.01	0.01	0.18	0.04	0.18	0.10	0.01	T	T			20	0.53	
21													21												21	T	
22													22												22	0.00	
23													23												23	0.00	
24													24												24	0.32	
25													25												25	0.00	
26													26												26	0.00	
27													27												27	0.00	
28													28												28	0.00	
29													29	0.34										29	0.90		
30	0.04	0.02	0.02	0.02	0.06	0.02	T						30	0.02											30	0.20	

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 4.51

**SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)**

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.24	0.38	0.42	0.55	0.68	0.90	1.00	1.10	1.18	1.29	1.46	1.51
ENDED: DATE	07	07	07	07	07	07	07	07	07	07	07	07
ENDED: TIME	0035	0040	0045	0045	0100	0100	0100	0124	0140	0222	0222	0250

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.

First HPD value that follows is the total accumulated amount.



SEPTEMBER 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19



# OCTOBER 1999

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

**BUFFALO, NY**

## GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 705 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

OCTOBER 1999  
BUFFALO, NY

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

OCTOBER 1999

BUF

WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24			
01													01							T	T	0.03	0.08	0.02	0.07	01	0.00	
02													02							T	T	0.02	0.07	T	0.01	02	0.22	
03													03							T	T	0.03	0.08	T	0.01	03	0.47	
04													04							T	T	0.02	0.07	T	0.01	04	0.47	
05													05							T	T	0.02	0.07	T	0.01	05	0.03	
06													06							T	T	0.02	0.07	T	0.01	06	0.05	
07													07							T	T	0.02	0.07	T	0.01	07	0.00	
08													08							T	T	0.02	0.07	T	0.01	08	0.17	
09													09							T	T	0.02	0.07	T	0.01	09	0.03	
10													10							T	T	0.02	0.07	T	0.01	10	0.05	
11													11							T	T	0.02	0.07	T	0.01	11	0.00	
12													12							T	T	0.02	0.07	T	0.01	12	0.00	
13													13							T	T	0.02	0.07	T	0.01	13	1.02	
14													14							T	T	0.02	0.07	T	0.01	14	0.20	
15													15							T	T	0.02	0.07	T	0.01	15	0.00	
16													16							T	T	0.02	0.07	T	0.01	16	0.00	
17													17							T	T	0.02	0.07	T	0.01	17	0.42	
18													18							T	T	0.02	0.07	T	0.01	18	0.00	
19													19							T	T	0.02	0.07	T	0.01	19	0.00	
20													20							T	T	0.02	0.07	T	0.01	20	0.23	
21													21							T	T	0.02	0.07	T	0.01	21	0.00	
22													22							T	T	0.02	0.07	T	0.01	22	0.05	
23													23							T	T	0.02	0.07	T	0.01	23	0.00	
24													24							T	T	0.02	0.07	T	0.01	24	T	
25													25							T	T	0.02	0.07	T	0.01	25	0.00	
26													26							T	T	0.02	0.07	T	0.01	26	0.00	
27													27							T	T	0.02	0.07	T	0.01	27	0.00	
28													28							T	T	0.02	0.07	T	0.01	28	0.00	
29													29							T	T	0.02	0.07	T	0.01	29	0.00	
30													30							T	T	0.02	0.07	T	0.01	30	0.00	
31													31							T	T	0.02	0.07	T	0.01	31	0.01	

### MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCUSSION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	SQ Squalls
SH Shower(s)	SG Snow Grains	SA Sand	SS Sandstorm
TS Thunderstorm	SN Snow	VA Volcanic Ash	GL Glaze
VC In the Vicinity	UP Unknown Precipitation		
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy	'-' = Moderate	'-' = Light	

## BUFFALO, NY OCTOBER 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	CELOMETER	SATELLITE	
01	546	77					10.00
02	175	25					10.00
03	230	33					5.00
04	0	0					3.00
05	390	56					10.00
06	303	44					4.00
07	631	92					10.00
08	350	51					2.00
09	430	63					2.00
10	15	2					2.50
11	605	89					7.00
12	490	73					10.00
13	394	59					3.00
14	484	73					9.00
15	595	89					10.00
16	660	100					10.00
17	0	0					5.00
18	167	25					9.00
19	440	67					10.00
20	113	17					3.00
21	407	63					10.00
22	90	14					4.00
23	15	2					10.00
24	27	4					10.00
25	307	48					10.00
26	475	75					10.00
27	0	0					10.00
28	629	100					8.00
29	567	90					6.00
30	593	95					7.00
31	249	40					<.25
MONTHLY AVGS							7.08
SUNSHINE (MINUTES)							10.00
Total: 10377 Possible: 20503 Percent Possible: 51							
NUMBER OF DAYS WITH: SKY CONDITION CLR PTLY CLDY CLOUDY MISSING 31							
MINIMUM VISIBILITY (MILES) <=.25 <=3.0 >=7.0 1 7 19							

## OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**  
**OCTOBER 1999**

OCTOBER 1991

BLU

WBAN # 14733

OCTOBER 1999				BUF												WBAN # 14733												
HOUR (LST)	SATELLITE			TEMPERATURE °F			WIND			PRESSURE (INCHES,HG)		SATELLITE			TEMPERATURE °F			WIND			PRESSURE (INCHES,HG)							
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLO AMT	Orbs	WEATHER	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLO AMT	Orbs	WEATHER	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
<b>SUNRISE: 0612 OCT 01 SUNSET: 1757</b>																												
01	CLR	NC		10.00			53	38	46	57	15	21	29.10	29.85	01	CLR	NC		10.00			35	27	32	72	0.00	29.58	30.35
04	FEW	NC		10.00			53	37	46	55	18	21	29.08	29.83	04	CLR	NC		10.00			31	28	30	89	0.00	29.60	30.40
07	BKN	041		10.00			56	45	50	67	14	23	29.11	29.86	07	SCT	NC		10.00			31	28	30	89	0.00	29.68	30.47
10	FEW	NC		10.00			60	34	48	38	18	25	29.14	29.90	10	BKN	034		10.00			39	25	34	57	8.05	29.72	30.51
13	FEW	NC		10.00			62	38	50	41	23	25	29.17	29.93	13	BKN	250		10.00			45	24	37	44	3.00	29.68	30.47
16	FEW	NC		10.00			60	40	50	48	17	24	29.21	29.97	16	FEW	NC		10.00			47	24	38	41	0.00	29.63	30.41
19	BKN	060		10.00			56	40	48	55	7	27	29.27	30.03	19	FEW	NC		10.00			40	31	36	70	8.06	29.60	30.40
22	BKN	060		10.00			50	41	46	71	6	14	29.31	30.07	22	Few	NC		10.00			39	28	35	65	6.12	29.56	30.34
<b>SUNRISE: 0613 OCT 02 SUNSET: 1755</b>																												
01	FEW	NC		10.00			46	41	44	83	6	14	29.32	30.09	01	CLR	NC		10.00			39	28	35	65	7.15	29.51	30.29
04	OVC	250		10.00			45	41	43	86	7	16	29.33	30.10	04	CLR	NC		10.00			41	29	36	62	7.14	29.46	30.24
07	BKN	220		10.00			47	42	45	83	7	18	29.33	30.10	07	CLR	NC		10.00			44	33	39	65	3.19	29.43	30.21
10	OVC	200		10.00			60	43	51	53	3	VR	29.30	30.07	10	OVC	250		10.00			60	44	52	56	2.00	29.43	30.19
13	OVC	080		10.00			65	42	53	44	7	23	29.24	30.00	13	OVC	200		10.00			66	49	57	54	18.21	29.37	30.14
16	OVC	080		10.00			65	45	54	49	6	28	29.22	29.98	16	OVC	130		10.00			64	47	55	54	14.20	29.30	30.07
19	OVC	085		10.00			57	49	53	75	7	33	29.30	30.06	19	OVC	055		10.00	-RA		62	49	55	62	14.19	29.26	30.02
22	OVC	090		10.00			55	51	53	87	0	00	29.31	30.08	22	OVC	028		5.00	-RA		58	52	55	81	20.21	29.24	30.00
<b>SUNRISE: 0614 OCT 03 SUNSET: 1753</b>																												
01	OVC	028		10.00			53	46	49	77	10	32	29.39	30.15	01	OVC	006		2.00	-RA	BR	57	56	56	96	14.21	29.25	30.01
04	OVC	046		10.00			51	42	47	71	9	32	29.47	30.23	04	OVC	050		3.00	BR		60	57	58	90	10.25	29.29	30.05
07	BKN	048		10.00			47	41	44	80	6	34	29.57	30.33	07	BKN	039		4.00	BR		59	57	58	93	10.26	29.36	30.11
10	BKN	250		10.00			51	36	44	56	8	01	29.59	30.37	10	BKN	300		9.00			62	54	57	75	10.27	29.41	30.17
13	SCT	NC		10.00			55	36	46	49	0	00	29.56	30.32	13	OVC	300		10.00			64	54	58	70	12.24	29.40	30.16
16	OVC	150		10.00			52	40	46	64	13	01	29.54	30.30	16	OVC	180		10.00			63	54	58	73	8.22	29.38	30.14
19	OVC	090		10.00			48	35	42	61	14	07	29.48	30.26	19	OVC	150		7.00			63	54	55	84	3.16	29.38	30.14
22	OVC	046		6.00	-RA	BR	44	40	42	85	10	08	29.50	30.27	22	OVC	032		5.00	BR		56	54	55	93	5.11	29.36	30.12
<b>SUNRISE: 0615 OCT 04 SUNSET: 1752</b>																												
01	OVC	012		7.00	RA		43	41	42	93	13	05	29.37	30.14	01	OVC	025		2.50	BR		58	57	57	97	6.17	29.31	30.07
04	OVC	045		10.00	-RA		42	40	41	92	10	04	29.37	30.14	04	OVC	028		3.00	BR		59	58	58	96	3.16	29.25	30.01
07	OVC	008		10.00			43	41	42	93	14	04	29.38	30.15	07	OVC	022		3.00	BR		60	59	59	96	0.00	29.23	29.99
10	OVC	006		5.00	BR		43	41	42	93	13	03	29.42	30.20	10	OVC	018		5.00	BR		63	60	61	90	5.23	29.22	29.98
13	OVC	010		10.00			44	41	43	89	14	04	29.42	30.19	13	OVC	014		10.00			64	59	61	84	12.24	29.17	29.93
16	OVC	023		10.00			46	39	43	77	10	02	29.41	30.19	16	OVC	009		6.00	BR		63	60	61	90	8.23	29.15	29.91
19	OVC	047		10.00			44	38	41	79	6	02	29.45	30.22	19	OVC	005		5.00	BR		61	60	60	97	14.22	29.16	29.92
22	BKN	040		10.00			43	36	40	76	3	03	29.44	30.22	22	OVC	005		7.00			61	59	60	93	16.24	29.19	29.95
<b>SUNRISE: 0616 OCT 05 SUNSET: 1750</b>																												
01	OVC	044		10.00			42	39	41	89	3	34	29.43	30.20	01	OVC	055		10.00			57	54	55	90	10.32	29.26	30.02
04	OVC	044		10.00			43	39	41	86	0	00	29.43	30.20	04	SCT	NC		7.00			52	50	51	93	5.29	29.32	30.08
07	OVC	046		10.00			43	39	41	86	5	31	29.43	30.21	07	CLR	NC		10.00			49	46	47	90	7.28	29.40	30.16
10	BKN	035		10.00			48	34	42	58	0	00	29.42	30.20	10	Few	NC		10.00			57	44	50	62	8.31	29.46	30.22
13	OVC	039		10.00			51	35	44	54	6	24	29.37	30.14	13	Few	NC		10.00			61	37	49	41	15.31	29.46	30.22
16	CLR	NC		10.00			52	32	43	47	9	20	29.31	30.08	16	SCT	NC		10.00			61	35	49	38	13.28	29.46	30.22
19	SCT	NC		10.00			50	38	44	63	7	23	29.30	30.07	19	SCT	NC		10.00			55	35	46	47	8.30	29.50	30.27
22	OVC	065		10.00	-RA		48	41	45	77	10	21	29.28	30.05	22	Few	NC		10.00			50	34	43	54	5.29	29.54	30.31
<b>SUNRISE: 0617 OCT 06 SUNSET: 1748</b>																												
01	OVC	045		4.00	RA	BR	48	44	46	86	8	21	29.23	30.00	01	CLR	NC		10.00			45	37	41	74	3.21	29.56	30.32
04	OVC	055		10.00			50	43	47	77	9	21	29.19	29.96	04	CLR	NC		10.00			39	35	37	86	0.00	29.58	30.35
07	BKN	350		10.00			50	43	47	77	7	29	29.23	30.00	07	SCT	NC		10.00			38	35	37	89	0.00	29.59	30.38
10	OVC	041		10.00			48	38	43	68	15	32	29.32	30.09	10	OVC	200		10.00			52	40	46	64	5.21	29.60	30.38
13	BKN	043		10.00			49	32	42	52	17	31	29.38	30.15	13	OVC	250		10.00			57	37	48	47	0.00	29.53	30.30
16	Few	NC		10.00			47	32	41	56	13	33	29.43	30.20	16	OVC	250		10.00			60	37	49	42	5.01	29.42	30.19
19	Few	NC		10.00			40	30	36	68	10	35	29.49	30.27	19	SCT	NC		10.00			53	37	46	55	5.12	29.34	3

# OBSERVATIONS AT 3-HOURLY INTERVALS

**BUFFALO, NY**  
OCTOBER 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)	HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND	PRESSURE (INCHES,HG)												
	SKY COVER	CEILING	100'S OF FT		OBservation TIME (LST)	EFF CLD AMT	Oktas				SKY COVER	CEILING	100'S OF FT		OBservation TIME (LST)	EFF CLD AMT	Oktas	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL						
					SUNRISE: 0626	OCT 13	SUNSET: 1736									SUNRISE: 0633	OCT 19	SUNSET: 1727													
01	SCT	NC			10.00			52	41	47	66	6	17	29.24	30.01	01	CLR	NC			10.00			34	32	33	92	5	13	29.50	30.27
04	SCT	NC			10.00			58	48	53	70	12	19	29.16	29.91	04	BKN	150			10.00			33	31	32	92	7	14	29.50	30.28
07	SCT	NC			10.00			59	50	54	72	20	20	29.09	29.84	07	SCT	NC			10.00			35	32	34	89	6	13	29.54	30.32
10	BKN	250			10.00			68	56	61	66	18	20	29.02	29.77	10	CLR	NC			10.00			47	35	42	63	7	17	29.53	30.30
13	OVC	250			10.00			73	54	62	51	20	21	28.92	29.66	13	SCT	NC			10.00			55	33	45	44	6	VR	29.47	30.25
16	OVC	050			10.00			65	49	56	56	16	30	28.84	29.59	16	OVC	250			10.00			54	33	45	45	6	20	29.43	30.21
19	OVC	022			3.00	+TSRA BR		53	52	52	96	8	21	28.84	29.59	19	OVC	110			10.00			51	37	45	59	6	10	29.43	30.20
22	OVC	005			9.00	-RA		51	50	51	96	17	29	28.84	29.59	22	OVC	080			10.00			50	37	44	61	7	18	29.41	30.18
					SUNRISE: 0627	OCT 14	SUNSET: 1735									SUNRISE: 0634	OCT 20	SUNSET: 1725													
01	OVC	011			10.00	-RA		38	36	37	93	21	34	29.05	29.80	01	OVC	080			10.00			50	40	45	68	13	20	29.38	30.15
04	OVC	032			10.00			39	37	38	93	9	30	29.18	29.94	04	OVC	042			10.00			48	45	47	89	8	19	29.37	30.14
07	BKN	031			10.00			38	32	36	79	14	33	29.31	30.08	07	BKN	041			6.00	-RA BR		47	44	46	90	10	19	29.37	30.14
10	BKN	028			10.00			42	31	37	65	10	35	29.38	30.16	10	OVC	038			7.00	-RA		48	44	46	86	3	24	29.37	30.14
13	Few	NC			10.00			47	31	40	54	9	28	29.38	30.15	13	BKN	049			10.00			55	38	47	53	14	27	29.33	30.10
16	Few	NC			10.00			48	32	41	54	12	23	29.38	30.15	16	OVC	070			10.00			52	33	41	49	9	27	29.33	30.10
19	Few	NC			10.00			43	34	39	71	7	20	29.40	30.18	19	OVC	070			10.00			49	31	41	50	6	28	29.37	30.14
22	CLR	NC			10.00			39	32	36	76	5	18	29.40	30.18	22	Few	NC			10.00			45	30	39	56	6	24	29.39	30.16
					SUNRISE: 0628	OCT 15	SUNSET: 1733									SUNRISE: 0635	OCT 21	SUNSET: 1724													
01	BKN	100			10.00			40	33	37	77	6	14	29.41	30.18	01	OVC	150			10.00			44	30	38	58	6	26	29.36	30.13
04	BKN	110			10.00			38	31	35	76	5	13	29.42	30.19	04	Few	NC			10.00			41	31	37	67	7	26	29.34	30.12
07	SCT	NC			10.00			38	31	35	76	6	14	29.44	30.22	07	Few	NC			10.00			39	32	36	76	5	21	29.34	30.11
10	Few	NC			10.00			54	36	46	51	8	17	29.41	30.18	10	OVC	034			10.00			47	33	41	59	9	25	29.32	30.09
13	BKN	300			10.00			60	33	47	36	7	18	29.34	30.10	13	BKN	039			10.00			50	35	43	57	16	24	29.25	30.02
16	Few	NC			10.00			65	31	49	28	0	0	29.28	30.05	16	Few	NC			10.00			52	37	45	57	16	24	29.16	29.93
19	SCT	NC			10.00			58	35	47	42	0	0	29.29	30.06	19	BKN	200			10.00			48	38	43	68	8	16	29.12	29.90
22	CLR	NC			10.00			53	40	47	61	7	18	29.29	30.05	22	BKN	120			10.00			44	35	40	71	9	18	29.03	29.79
					SUNRISE: 0629	OCT 16	SUNSET: 1731									SUNRISE: 0636	OCT 22	SUNSET: 1722													
01	CLR	NC			10.00			55	43	49	64	12	21	29.30	30.06	01	OVC	140			10.00			51	33	43	50	16	20	28.91	29.66
04	CLR	NC			10.00			52	43	48	72	6	18	29.28	30.04	04	OVC	070			10.00	-RA		52	35	44	53	18	19	28.76	29.51
07	SCT	NC			10.00			56	46	51	70	10	20	29.26	30.02	07	SCT	NC			10.00	-RA		52	37	45	57	16	18	28.65	29.40
10	Few	NC			10.00			67	50	57	55	15	20	29.25	30.01	10	OVC	041			10.00			51	40	46	66	21	20	28.61	29.36
13	SCT	NC			10.00			74	53	62	48	18	20	29.19	29.95	13	BKN	085			10.00			53	43	48	69	15	23	28.64	29.39
16	CLR	NC			10.00			74	53	62	48	15	21	29.15	29.91	16	OVC	075			10.00			50	36	44	59	16	24	28.69	29.44
19	SCT	NC			10.00			69	51	59	53	14	20	29.16	29.91	19	BKN	090			10.00			47	35	42	63	14	25	28.76	29.52
22	OVC	055			10.00			69	52	59	55	15	20	29.17	29.92	22	OVC	085			10.00			45	33	40	63	13	26	28.77	29.53
					SUNRISE: 0630	OCT 17	SUNSET: 1730									SUNRISE: 0638	OCT 23	SUNSET: 1720													
01	OVC	050			10.00			67	53	59	61	9	22	29.16	29.91	01	BKN	100			10.00			42	34	39	73	12	25	28.76	29.52
04	OVC	033			10.00			60	54	57	80	10	33	29.17	29.92	04	OVC	065			10.00			41	35	38	79	14	25	28.75	29.51
07	OVC	010			7.00	-RA		52	51	52	97	8	34	29.22	29.98	07	OVC	095			10.00			40	34	37	79	14	26	28.77	29.53
10	OVC	010			10.00			51	49	50	92	7	33	29.25	30.01	10	BKN	070			10.00			42	35	39	76	17	26	28.77	29.53
13	OVC	055			10.00			52	47	49	83	7	01	29.22	29.98	13	OVC	060			10.00			45	36	41	71	13	26	28.76	29.52
16	OVC	049			7.00	-RA		50	48	49	93	7	33	29.20	29.97	16	BKN	085			10.00			46	36	42	68	10	25	28.78	29.54
19	OVC	035			8.00	-RA		48	47	47	96	6	09	29.21	29.98	19	BKN	080			10.00			44	38	41	79	7	29	28.85	29.61
22	OVC	080			10.00			47	45	46	93	6	16	29.20	29.97	22	SCT	NC			10.00			42	37	40	82	8	31	28.93	29.70
					SUNRISE: 0632	OCT 18	SUNSET: 1728									SUNRISE: 0639	OCT 24	SUNSET: 1719													
01	OVC	038			10.00			46	44	45	93	0	00	29.19	29.96	01	OVC	018			10.00										

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
OCTOBER 1999

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)	
					DRY BULB	DEW POINT	WET BULB				
<b>SUNRISE: 0640 OCT 25 SUNSET: 1718</b>											
01	OVC	070		10.00	42	30	37	62	9	26 29.31 30.09	
04	OVC	065		10.00	44	30	38	58	13	27 29.31 30.09	
07	OVC	110		10.00	42	35	39	76	10	26 29.31 30.09	
10	BKN	035		10.00	48	38	43	68	17	22 29.32 30.10	
13	OVC	025		10.00	51	40	46	66	23	29.28 30.06	
16	FEW	NC		10.00	52	36	45	55	18	24 29.24 30.01	
19	CLR	NC		10.00	50	40	45	68	10	21 29.22 29.98	
22	BKN	250		10.00	50	31	42	48	17	21 29.18 29.94	
<b>SUNRISE: 0641 OCT 26 SUNSET: 1716</b>											
01	OVC	150		10.00	50	32	42	50	15	22 29.15 29.92	
04	SCT	NC		10.00	49	33	42	55	14	22 29.10 29.86	
07	BKN	120		10.00	52	39	46	61	18	22 29.10 29.86	
10	FEW	NC		10.00	54	43	48	67	20	24 29.12 29.88	
13	SCT	NC		10.00	55	42	49	62	26	23 29.13 29.89	
16	FEW	NC		10.00	54	41	48	62	20	25 29.17 29.93	
19	FEW	NC		10.00	50	32	42	50	10	30 29.26 30.03	
22	OVC	070		10.00	46	37	42	71	6	32 29.30 30.06	
<b>SUNRISE: 0643 OCT 27 SUNSET: 1715</b>											
01	OVC	030		10.00	45	36	41	71	8	31 29.34 30.11	
04	SCT	NC		10.00	42	38	40	85	8	33 29.39 30.16	
07	OVC	050		10.00	41	37	39	86	9	34 29.46 30.23	
10	OVC	031		10.00	44	35	40	71	7	02 29.54 30.32	
13	OVC	026		10.00	43	34	39	71	6	03 29.56 30.34	
16	OVC	028		10.00	44	34	40	68	5	36 29.57 30.35	
19	BKN	032		10.00	40	34	37	79	6	05 29.59 30.38	
22	CLR	NC		10.00	36	33	35	89	6	10 29.58 30.36	
<b>SUNRISE: 0644 OCT 28 SUNSET: 1713</b>											
01	CLR	NC		9.00	34	32	33	92	8	14 29.57 30.35	
04	FEW	NC		8.00	32	30	31	92	6	14 29.53 30.31	
07	BKN	250		10.00	34	30	32	85	7	16 29.52 30.30	
10	BKN	350		10.00	50	35	43	57	12	20 29.49 30.27	
13	FEW	NC		10.00	59	39	49	48	15	21 29.41 30.18	
16	FEW	NC		10.00	62	39	51	43	15	21 29.35 30.12	
19	FEW	NC		10.00	59	37	48	44	14	21 29.36 30.13	
22	CLR	NC		10.00	53	42	48	66	6	28 29.41 30.17	
<b>SUNRISE: 0645 OCT 29 SUNSET: 1712</b>											
01	CLR	NC		10.00	48	42	45	80	0	00 29.43 30.19	
04	CLR	NC		7.00	44	41	43	89	5	03 29.45 30.22	
07	FEW	NC		6.00	BR	43	40	42	89	5	07 29.48 30.25
10	BKN	300		8.00	55	42	49	62	5	08 29.51 30.28	
13	SCT	NC		10.00	64	46	54	52	8	25 29.50 30.26	
16	CLR	NC		10.00	66	46	55	49	0	00 29.50 30.26	
19	CLR	NC		10.00	54	48	51	80	6	06 29.51 30.28	
22	FEW	NC		8.00	53	46	50	77	6	13 29.50 30.26	
<b>SUNRISE: 0646 OCT 30 SUNSET: 1710</b>											
01	CLR	NC		10.00	53	45	49	74	7	15 29.49 30.25	
04	SCT	NC		10.00	52	43	48	72	6	15 29.49 30.25	
07	OVC	120		10.00	53	43	48	69	6	15 29.53 30.29	
10	FEW	NC		10.00	66	47	56	50	9	21 29.53 30.29	
13	CLR	NC		10.00	72	47	58	41	12	23 29.47 30.23	
16	BKN	250		10.00	68	47	57	47	7	22 29.45 30.20	
19	BKN	250		9.00	60	46	53	60	5	17 29.45 30.22	
22	SCT	NC		7.00	54	45	49	72	8	21 29.42 30.18	

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)
					DRY BULB	DEW POINT	WET BULB			
<b>SUNRISE: 0648 OCT 31 SUNSET: 1709</b>										
01	SCT	NC		10.00	60	43	51	53	14	21 29.41 30.16
04	SCT	NC		10.00	60	44	52	56	14	22 29.40 30.15
07	OVC	085		10.00	62	47	54	58	15	24 29.39 30.15
10	OVC	010		4.00	BR	56	53	54	90	14 24 29.41 30.18
13	BKN	036		5.00	HZ	60	54	57	80	20 23 29.40 30.16
16	SCT	NC		5.00	HZ	59	53	56	81	13 24 29.41 30.17
19	CLR	NC		2.50	BR	54	53	53	97	8 23 29.45 30.21
22	CLR	NC		1.25	BR	50	50	50	100	5 21 29.46 30.23

## 3-HOURLY OBSERVATION NOTES

Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8,  
SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visibility = 8/8.

Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.  
NC = No ceiling detected.

& = Original observation contained additional weather elements.  
See page 3 for additional notes.

## SUMMARY BY HOUR

HOUR (LST)	CEILOMETER	EFF CLD AMT	AVERAGES					RESULTANT WIND (MPH)	DIRECTION	
			DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	STATION	SEA LEVEL	VISIBILITY (MILES)	WIND SPEED (MPH)
01			47	40	44	76	29.30	30.06	9.18	9 4 22
02			47	40	44	77	29.30	30.07	9.11	9 5 22
03			47	40	43	77	29.30	30.06	9.31	9 4 23
04			46	40	43	78	29.30	30.06	9.29	8 4 23
05			46	40	43	78	29.31	30.07	9.26	8 4 24
06			46	40	43	79	29.31	30.08	9.29	9 4 24
07			46	40	43	80	29.32	30.09	9.23	9 4 24
08			48	40	44	76	29.33	30.10	9.29	9 4 24
09			50	41	46	71	29.34	30.11	9.13	10 4 25
10			52	41	47	67	29.33	30.10	9.29	10 5 24
11			54	41	48	63	29.33	30.10	9.52	12 8 24
12			55	41	48	60	29.32	30.09	9.39	13 9 24
13			56	41	49	58	29.31	30.07	9.84	12 8 24
14			57	41	49	56	29.30	30.06	9.84	12 9 25
15			57	40	49	56	29.29	30.06	9.81	11 9 25
16			56	40	48	57	29.29	30.06	9.61	10 7 26
17			54	40	47	61	29.30	30.06	9.26	9 5 26
18			52	40	46	65	29.30	30.07	9.39	9 3 26
19			51	40	46	68	29.31	30.08	9.18	8 3 23
20			50	40	45	70	29.31	30.08	9.31	8 3 23
21			49	40	45	73	29.31	30.08	9.16	8 3 22
22			48	40	44	74	29.31	30.08	8.98	8 4 22
23			48	40	44	75	29.31	30.08	9.00	9 4 22
24			47	40	44	76	29.31	30.08	8.71	9 3 23

OCTOBER 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	0.00	
02													02												02	0.00	
03													03												03	0.23	
04	0.10	0.28	0.13	0.03	T								04	T											04	0.54	
05													05												05	0.03	
06													06												06	0.00	
07													07												07	0.00	
08													08												08	0.19	
09													09												09	0.00	
10													10												10	0.04	
11													11												11	0.00	
12													12												12	0.00	
13													13												13	1.12	
14	0.08	0.07	0.08	0.01									14												14	0.24	
15													15												15	0.00	
16													16												16	0.00	
17													17												17	0.44	
18													18												18	0.00	
19													19												19	0.00	
20													20												20	0.22	
21													21												21	0.00	
22													22												22	0.04	
23													23												23	0.00	
24													24												24	T	
25													25												25	0.00	
26													26												26	0.00	
27													27												27	0.00	
28													28												28	0.00	
29													29												29	0.00	
30													30												30	0.00	
31													31												31	0.00	
																									MONTHLY TOTAL 3.09		

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.20	0.31	0.32	0.34	0.37	0.38	0.39	0.42	0.49	0.60	0.79	0.90
ENDED: DATE	13	13	13	13	13	13	13	13	13	13	13	13
ENDED: TIME	1633	1649	1650	1652	1657	1658	1659	1755	1810	1829	1900	1925

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

PAGE 7

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.

First HPD value that follows is the total accumulated amount.



OCTOBER 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

United States  
Department of Commerce

National Oceanic and  
Atmospheric Administration

National Environmental Satellite  
Data, and Information Service

For address correction, please return a photocopy of this page to Subscription Services indicating changes

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300



**NOVEMBER 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
 NOAA, National Climatic Data Center

**BUFFALO, NY**

GREATER BUFFALO INTL AIRPORT (BUF)

Lat: 42°56' N Long: 78°44' W Elev (Ground): 739 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #:0198-358X

**NOVEMBER 1999**  
**BUFFALO, NY**

DATE	TEMPERATURE °F							DEG DAYS BASE 65°	WEATHER	SNOW/ICE ON GND(IN)		PRECIPITATION (INCHES)		PRESSURE (INCHES OF HG)		WIND SPEED = MPH DIR = TENS OF DEGREES						DATE	
	MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	HEATING			0700 LST	1300 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	5-SEC	2-MIN	SPEED	DIR	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
01	66	40	53	7	47	51	12	0	FG+ BR	0	0.0	0.00	29.27	30.07	6.6	19	7.4	22	18	17	18	01	
02	65	38	52	7	48	51	13	0	RA DZ BR	0	0.0	1.65	28.71	29.49	5.4	25	15.1	39	30	31	31	02	
03	39	34	37	-8	30	34	28	0	RA DZ SN BR	0	0.1	0.01	28.80	29.60	21.1	26	21.2	43*	26	33*	26	03	
04	48	35	42	-3	25	35	23	0		0	0.0	0.00	29.30	30.11	16.0	25	17.2	38	23	29	24	04	
05	63	41	52	8	29	43	13	0		0	0.0	0.00	29.30	30.11	16.9	23	17.4	40	23	31	22	05	
06	52	37	45	1	28	38	20	0		0	0.0	0.00	29.42	30.23	9.5	27	10.2	24	29	20	29	06	
07	42	32	37	-7	25	33	28	0		0	0.0	0.00	29.51	30.33	8.0	29	8.3	20	30	16	31	07	
08	52	33	43	0	29	37	22	0		0	0.0	0.00	29.38	30.19	6.7	22	7.0	20	21	16	20	08	
09	64	48	56	13	43	51	9	0		0	0.0	0.00	29.13	29.92	17.2	23	17.6	41	24	31	24	09	
10	60	38	49	6	48	51	16	0	RA BR	0	0.0	0.34	29.08	29.87	10.0	26	17.2	37	24	26	23	10	
11	39	29	34	-8	25	30	31	0		0	0.0	0.00	29.54	30.36	11.3	06	12.2	25	04	20	05	11	
12	47	29	38	-4	33	38	27	0		0	0.0	0.00	29.37	30.19	9.3	23	10.8	26	28	21	26	12	
13	54	43	49	7	41	44	16	0	BR HZ	0	0.0	0.00	29.19	30.00	7.2	22	8.8	24	21	20	20	13	
14	58	39	49	8	37	43	16	0	RA SN BR	0	T	T	28.96	29.75	14.0	28	17.1	37	31	30	31	14	
15	40	28	34	-7	23	31	31	0	RA SN	0	T	T	29.06	29.87	11.5	31	12.3	26	31	21	33	15	
16	34	26	30	-10	18	26	35	0	SN	0	T	T	29.08	29.89	14.7	31	14.9	33	30	26	32	16	
17	36	24	30	-10	21	27	35	0		0	0.0	0.00	29.32	30.14	6.5	26	8.3	22	32	17	24	17	
18	49	32	41	1	24	35	24	0	RA	0	0.0	T	29.35	30.17	9.2	21	9.7	18	22	16	20	18	
19	64	45	55	16	29	44	10	0		0	0.0	0.00	29.27	30.07	12.9	20	13.1	30	19	24	20	19	
20	59	44	52	13	43	46	13	0	RA BR	0	0.0	0.28	29.23	30.03	11.4	23	12.1	28	24	22	23	20	
21	55	39	47	8	45	46	18	0	BR HZ	0	0.0	0.00	29.33	30.14	3.5	16	4.7	11	14	10	14	21	
22	68	51	60*	22	52	55	5	0	BR	0	0.0	0.00	29.34	30.14	6.7	20	8.0	24	21	21	20	22	
23	69*	48	59	21	52	55	6	0	BR	0	0.0	0.00	29.36	30.16	4.9	16	5.3	21	18	17	17	23	
24	63	42	53	16	42	47	12	0	RA BR	0	0.0	0.13	29.28	30.08	18.1	23	20.0	41	24	32	23	24	
25	46	38	42	5	34	38	23	0	RA	0	0.0	0.01	29.43	30.24	3.8	07	4.0	18	07	15	06	25	
26	49	39	44	8	44	44	21	0	RA BR	0	0.0	0.88	28.99	29.79	1.8	31	8.7	21	26	17	27	26	
27	46	38	42	6	36	40	23	0		0	0.0	0.00	29.11	29.91	13.2	24	14.1	36	25	28	23	27	
28	41	35	38	2	27	34	27	0		0	0.0	0.00	29.39	30.21	13.6	26	13.7	30	28	24	27	28	
29	38	28	33	-2	25	30	32	0	SN BR	0	0.1	0.01	29.53	30.36	9.2	32	10.9	24	36	20	33	29	
30	30	22*	26*	-9	17	23	39	0	RA SN FG+ FZFG BR	T	0.7	0.02	29.78	30.62	6.1	35	6.5	20	33	16	03	30	
51.2	36.5	43.9			34.0	40.0	20.9	0.0	< MONTHLY AVERAGES	TOTALS->	0.9	3.33	29.26	30.07	7.2	25	11.8	< - MONTHLY AVERAGES					
4.1	2.6	3.4			<-----	DEPARTURE FROM NORMAL	----->																

DEGREE DAYS		MONTHLY TOTAL DEPARTURE	SEASON TO DATE TOTAL DEPARTURE
HEATING:	628	-107	1196
COOLING:	0	0	688

GREATEST 24-HR PRECIPITATION:	1.65	DATE: 02	SEA LEVEL PRESSURE	DATE
GREATEST 24-HR SNOWFALL:	0.7	DATE: 30	TIME	30 1854
GREATEST SNOW DEPTH:	T	DATE: 30	MAXIMUM MINIMUM	29.05
NUMBER OF DAYS WITH →	MAXIMUM TEMP ≥ 90: 0	MINIMUM TEMP ≤ 32: 9	PRECIPITATION ≥ 0.01 INCH	9
	MAXIMUM TEMP ≤ 32: 1	MINIMUM TEMP ≤ 0: 0	PRECIPITATION ≥ 0.10 INCH	5
	THUNDERSTORMS: 0	HEAVY FOG: 2	SNOWFALL ≥ 1.0 INCH	0

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

NOVEMBER 1999

BUF WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	Water Equiv.	2400 LST
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24				
01													01												01		0.00		
02													02	0.12	0.22	0.11	0.15	0.07	0.12	0.13	0.14	0.14				02	1.65		
03	T	T	T	T	T	T	0.15	0.06	0.03	0.01	T	0.05	03	T	T	T	T								03	0.01	T		
04													04												04	0.00			
05													05												05	0.00			
06													06												06	0.00			
07													07												07	0.00			
08													08												08	0.00			
09													09												09	0.00			
10													10	0.01	0.02	0.06	0.04	0.08	0.11	0.01	0.01	T	T	T	T	10	0.34		
11													11												11	0.00			
12													12												12	0.00			
13													13												13	0.00			
14													14	T					T	T					14	T			
15	T												15												15	T			
16													16												16	T			
17													17												17	0.00			
18													18												18	T			
19													19												19	0.00			
20							T	0.01	0.15	0.03	T	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.02	0.02	T	T			20	0.28			
21													21												21	0.00			
22													22												22	0.00			
23													23												23	0.00			
24													24												24	0.13			
25													25												25	0.01			
26	0.01	0.02	0.03	0.05	0.13	0.12	0.05	0.04	0.05	0.02	0.02	0.01	26	T	0.02	0.06	0.04	0.03	0.09	0.07	0.02	T	T		0.01	26	0.88		
27			T	T		T	T	T	0.02		T	T	27	T	0.01	T									27	0.00			
28													28												28	0.00			
29													29												29	0.01			
30													30												30	0.02			

### MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)

T = Trace precipitation amount

+ = also occurs on earlier date

FG+ = Heavy fog, visibility .25 miles or less

BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+ FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy    ' ' = Moderate    '-' = Light			

## BUFFALO, NY NOVEMBER 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled at constant pressure by evaporation of moisture into it, to 100% relative humidity.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	MINIMUM	MAXIMUM	
01	619	100			<.25	10.00	
02	0	0			1.25	10.00	
03	8	1			2.00	10.00	
04	525	86			10.00	10.00	
05	340	56			10.00	10.00	
06	310	51			10.00	10.00	
07	265	44			10.00	10.00	
08	512	85			10.00	10.00	
09	246	41			10.00	10.00	
10	0	0			2.00	10.00	
11	388	65			10.00	10.00	
12	170	29			7.00	10.00	
13	138	23			4.00	10.00	
14	122	21			4.00	10.00	
15	4	1			10.00	10.00	
16	115	20			7.00	10.00	
17	330	57			10.00	10.00	
18	211	37			10.00	10.00	
19	338	59			8.00	10.00	
20	0	0			3.00	10.00	
21	84	15			1.00	9.00	
22	118	21			6.00	10.00	
23	515	91			3.00	10.00	
24	20	4			10.00	10.00	
25	129	23			9.00	10.00	
26	0	0			2.00	10.00	
27	15	3			10.00	10.00	
28	182	33			10.00	10.00	
29	137	25			4.00	10.00	
30	205	37			.50	10.00	
MONTHLY AVGS					6.46	9.97	
SUNSHINE (MINUTES)							
Total:	6046	Possible:	17543				
Percent Possible:	34						
NUMBER OF DAYS WITH:							
SKY CONDITION	CLR	PTLY	CLDY	CLOUDY	MISSING		
					30		
MINIMUM VISIBILITY (MILES)							
<-0.25	<=3.0	>=7.0					
1	9	17					

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
NOVEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite				WEATHER	TEMPERATURE °F						WIND	PRESSURE (INCHES.HG)			HOUR (LST)	SATellite				WEATHER	TEMPERATURE °F						WIND	PRESSURE (INCHES.HG)		
	SKY COVER	CEILING	100'S OF FT	OBSErVATION TIME (LST)	EFF Cld AMT	Oktas	Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)	Speed (MPH)	Direction Tens of Deg	Station	Sea Level	SKY COVER	CEILING	100'S OF FT	OBSErVATION TIME (LST)	EFF Cld AMT	Oktas	Visibility (miles)	Wind Speed (MPH)	Wind Direction Tens of Deg	Station	Sea Level	PRESSURE (INCHES.HG)					
01	OVC	001	<.25	SUNRISE: 0649	FG	44	44	44	100	3	16	29.42	30.22	01	CLR	NC		SUNRISE: 0657	NOV 07	SUNSET: 1700	NOV 07	37	28	34	70	9	28	29.47	30.28		
04	OVC	003	0.25	FG		41	41	41	100	6	17	29.39	30.20	04	SCT	NC			10.00		35	27	32	72	8	28	29.49	30.31			
07	CLR	NC	3.00	BR		41	41	41	100	7	17	29.37	30.19	07	SCT	NC			10.00		33	27	31	78	7	28	29.52	30.34			
10	CLR	NC	10.00			54	44	49	69	6	18	29.36	30.16	10	SCT	NC			10.00		39	30	35	70	9	30	29.56	30.38			
13	CLR	NC	10.00			64	46	54	52	9	23	29.29	30.09	13	BKN	230			10.00		40	24	34	53	14	32	29.52	30.34			
16	SCT	NC	9.00			66	54	59	65	6	19	29.20	30.00	16	BKN	250			10.00		40	22	33	49	12	30	29.50	30.32			
19	BKN	250	7.00			61	54	57	78	8	17	29.15	29.95	19	SCT	NC			10.00		36	21	31	55	3	27	29.49	30.31			
22	BKN	120	10.00			64	53	58	68	14	17	29.08	29.87	22	BKN	200			10.00		35	24	31	64	6	30	29.49	30.31			
01	OVC	120	10.00	SUNRISE: 0650		63	52	57	68	17	17	29.00	29.79	01	OVC	200		SUNRISE: 0658	NOV 08	SUNSET: 1659	NOV 08	34	26	31	73	0	00	29.45	30.27		
04	OVC	110	10.00			63	52	57	68	14	19	28.95	29.73	04	OVC	110			10.00		34	28	32	79	3	22	29.44	30.27			
07	OVC	039	5.00	-RA		61	55	58	81	17	20	28.92	29.70	07	OVC	060			10.00		35	29	33	78	3	18	29.46	30.28			
10	OVC	080	6.00	-RA		61	56	58	84	10	19	28.85	29.63	10	BKN	085			10.00		40	29	36	65	6	22	29.46	30.28			
13	OVC	002	1.25	RA BR		50	49	49	96	12	35	28.78	29.56	13	FEW	NC			10.00		45	30	39	56	9	22	29.40	30.22			
16	OVC	004	2.50	-RA BR		47	46	46	97	9	03	28.59	29.37	16	SCT	NC			10.00		48	29	40	48	12	21	29.32	30.14			
19	OVC	004	5.00	-RA BR		44	44	44	100	23	36	28.35	29.12	19	OVC	050			10.00		47	31	40	54	8	22	29.31	30.11			
22	OVC	010	5.00	-RA BR		39	38	39	96	20	24	28.45	29.23	22	BKN	050			10.00		50	27	40	41	14	20	29.27	30.07			
01	OVC	009	10.00	DZ	SUNRISE: 0652		36	35	36	97	18	25	28.54	29.34	01	FEW	NC		SUNRISE: 0659	NOV 09	SUNSET: 1658	NOV 09	48	31	41	52	9	21	29.22	30.02	
04	OVC	014	10.00			36	33	35	89	16	25	28.62	29.41	04	BKN	250			10.00		49	30	41	48	10	20	29.19	29.99			
07	OVC	017	9.00	-SN		34	32	33	92	18	26	28.68	29.47	07	SCT	NC			10.00		53	31	43	43	14	22	29.17	29.96			
10	OVC	015	10.00			35	31	33	85	18	26	28.73	29.53	10	BKN	250			10.00		63	49	55	60	21	23	29.17	29.96			
13	OVC	023	10.00			39	30	35	70	24	26	28.77	29.57	13	BKN	230			10.00		63	50	56	63	28	24	29.08	29.87			
16	OVC	016	2.00	-SN BR		34	31	33	89	20	26	28.87	29.68	16	BKN	230			10.00		61	50	55	67	25	24	29.05	29.84			
19	OVC	150	10.00			36	27	32	70	26	27	28.95	29.76	19	SCT	NC			10.00		61	50	55	67	21	24	29.09	29.88			
22	OVC	095	10.00			35	25	31	67	18	26	29.02	29.83	22	BKN	060			10.00		59	50	54	72	15	23	29.09	29.88			
01	BKN	100	10.00	SUNRISE: 0653		36	24	32	62	22	26	29.08	29.89	01	BKN	060		SUNRISE: 0700	NOV 10	SUNSET: 1657	NOV 10	58	50	54	75	17	24	29.10	29.88		
04	OVC	050	10.00			36	25	32	64	21	27	29.17	29.98	04	BKN	075			8.00		57	50	53	78	18	24	29.06	29.84			
07	OVC	044	10.00			37	22	32	54	17	28	29.26	30.06	07	OVC	070			9.00		59	50	54	72	20	24	29.02	29.80			
10	FEW	NC	10.00			40	24	34	53	22	26	29.31	30.13	10	OVC	060			8.00		60	50	55	70	18	24	29.03	29.81			
13	SCT	NC	10.00			46	28	39	50	25	24	29.31	30.13	13	BKN	024			4.00	-RA BR	55	53	54	93	17	24	28.98	29.78			
16	FEW	NC	10.00			47	30	40	52	20	24	29.34	30.15	16	OVC	041			4.00	-RA BR	55	53	54	93	15	26	29.00	29.79			
19	CLR	NC	10.00			42	28	36	58	9	20	29.38	30.19	19	OVC	004			10.00		45	44	45	97	13	03	29.12	29.91			
22	CLR	NC	10.00			40	25	34	55	8	20	29.39	30.20	22	OVC	005			6.00	-RA BR	40	39	40	97	17	03	29.23	30.03			
01	FEW	NC	10.00	SUNRISE: 0654		44	28	38	53	10	22	29.38	30.20	01	OVC	014		SUNRISE: 0702	NOV 11	SUNSET: 1656	NOV 11	37	33	35	86	18	03	29.32	30.13		
04	CLR	NC	10.00			47	27	39	46	14	22	29.37	30.19	04	OVC	020			10.00		34	28	32	79	16	04	29.41	30.22			
07	BKN	200	10.00			47	26	38	44	15	21	29.35	30.16	07	OVC	030			10.00		33	22	29	64	16	05	29.52	30.34			
10	SCT	NC	10.00			55	31	44	40	29	23	29.31	30.12	10	BKN	030			10.00		34	23	30	64	14	07	29.59	30.42			
13	BKN	200	10.00			59	31	46	35	22	23	29.25	30.04	13	SCT	NC			10.00		38	25	33	60	10	06	29.59	30.41			
16	BKN	200	10.00			63	31	48	30	23	22	29.18	29.98	16	FEW	NC			10.00		36	24	32	62	13	07	29.59	30.42			
19	SCT	NO	10.00			58	30	45	35	21	25	29.27	30.07	19	BKN	280			10.00		31	23	28	72	9	04	29.64	30.47			
22	FEW	NC	10.00			54	31	44	42	12	24	29.31	30.10	22	OVC	280			10.00		29	22	27	75	9	10	29.59	30.42			
01	CLR	NC	10.00	SUNRISE: 0655		51	31	42	46	10	27	29.35	30.15	01	OVC	150		SUNRISE: 0703	NOV 12	SUNSET: 1655	NOV 12	30	22	27	72	5	11	29.52	30.34		
04	CLR	NC	10.00			43	31	38	63	7	24	29.38	30.19	04	OVC	110			10.00		32	23	29	69	7	18	29.47	30.30			
07	CLR	NC	10.00			38	31	35	76	6	21	29.43	30.24	07	OVC	120			10.00		35	25	31	67	7	19	29.46	30.28			
10	BKN	250	10.00			49	25	39	39	10	28	29.45	30.26	10	BKN	250			10.00		45	29	38	54	12	22	29.43	30.25			
13	BKN	130	10.00			49	30	41	48	13	25	29.38	30.19	13	OVC	100			10.00		45	36	41	71	16	23	29.33	30.15			
16	SCT	NC	10.00			49	23	39	36	14	29	29.38	30.19	16	OVC	120			10.00		46	40	43	79	14	23	29.27	30.08			
19	OVC	130	10.00	</td																											

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
NOVEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Okas	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES.HG)		HOUR (LST)	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Okas	WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES.HG)		
						DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL							DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
01	OVC	026			SUNRISE: 0704	NOV 13		SUNSET: 1654						01	SCT	NC				SUNRISE: 0712	NOV 19		SUNSET: 1649					
04	OVC	020					6.00	BR						04	CLR	NC					48	22	38	36	3	19	29.35	30.16
07	OVC	024					9.00							04	CLR	NC					46	24	37	42	7	19	29.33	30.14
10	OVC	028					10.00							07	CLR	NC					46	23	37	40	6	16	29.32	30.13
13	OVC	028					10.00							10	BKN	300					57	27	44	32	16	20	29.31	30.11
16	OVC	250					7.00							13	OVC	250					63	33	49	33	18	20	29.25	30.04
19	OVC	280					6.00	BR						16	OVC	180					63	32	48	31	21	20	29.21	30.01
22	OVC	180					6.00	HZ						19	BKN	180					60	32	47	35	17	20	29.21	30.00
					SUNRISE: 0706	NOV 14		SUNSET: 1653						22	OVC	060					57	29	45	34	10	20	29.24	30.03
01	BKN	130					7.00							01	OVC	065					SUNRISE: 0713	NOV 20		SUNSET: 1648				
04	OVC	130					9.00							04	OVC	036					59	32	47	36	14	19	29.19	29.98
07	OVC	029					7.00							07	OVC	025					57	35	47	44	14	21	29.16	29.95
10	BKN	200					10.00							10	OVC	008					5.00	-RA	BR		10	21	29.19	29.99
13	OVC	049					10.00							13	OVC	020					5.00	-RA	BR		14	23	29.20	29.99
16	OVC	060					10.00							16	OVC	024					7.00	-RA			14	23	29.19	29.99
19	OVC	047					10.00							19	SCT	NC					48	48	48	100	14	23	29.24	30.03
22	OVC	042					10.00	-SN						22	OVC	014					45	43	44	93	13	25	29.29	30.09
					SUNRISE: 0707	NOV 15		SUNSET: 1652						01	OVC	037					SUNRISE: 0714	NOV 21		SUNSET: 1647				
01	OVC	037					10.00							04	OVC	047					8.00				6	20	29.32	30.14
04	OVC	047					10.00							07	OVC	041					8.00				5	17	29.32	30.13
07	OVC	041					10.00							10	BKN	030					8.00				6	18	29.36	30.17
10	OVC	043					10.00							13	OVC	041					2.00	BR			5	15	29.37	30.19
13	OVC	041					10.00							16	OVC	047					8.00				3	19	29.33	30.14
16	OVC	047					10.00							19	OVC	034					5.00	HZ			5	24	29.31	30.12
22	BKN	036					10.00							30	18	26	61	131	34	29.02	29.83	22	SCT	NC	6.00	BR		
					SUNRISE: 0708	NOV 16		SUNSET: 1651						01	SCT	NC					SUNRISE: 0715	NOV 22		SUNSET: 1646				
01	SCT	NC					10.00							04	SCT	NC					53	50	51	89	7	14	29.31	30.11
04	SCT	NC					10.00							07	SCT	NC					55	51	53	87	5	17	29.31	30.10
07	SCT	NC					10.00							10	BKN	003					57	50	53	78	9	16	29.31	30.12
10	BKN	031					10.00							13	BKN	100					62	53	57	73	12	19	29.33	30.13
13	BKN	032					10.00							16	BKN	100					66	53	59	63	15	23	29.31	30.11
16	OVC	037					10.00							19	BKN	070					63	52	57	68	9	24	29.32	30.12
19	BKN	038					10.00							31	21	27	67	22	30	29.14	29.95	19	BKN	090	7.00			
22	OVC	039					10.00							30	23	28	75	10	31	29.18	30.00	22	BKN	060	6.00	BR		
					SUNRISE: 0709	NOV 17		SUNSET: 1650						01	BKN	035					SUNRISE: 0717	NOV 23		SUNSET: 1646				
01	BKN	035					10.00							04	FEW	NC					54	51	52	90	5	19	29.41	30.21
04	FEW	NC					10.00							07	BKN	026					50	50	50	100	0	00	29.42	30.22
07	FEW	NC					10.00							10	BKN	090					50	50	50	100	0	00	29.45	30.25
10	BKN	026					10.00							13	BKN	110					56	53	54	90	3	10	29.46	30.26
13	BKN	090					10.00							16	SCT	NC					67	55	60	66	6	15	29.38	30.18
16	BKN	110					10.00							19	SCT	NC					67	53	59	61	7	18	29.32	30.11
19	SCT	NC					10.00							22	BKN	034					62	52	56	70	8	15	29.29	30.09
22	BKN	034					10.00							35	26	32	70	71	27	29.33	30.15	22	FEW	NC	10.00			
					SUNRISE: 0711	NOV 18		SUNSET: 1649						01	FEW	NC					SUNRISE: 0718	NOV 24		SUNSET: 1645				
01	BKN	025					10.00							04	OVC	025					58	52	55	81	12	18	29.18	29.96
04	OVC	025					10.00							07	BKN	120					62	51	56	67	23	19	29.12	29.91
07	BKN	120					10.00							10	SCT	NC					54	53	53	97	23	22	29.17	29.96
10	SCT	NC					10.00							13	OVC	110					49	43	46	80	25	23	29.26	30.05
13	OVC	110					10.00							16	OVC	090					47	39	43	74	24	23	29.29	30.09
16	OVC	090					10.00							19	BKN	070					46	37	42	71	24	25	29.33	30.14
19	BKN	070					10.00							22	OVC	100					46	33	40	61	18	25	29.39	30.20
22	OVC	100					10.00							35	22	36	40	5	15	29.34	30.16	22	OVC	040	10.00			

## **OBSERVATIONS AT 3-HOURLY INTERVALS**

**BUFFALO, NY**  
**NOVEMBER 1999**

NOVEMBER 1999

B1F

WRAN # 14733

HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS. OF DEG	PRESSURE (INCHES,HG)		
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)		EFF CLD AMT OCTS	DRY BULB	DEW POINT					
			VISIBILITY (MILES)							STATION	SEA LEVEL	
				SUNRISE: 0719	NOV 25	SUNSET: 1645						
01	BKN	047		10.00		41	32	37	70	0 00	29.44	30.2
04	OVC	150		10.00		40	34	37	79	0 00	29.45	30.2
07	OVC	042		10.00		40	33	37	77	0 00	29.46	30.2
10	OVC	150		10.00		40	33	37	77	0 00	29.49	30.3
13	BKN	035		10.00		44	30	38	58	0 00	29.45	30.2
16	BKN	250		10.00		44	32	39	63	6 07	29.42	30.2
19	OVC	150		10.00		41	33	38	74	10 08	29.40	30.2
22	OVC	047		10.00		41	34	38	76	10 05	29.34	30.1
				SUNRISE: 0720	NOV 26	SUNSET: 1644						
01	OVC	060		8.00 -RA		39	38	39	96	12 05	29.24	30.0
04	OVC	060		5.00 -RA BR		40	40	40	100	10 07	29.12	29.9
07	OVC	047		5.00 -RA BR		41	41	41	100	10 06	29.01	29.8
10	BKN	030		4.00 -RA BR		44	44	44	100	3 36	28.94	29.7
13	OVC	027		2.50 -RA BR		48	48	48	100	5 34	28.86	29.6
16	OVC	004		3.00 -RA		48	48	48	100	7 22	28.87	29.6
19	OVC	007		3.00 -RA		47	46	46	97	10 25	28.92	29.7
22	OVC	013		10.00		44	42	43	93	13 25	29.00	29.81
				SUNRISE: 0721	NOV 27	SUNSET: 1644						
01	BKN	042		10.00		42	38	40	85	12 27	29.07	29.87
04	OVC	018		10.00		45	40	43	83	15 23	29.07	29.88
07	OVC	024		10.00		42	36	39	79	13 21	29.08	29.88
10	OVC	023		10.00		44	37	41	76	13 22	29.08	29.89
13	OVC	021		10.00		45	38	42	77	21 23	29.06	29.86
16	OVC	021		10.00		45	39	42	80	17 23	29.08	29.88
19	OVC	050		10.00		44	33	39	65	16 27	29.15	29.95
22	BKN	065		10.00		41	30	37	65	15 27	29.21	30.01
				SUNRISE: 0723	NOV 28	SUNSET: 1643						
01	FEW	NC		10.00		37	28	34	70	13 25	29.26	30.07
04	SCT	NC		10.00		36	28	33	73	12 27	29.30	30.11
07	SCT	NC		10.00		35	29	33	78	13 26	29.34	30.16
10	SCT	NC		10.00		40	29	36	65	21 27	29.38	30.20
13	OVC	039		10.00		40	30	36	68	16 26	29.40	30.21
16	BKN	060		10.00		40	29	36	65	17 26	29.43	30.25
19	CLR	NC		10.00		37	25	33	62	10 27	29.47	30.30
22	SCT	NC		10.00		36	25	32	64	12 26	29.47	30.29
				SUNRISE: 0724	NOV 29	SUNSET: 1643						
01	OVC	041		10.00		37	26	33	65	12 27	29.44	30.26
04	OVC	090		10.00		34	29	32	82	7 29	29.43	30.25
07	BKN	100		10.00		32	30	31	92	7 26	29.46	30.28
10	BKN	055		10.00		34	28	32	79	10 29	29.47	30.30
13	BKN	050		9.00		37	27	33	67	15 31	29.48	30.30
16	BKN	034		10.00		33	21	29	61	14 35	29.57	30.39
19	OVC	032		10.00		32	20	28	61	9 35	29.63	30.46
22	OVC	032		10.00		30	19	26	64	9 34	29.68	30.51
				SUNRISE: 0725	NOV 30	SUNSET: 1642						
01	BKN	034		10.00		27	18	24	69	12 35	29.70	30.53
04	OVC	035		10.00		26	18	23	71	8 01	29.72	30.55
07	SCT	NC		10.00		24	20	23	84	6 33	29.76	30.60
10	SCT	NC		10.00		27	21	25	78	9 33	29.79	30.63
13	BKN	060		9.00		28	18	25	66	8 36	29.78	30.63
16	SCT	NC		10.00		28	14	24	56	8 03	29.81	30.65
19	CLR	NC		10.00		22	15	20	75	6 35	29.83	30.68
22	CLR	NC		10.00		23	14	20	68	5 28	29.80	30.65

NOVEMBER 1999				BUF	WBAN # 14733							
HOUR (LST)	SATELLITE			WEATHER	TEMPERATURE °F		WIND	PRESSURE (INCHES,HG)				
SKY COVER	CEILINGS 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT Ones	VISIBILITY (MILES)	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
				SUNRISE:		NOV 31		SUNSET:				

### **3-HOURLY OBSERVATION NOTES**

**Sky Cover** is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8–2/8, SCT = 3/8–4/8, BKN = 5/8–7/8, OVC = 8/8. WV = Vertical Visibility = 8/8.

Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.

NC = No ceiling detected

& = Original observation contained additional weather elements

See page 3 for additional notes.

## SUMMARY BY HOUR

HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)	
	CEILMETER					PRESSURE (INCHES,HG)		VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED
		DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	STATION	SEA LEVEL			
01		43	34	39	72	29.25	30.06	9.10	10	5 25
02		43	34	39	72	29.25	30.06	8.80	10	6 24
03		42	33	39	72	29.25	30.06	9.07	10	6 24
04		42	34	39	73	29.25	30.06	9.14	10	5 24
05		42	34	39	74	29.26	30.06	8.97	10	6 24
06		42	34	38	75	29.26	30.07	9.02	10	6 24
07		41	34	38	76	29.27	30.08	8.90	10	6 23
08		41	34	38	76	29.28	30.09	8.32	10	7 24
09		43	34	39	73	29.28	30.09	8.80	12	8 24
10		45	35	40	70	29.28	30.09	9.13	13	9 25
11		46	35	41	66	29.28	30.09	9.43	13	10 25
12		47	35	42	64	29.26	30.07	9.16	15	11 26
13		47	35	42	65	29.25	30.05	9.03	14	11 25
14		48	35	42	64	29.24	30.04	9.08	15	11 26
15		48	35	42	63	29.23	30.04	9.12	15	11 25
16		47	35	42	65	29.24	30.04	8.75	14	9 25
17		46	35	41	67	29.24	30.05	9.17	12	8 26
18		45	35	41	68	29.25	30.06	8.97	12	8 27
19		44	34	40	69	29.26	30.07	9.20	12	6 27
20		43	34	39	71	29.26	30.07	9.27	11	6 26
21		43	33	39	70	29.26	30.07	9.37	11	5 25
22		43	33	39	70	29.27	30.08	9.17	11	6 25
23		43	33	39	70	29.27	30.08	9.40	11	5 25
24		42	33	38	71	29.27	30.08	9.23	11	5 24

NOVEMBER 1999  
BUFFALO, NY

SUPPLEMENTARY HOURLY PRECIPITATION  
UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

LATITUDE 42° 56' N  
LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12		
01													01												01	0.00	
02	T	T	0.01	T	T	0.16	0.05	0.02	T	T	0.01	0.05	02	0.11	0.24	0.13	0.07	0.08	0.15	0.12	0.16	0.12	0.15	0.01	0.01	02	1.63
03													03	T												03	0.02
04													04													04	0.00
05													05													05	0.00
06													06													06	0.00
07													07													07	0.00
08													08													08	0.00
09													09	0.02	0.04	0.06	0.03	0.09	0.09	0.01						09	0.00
10													10													10	0.35
11													11													11	0.00
12													12													12	0.00
13													13													13	0.00
14													14													14	T
15													15													15	0.00
16													16													16	0.00
17													17													17	0.00
18													18													18	0.00
19													19													19	0.00
20													20	0.01	0.02	T									20	0.30	
21													21													21	0.00
22													22													22	0.00
23													23													23	0.00
24													24													24	0.15
25													25													25	0.01
26	0.02	0.02	0.05	0.07	0.18	0.08	0.06	0.06	0.02	0.01	0.04	0.01	26		T	0.07	0.03	0.04	0.09	0.08	0.02	T	T			26	0.96
27													27													27	0.00
28													28													28	0.00
29													29													29	0.01
30													30		T	0.01	T								T	0.01	
	MONTHLY TOTAL																									3.44	

PUBLISHED BY: NCDC, ASHEVILLE, NC.

SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.10	0.12	0.14	0.14	0.15	0.20	0.24	0.28	0.31	0.37	0.45	0.48
ENDED: DATE	02	02	02	02	02	02	02	02	02	02	02	02
ENDED: TIME	0635	0640	0650	0650	0700	1358	1358	1358	1500	1500	1500	1500

The time indicated is the ending time of the interval.  
Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data. M = Missing Data.

\* = Data distribution unknown.  
First HPP value that follows is the total accumulated amount.



NOVEMBER 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

*I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA—National Weather Service / Department Of Transportation—Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.*

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

For address correction, please return a photocopy of this page to Subscription Services indicating changes

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHEVILLE, NC 28801-5001

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19



**DECEMBER 1999**  
**LOCAL CLIMATOLOGICAL DATA**  
NOAA, National Climatic Data Center

**BUFFALO, NY**

## **GREATER BUFFALO INTL AIRPORT (BUF)**

Lat: 42° 56' N Long: 78° 44' W Elev (Ground): 739 Feet

Time Zone: EASTERN WBAN: 14733 ISSN #: 0198-358X

DECEMBER 1999  
BUFFALO, NY

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

BUFFALO, NY

DECEMBER 1999

BUF WBAN # 14733

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT												DATE	Sum if Different (See Note)	2400 LST		
	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24					
01	T												01												01	T				
02													02												02	0.00				
03		T	T	0.03	0.04	0.01	0.03	T	0.01				03	T		T	T	0.03	T	0.01	T	0.02	0.04	0.02	T	T	03	0.08		
04				0.01	0.01	0.03	0.03		0.04	0.01			04													04	0.18			
05		T											05	T		T	T	T	0.03	T	0.01	T	0.02	0.04	0.02	T	T	05		
06													06			T	T	T									06	0.05		
07													07														07	0.00		
08													08														08	0.00		
09													09														09	T		
10		T	T	T	T	T	T	T	0.06	0.07	0.10	0.06	0.01	10	0.02	0.02	T	T				T				10	0.34			
11													11														11	0.00		
12													12														12	T		
13		T	T	T	T	T	T	T	0.01	T			13	T	0.16	0.13	0.17	0.07	0.05	0.01	T	0.01	T	0.02	T	T	13	0.01		
14													14	T													14	0.60		
15													15														15	0.13		
16		T	T										16														16	0.08		
17													17														17	0.25		
18													18														18	T		
19													19														19	0.02		
20													20	T	T		T	0.02	0.01	0.02	0.01					20	0.00			
21													21														21	T		
22		T	T	T	T	T	T	T	T	T	T	T	22													22	0.04			
23													23														23	0.06		
24													24														24	T		
25													25	T	T	T	T	T	T	T	T	T	T	T	T	25	T	0.04		
26													26	T	T	T	T	T	T	T	T	T	T	T	T	26	T	0.04		
27													27														27	T		
28		T											28														28	0.09		
29													29	T	T	T	T	T	T	T	T	T	T	T	T	29	0.18			
30													30														30	T		
31													31														31	0.00		

### MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)												
Ending Date												
Ending Time (Hour/Min)												

Date and time are not entered for TRACE amounts.

Note : The sum of the hourly totals is given when it differs from the daily total. NWS does not edit ASOS hourly values but may edit daily and monthly totals. Hourly, daily, and monthly totals are printed as reported by the ASOS site.

## REFERENCE NOTES & SUPPLEMENTAL SUMMARIES

\* = Extreme for the month (last occurrence if more than one)  
 T = Trace precipitation amount  
 + = also occurs on earlier date  
 FG+ = Heavy fog, visibility .25 miles or less  
 BLANK entries denote missing or unreported data

Resultant wind is the vector sum of the wind speeds and directions divided by the number of observations.

Wind direction is recorded in tens of degrees (2 digits) clockwise from true north. '00' = calm, 'VR' = variable.

Precipitation is for the 24-hour period ending at the time indicated in the column heading.

Water Equivalent of snow on the ground is reported only when the depth is 2 or more inches.

NORMALS ARE FOR THE YEARS 1961-1990

### WEATHER NOTATIONS

QUALIFIER	WEATHER PHENOMENA		
DESCRIPTOR	PRECIPITATION	OBSCURATION	OTHER
BC Patches	DZ Drizzle	BR Mist	DS Duststorm
BL Blowing	GR Hail	DU Widespread Dust	FC Funnel Cloud
DR Low Drifting	GS Small Hail and/or Snow Pellets	FG Fog	+FC Tornado Waterspout
FZ Freezing	IC Ice Crystals	FU Smoke	PO Well-Developed Dust/Sand Whirls
MI Shallow	PL Ice Pellets	HZ Haze	
PR Partial	RA Rain	PY Spray	
SH Shower(s)	SG Snow Grains	SA Sand	SQ Squalls
TS Thunderstorm	SN Snow	VA Volcanic Ash	SS Sandstorm
VC In the Vicinity	UP Unknown Precipitation		GL Glaze
Intensity (as indicated on pages 4 to 6):			
'+' = Heavy	'-' = Moderate	'-' = Light	

## BUFFALO, NY DECEMBER 1999

Ceilometer (30-second) data are used to derive cloudiness at or below 12,000 feet. This cloudiness is the mean cloud cover detected during sunrise to sunset (SR-SS), or midnight to midnight (MN-MN).

Satellite data are used to derive cloudiness above 12,000 feet. Effective Cloud Amount is based on the cloud cover and the transparency of the clouds within the satellite field of view (approx. 31x31 miles).

Sky Condition is based on the sum (not to exceed 8) of the sunrise to sunset cloud cover below and above 12,000 feet. Both ceilometer and satellite data must be present to compute Sky Condition. Clear = 0-2 oktas, Partly Cloudy = 3-6 oktas, Cloudy = 7-8 oktas.

A Heating (Cooling) Degree Day is the difference between the average daily temperature and 65 degrees F. The HDD season begins July 1, the CDD season begins January 1.

Dew Point is the temperature to which the air must be cooled to achieve 100% relative humidity. Wet Bulb is the temperature the air would have if cooled to saturation at constant pressure by evaporation of water into it.

Snow Depth, Snowfall, and Sunshine data may come from nearby sites that the National Weather Service deems Climatologically representative of this site.

### ADDITIONAL NOTES:

DATE	SUNSHINE		CLOUDINESS (OKTAS)		VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS	MN-MN	MINIMUM	MAXIMUM	
01	556	100			9.00	10.00	
02	35	6			7.00	10.00	
03	0	0			10.00	10.00	
04	0	0			2.00	10.00	
05	0	0			3.00	10.00	
06	0	0			6.00	10.00	
07	7	1			10.00	10.00	
08	459	84			9.00	10.00	
09	515	94			10.00	10.00	
10	3	1			1.50	10.00	
11	305	56			10.00	10.00	
12	165	30			10.00	10.00	
13	0	0			.25	10.00	
14	0	0			.50	10.00	
15	265	49			4.00	10.00	
16	28	5			.50	10.00	
17	398	74			10.00	10.00	
18	55	10			1.00	10.00	
19	508	94			10.00	10.00	
20	0	0			5.00	10.00	
21	103	19			8.00	10.00	
22	217	40			1.50	10.00	
23	40	7			1.25	10.00	
24	256	47			7.00	10.00	
25	0	0			1.25	10.00	
26	19	4			.75	10.00	
27	7	1			1.00	10.00	
28	0	0			1.00	10.00	
29	225	42			3.00	10.00	
30	90	17			9.00	10.00	
31	92	17			10.00	10.00	
MONTHLY AVGS					5.24	10.00	
SUNSHINE (MINUTES)							
Total:	4348	Possible:	16895				
Percent Possible:	26						
NUMBER OF DAYS WITH:							
SKY CONDITION							
CLR	PTLY	CLOUDY	MISSING				
			31				
MINIMUM VISIBILITY (MILES)							
<~0.25	<=3.0	>=7.0					
1	14	14					

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
DECEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SKY COVER		CEILING 100'S OF FT		OBSERVATION TIME (LST)	EFFECTIVE AMT Odds	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT		OBSERVATION TIME (LST)	EFFECTIVE AMT Odds	WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)			
								DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY (%)		STATION	SEA LEVEL																	
01	BKN	130		10.00				20	17	19	89	0	00	29.78	30.63	01	OVC	013		10.00				35	30	33	82	14	31	29.31	30.12
04	SCT	NC		10.00				17	14	16	88	0	00	29.77	30.61	04	OVC	017		10.00				34	29	32	82	5	33	29.35	30.17
07	FEW	NC		10.00				17	14	16	88	6	18	29.76	30.60	07	OVC	015		10.00				33	26	30	75	10	29	29.42	30.24
10	FEW	NC		9.00				25	19	23	78	0	00	29.74	30.58	10	OVC	020		10.00				33	24	30	70	10	27	29.46	30.25
13	FEW	NC		10.00				33	17	28	52	8	23	29.67	30.50	13	OVC	027		10.00				36	25	32	64	14	27	29.43	30.25
16	FEW	NC		10.00				31	20	27	64	9	22	29.63	30.46	16	OVC	023		10.00				36	27	33	70	7	26	29.44	30.27
19	CLR	NC		10.00				28	20	25	72	5	21	29.60	30.43	19	OVC	023		10.00				34	26	31	73	7	30	29.47	30.29
22	SCT	NC		10.00				27	20	25	75	8	21	29.55	30.39	22	BKN	025		10.00				34	27	31	76	6	14	29.46	30.28
				SUNRISE: 0726				DEC	01		SUNSET: 1642								SUNRISE: 0732				DEC	07		SUNSET: 1641					
01	OVC	140		10.00				29	21	26	72	12	20	29.50	30.33	01	CLR	NC		10.00				31	25	29	79	6	17	29.46	30.29
04	BKN	250		10.00				28	17	25	63	9	20	29.46	30.29	04	CLR	NC		10.00				29	25	28	85	8	18	29.47	30.30
07	BKN	070		10.00				30	15	25	54	9	18	29.46	30.28	07	BKN	017		10.00				30	25	28	82	5	18	29.51	30.34
10	OVC	075		10.00				35	16	29	46	12	20	29.44	30.27	10	SCT	NC		10.00				35	28	32	76	8	17	29.53	30.35
13	OVC	080		10.00				39	22	33	50	14	21	29.36	30.19	13	FEW	NC		10.00				42	29	37	60	10	24	29.49	30.32
16	BKN	075		10.00				41	20	33	43	8	21	29.33	30.16	16	CLR	NC		10.00				41	32	37	70	7	21	29.49	30.31
19	SCT	NC		10.00				34	21	29	59	9	21	29.31	30.14	19	CLR	NC		10.00				36	31	34	82	7	18	29.50	30.32
22	SCT	NC		10.00				39	20	32	46	10	20	29.30	30.11	22	CLR	NC		10.00				33	28	31	82	5	14	29.51	30.34
				SUNRISE: 0727				DEC	02		SUNSET: 1642							SUNRISE: 0733				DEC	08		SUNSET: 1641						
01	OVC	095		10.00				44	23	36	43	9	19	29.27	30.07	01	CLR	NC		10.00				34	24	30	67	5	15	29.51	30.34
04	OVC	095		10.00				45	28	38	52	9	20	29.25	30.06	04	FEW	NC		10.00				35	25	31	67	3	20	29.50	30.33
07	OVC	037		10.00				48	35	42	61	9	20	29.26	30.06	07	SCT	NC		10.00				35	27	32	72	7	18	29.51	30.33
10	OVC	100		10.00				51	36	44	56	12	21	29.27	30.07	10	SCT	NC		10.00				40	30	36	68	6	19	29.51	30.33
13	OVC	070		10.00				49	40	45	71	12	20	29.25	30.06	13	FEW	NC		10.00				50	32	42	50	6	22	29.41	30.22
16	OVC	130		10.00				52	36	45	55	12	20	29.24	30.03	16	CLR	NC		10.00				51	31	42	46	9	24	29.36	30.17
19	BKN	100		10.00				53	33	44	47	13	21	29.24	30.03	19	OVC	070		10.00				46	33	40	61	5	16	29.31	30.13
22	OVC	080		10.00				53	30	43	41	14	21	29.21	30.01	22	OVC	080		10.00				47	33	41	59	7	14	29.23	30.03
				SUNRISE: 0728				DEC	03		SUNSET: 1641							SUNRISE: 0734				DEC	09		SUNSET: 1641						
01	OVC	095		10.00				44	23	36	43	9	19	29.27	30.07	01	CLR	NC		10.00				34	24	30	67	5	15	29.51	30.34
04	OVC	095		10.00				45	28	38	52	9	20	29.25	30.06	04	FEW	NC		10.00				35	25	31	67	3	20	29.50	30.33
07	OVC	037		10.00				48	35	42	61	9	20	29.26	30.06	07	SCT	NC		10.00				35	27	32	72	7	18	29.51	30.33
10	OVC	100		10.00				51	36	44	56	12	21	29.27	30.07	10	SCT	NC		10.00				40	30	36	68	6	19	29.51	30.33
13	OVC	070		10.00				49	40	45	71	12	20	29.25	30.06	13	FEW	NC		10.00				50	32	42	50	6	22	29.41	30.22
16	OVC	130		10.00				52	36	45	55	12	20	29.24	30.03	16	CLR	NC		10.00				51	31	42	46	9	24	29.36	30.17
19	BKN	100		10.00				53	33	44	47	13	21	29.24	30.03	19	OVC	070		10.00				46	33	40	61	5	16	29.31	30.13
22	OVC	080		10.00				53	30	43	41	14	21	29.21	30.01	22	OVC	080		10.00				47	33	41	59	7	14	29.23	30.03
				SUNRISE: 0729				DEC	04		SUNSET: 1641							SUNRISE: 0735				DEC	10		SUNSET: 1641						
01	OVC	070		10.00	-RA			49	41	45	74	10	21	29.19	29.99	01	OVC	070		10.00	-RA			49	32	42	52	3	21	29.15	29.94
04	OVC	017		10.00				47	45	46	93	14	22	29.20	30.00	04	OVC	034		10.00				50	36	44	59	10	20	29.08	29.88
07	OVC	019		10.00				50	45	47	83	16	23	29.23	30.02	07	OVC	070		10.00	-RA			48	43	46	83	5	22	28.99	29.79
10	OVC	008		6.00	BR			49	47	48	93	18	24	29.28	30.08	10	OVC	022		2.50	RA BR			45	44	45	97	8	21	28.94	29.74
13	OVC	008		6.00	BR			50	47	48	89	16	24	29.27	30.07	13	OVC	007		2.00	-RA BR			44	42	43	93	22	29	28.87	29.67
16	OVC	007		4.00	BR			50	48	49	93	14	25	29.31	30.11	16	OVC	075		10.00				41	34	38	76	18	28	28.97	29.77
19	OVC	032		5.00	BR			49	47	48	93	8	21	29.33	30.13	19	OVC	029		10.00				37	30	34	76	20	26	29.08	29.88
22	OVC	003		2.00	BR			49	48	48	97	51	19	29.31	30.12	22	OVC	033		10.00				35	26	32	70	23	30	29.19	30.23
				SUNRISE: 0730				DEC	05		SUNSET: 1641							SUNRISE: 0736				DEC	11		SUNSET: 1641						
01	OVC	026		3.00	-RA BR			50	49	49	96	6	16	29.27																	

# OBSERVATIONS AT 3-HOURLY INTERVALS

BUFFALO, NY  
DECEMBER 1999

BUF WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND		PRESSURE (INCHES,HG)							
					Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)	Speed (mph)	Direction Tens of Deg	Station	Sea Level					Dry Bulb	Dew Point	Wet Bulb	Relative Humidity (%)	Speed (mph)	Direction Tens of Deg	Station						
	Sky Cover	Ceiling 100's of ft	Observation Time (LST)	Eff Cld Amt Oktas	Visibility (miles)																			Sea Level					
01	OVC	037		SUNRISE: 0737	DEC 13	SUNSET: 1641	36	31	34	82	0 00	29.16	29.97	01	CLR	NC		SUNRISE: 0741	DEC 19	SUNSET: 1643	18	16	17	92	5 08	29.56	30.40		
04	OVC	022			10.00		35	33	34	93	0 00	29.18	29.99	04	CLR	NC			10.00	18	14	17	84	6 05	29.56	30.39			
07	OVC	018			6.00	BR	36	34	35	93	5 12	29.20	30.01	07	CLR	NC			10.00	20	15	19	81	6 09	29.54	30.38			
10	OVC	007			5.00	BR	35	33	34	93	6 36	29.24	30.05	10	CLR	NC			10.00	26	18	23	71	8 10	29.53	30.37			
13	OVC	001			1.00	BR	35	34	35	96	10 02	29.25	30.06	13	FEW	NC			10.00	37	24	32	60	10 09	29.44	30.27			
16	OVC	005			8.00		35	33	34	93	7 02	29.30	30.11	16	BKN	250			10.00	35	24	31	64	9 08	29.44	30.27			
19	OVC	011			10.00		34	31	33	89	9 05	29.35	30.18	19	OVC	300			10.00	32	24	29	73	8 08	29.41	30.24			
22	BKN	018			10.00		34	28	32	79	15 07	29.37	30.19	22	OVC	200			10.00	31	25	29	79	0 00	29.37	30.19			
				SUNRISE: 0738	DEC 14	SUNSET: 1641	34	28	32	79	18 09	29.34	30.16	01	OVC	140		SUNRISE: 0742	DEC 20	SUNSET: 1643	35	29	33	78	6 19	29.31	30.14		
01	OVC	016			10.00		33	28	31	82	16 08	29.31	30.12	04	BKN	120			10.00	38	30	35	73	12 18	29.26	30.07			
04	OVC	014			10.00		31	27	29	85	20 07	29.23	30.04	07	OVC	065			10.00	42	31	37	65	10 16	29.22	30.03			
07	OVC	010			10.00		32	27	30	82	22 07	29.17	29.98	10	OVC	044			7 00	42	39	41	89	16 19	29.17	29.98			
10	OVC	014			10.00		33	28	31	82	20 07	29.04	29.85	13	OVC	048			10.00	46	39	43	77	26 18	29.05	29.85			
13	OVC	080			10.00	-RA	32	31	32	96	13 07	29.06	29.88	16	OVC	028			10.00	48	42	45	80	21 20	29.02	29.83			
16	OVC	007			2.50	-FZRPL BR	33	31	32	92	14 08	29.08	29.89	19	OVC	028			6 00	38	33	36	83	23 24	29.11	29.92			
19	OVC	040			10.00	-RA	33	31	32	92	14 08	29.08	29.89	22	BKN	038			10.00	34	20	29	56	29 25	29.16	29.97			
				SUNRISE: 0739	DEC 15	SUNSET: 1641	38	36	37	93	10 16	29.08	29.89	01	BKN	035		SUNRISE: 0743	DEC 21	SUNSET: 1644	30	18	26	61	17 28	29.23	30.04		
01	OVC	060			10.00		39	37	38	93	8 13	29.10	29.91	04	OVC	026			10.00	26	16	23	66	17 27	29.27	30.08			
04	OVC	025			10.00		41	38	40	89	12 16	29.11	29.92	07	OVC	035			9 00	26	15	23	63	15 29	29.31	30.13			
07	OVC	039			10.00		44	39	42	83	10 17	29.11	29.92	10	OVC	200			10.00	23	12	20	63	13 28	29.37	30.20			
10	BKN	070			10.00		48	34	42	58	15 17	29.00	29.81	13	BKN	200			10.00	24	11	20	57	15 28	29.37	30.20			
13	FEW	NC			10.00		47	33	41	59	17 18	28.92	29.72	16	BKN	200			10.00	24	13	21	62	15 26	29.36	30.20			
16	SCT	NC			10.00		44	36	40	73	14 17	28.92	29.72	19	BKN	100			10.00	21	10	18	62	8 29	29.39	30.22			
19	BKN	080			10.00		42	35	39	76	21 21	28.92	29.72	22	OVC	028			10.00	21	11	18	65	7 29	29.41	30.25			
22	OVC	031			10.00	-RA											SUNRISE: 0743	DEC 22	SUNSET: 1644	20	10	17	65	7 26	29.39	30.23			
				SUNRISE: 0739	DEC 16	SUNSET: 1642	39	27	34	62	24 22	28.93	29.73	01	OVC	028			9 00	20	10	17	65	7 26	29.39	30.24			
01	OVC	044			10.00		39	27	34	62	30 22	28.92	29.72	04	OVC	030			9 00	18	8	15	65	9 28	29.43	30.27			
04	OVC	034			10.00		38	28	34	68	26 23	28.93	29.74	07	SCT	NC			10.00	19	5	16	54	13 25	29.44	30.28			
07	OVC	028			10.00		35	31	33	85	21 23	28.94	29.75	10	SCT	NC			10.00	22	8	18	55	20 27	29.43	30.26			
10	OVC	020			1.50	-SN BR	34	33	34	97	12 24	28.94	29.75	13	BKN	110			10.00	24	11	20	57	14 26	29.41	30.24			
13	BKN	029			9.00		37	29	34	73	13 26	28.99	29.80	16	OVC	080			9.00	22	11	19	63	13 28	29.43	30.27			
16	OVC	050			10.00	-RA	34	27	31	76	15 26	29.07	29.88	19	OVC	095			10.00	20	17	19	89	8 23	29.41	30.25			
19	BKN	080			10.00		34	26	31	73	17 26	29.10	29.91	22	OVC	010			1.50	20	17	19	89	8 23	29.41	30.25			
22	OVC	034			10.00												SUNRISE: 0743	DEC 23	SUNSET: 1645	20	17	19	89	8 23	29.41	30.25			
				SUNRISE: 0740	DEC 17	SUNSET: 1642	33	24	30	70	20 26	29.13	29.94	01	OVC	006			1.25	19	16	18	88	7 20	29.35	30.19			
01	OVC	035			10.00		29	13	24	51	16 27	29.20	30.01	04	OVC	028			3.00	19	14	18	78	8 26	29.35	30.18			
04	BKN	050			10.00		27	17	24	66	16 29	29.24	30.06	07	OVC	020			2.00	21	12	18	68	8 27	29.34	30.17			
07	OVC	045			10.00		27	14	23	58	13 30	29.28	30.10	10	OVC	055			10.00	21	8	18	57	14 25	29.31	30.13			
10	BKN	250			10.00		30	15	25	54	13 29	29.27	30.09	13	OVC	065			10.00	19	4	15	52	12 27	29.31	30.14			
13	BKN	250			10.00		31	13	25	47	13 27	29.31	30.12	16	BKN	280			10.00	16	2	13	54	8 26	29.34	30.18			
16	BKN	095			10.00		27	14	23	58	10 29	29.37	30.20	19	SCT	NC			10.00	15	4	12	61	10 27	29.36	30.19			
19	BKN	090			10.00		27	17	24	66	5 28	29.40	30.23	22	BKN	070			10.00	SUNRISE: 0744	DEC 24	SUNSET: 1645	12	3	10	67	7 29	29.36	30.20
22	BKN	100			10.00		20	18	21	92	3 06	29.53	30.37	10	FEW	NC			10.00	12	5	10	73	6 28	29.35	30.20			
				SUNRISE: 0741	DEC 18	SUNSET: 1642	24	18	22	77	3 24	29.41	30.24	01	SCT	NC			10.00	8	4	7	83	5 23	29.36	30.20			
01	CLR	NC			10.00		22	18	21	85	5 18	29.45	30.28	04	FEW	NC			10.00	20	14	18	80	3 21	29.41	30.25			
04	CLR	NC			10.00		19	16	18	88	6 15	29.49	30.33	07	CLR	NC			8.00	21	10	18	62	5 26	29.40	30.25			
07	OVC	044			10.00		22	20	21	92	3 06	29.53	30.37	10	FEW	NC			8.00	21	8	18	57	12 28	29.41	30.25			
10	OVC	026			2.00	-SN BR	27	22	25	81	6 11	29.51	30.35	13	BKN	026			10.00	21	11	18	65	13 28	29.44	30.28			
13	BKN	032			7.00	-SN	27	22	25	81	6 11	29.51	30.36	16	OVC	049													

# OBSERVATIONS AT 3-HOURLY INTERVALS

# BUFFALO, NY

DECEMBER 1999

BUF

WBAN # 14733

HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)		HOUR (LST)	SATellite			WEATHER	TEMPERATURE °F			WIND SPEED (MPH)	DIRECTION TENS OF DEG	PRESSURE (INCHES,HG)			
	SKY COVER	CEILING 100'S OF FT	OBSErVATION TIME (LST)		DRY BULB	DEW POINT	WET BULB			RELATIVE HUMIDITY (%)	STATION	SEA LEVEL	SKY COVER	CEILING 100'S OF FT	OBSErVATION TIME (LST)	DRY BULB	DEW POINT	WET BULB	STATION	SEA LEVEL					
SUNRISE: 0744 DEC 25 SUNSET: 1646																									
01 BKN 038		10.00			15	9	14	77	7	25	29.49	30.33	01 OVC 028		10.00			22	16	20	78	9	04	29.21	30.03
04 BKN 031		9.00	-SN		17	9	15	70	6	26	29.52	30.36	04 OVC 027		10.00			22	12	19	66	9	04	29.23	30.05
07 FEW NC		10.00			16	12	15	84	6	29	29.51	30.35	07 OVC 029		10.00			22	11	19	63	6	10	29.24	30.06
10 BKN 047		10.00			16	11	15	80	6	17	29.51	30.35	10 OVC 080		10.00			25	14	22	63	0	00	29.25	30.07
13 OVC 032		9.00	-SN		25	15	22	66	12	26	29.41	30.25	13 OVC 029		10.00			30	23	28	75	14	22	29.21	30.03
16 OVC 011		1.75	-SN BR		25	21	24	85	23	22	29.31	30.15	16 OVC 022		10.00			33	25	30	72	9	22	29.23	30.05
19 FEW NC		10.00			22	12	19	66	20	21	29.20	30.03	19 OVC 039		10.00			35	28	32	76	14	27	29.28	30.10
22 BKN 070		5.00	HZ		24	13	21	62	28	22	29.03	29.85	22 OVC 037		10.00			34	27	31	76	7	23	29.31	30.13
SUNRISE: 0745 DEC 26 SUNSET: 1646																									
01 OVC 031		5.00	BLSN		30	19	26	64	33	23	28.87	29.69	01 OVC 028		10.00			22	16	20	78	9	04	29.21	30.03
04 OVC 027		10.00			29	19	26	66	30	23	28.76	29.57	04 OVC 027		10.00			22	12	19	66	9	04	29.23	30.05
07 OVC 021		5.00	FZRASN BLSN		30	24	28	79	36	24	28.72	29.53	07 OVC 029		10.00			22	11	19	63	6	10	29.24	30.06
10 OVC 013		10.00			32	28	30	85	29	24	28.70	29.50	10 OVC 080		10.00			25	14	22	63	0	00	29.25	30.07
13 OVC 033		10.00			31	18	27	59	15	29	28.74	29.54	13 OVC 029		10.00			30	23	28	75	14	22	29.21	30.03
16 VV 005		0.75	-SN BLSN BR		24	21	23	88	18	30	28.84	29.65	16 OVC 022		10.00			33	25	30	72	9	22	29.23	30.05
19 BKN 070		10.00			25	16	22	69	21	26	28.90	29.72	19 OVC 039		10.00			35	28	32	76	14	27	29.28	30.10
22 OVC 060		10.00			24	17	22	75	18	27	28.89	29.71	22 OVC 037		10.00			34	27	31	76	7	23	29.31	30.13
SUNRISE: 0745 DEC 27 SUNSET: 1647																									
01 OVC 095		10.00			24	16	22	71	16	26	28.90	29.72	01 OVC 045		10.00			23	23	28	90	29	01	29.72	30.45
04 OVC 024		9.00	-SN		24	17	22	75	10	28	28.91	29.73	04 OVC 024		10.00			23	23	28	91	29	01	29.73	30.45
07 OVC 020		9.00	-SN		24	17	22	75	13	28	28.93	29.75	07 OVC 022		9.00	-SN		23	19	22	81	9	30	28.97	29.79
10 OVC 022		9.00	-SN		24	19	22	81	9	30	28.97	29.79	10 OVC 041		7.00	-SN		23	11	17	71	20	21	28.79	29.61
13 OVC 015		1.00	-SN BR		23	19	22	85	9	32	28.96	29.78	13 OVC 034		9.00			21	10	18	62	21	22	28.71	29.53
16 BKN 065		10.00			20	10	17	65	7	30	29.01	29.83	16 OVC 011		1.00	-SN BLSN		21	17	20	85	18	21	28.64	29.45
19 BKN 029		9.00	-SN		17	11	15	77	5	32	29.06	29.88	19 OVC 009		2.50	-SN BLSN		22	19	21	89	13	25	28.67	29.48
22 OVC 039		10.00			17	9	15	70	9	29	29.08	29.91	22 OVC 080		10.00			20	14	18	78	15	26	28.72	29.53
SUNRISE: 0745 DEC 28 SUNSET: 1648																									
01 SCT NC		10.00			13	4	11	67	7	26	29.03	29.86	01 OVC 075		10.00			31	23	28	75	29	23	30.05	9.30
04 BKN 250		10.00			9	2	7	73	3	17	28.98	29.81	04 OVC 035		3.00	-SN BR		31	23	28	75	29	23	30.05	9.46
07 OVC 009		1.75	-SN BR		13	10	12	88	6	17	28.88	29.71	07 BKN 032		10.00			30	23	28	74	29	24	30.06	9.45
10 OVC 041		7.00	-SN		19	11	17	71	20	21	28.79	29.61	10 OVC 022		5.00	-SN		25	11	17	68	8	25	29.01	29.83
13 OVC 034		9.00			21	10	18	62	21	22	28.71	29.53	13 OVC 032		8.00			25	17	22	72	23	21	28.89	29.71
16 OVC 011		1.00	-SN BLSN		21	17	20	85	18	21	28.64	29.45	16 OVC 032		8.00			27	22	25	81	22	20	28.81	29.62
19 OVC 009		2.50	-SN BLSN		22	19	21	89	13	25	28.67	29.48	19 OVC 029		4.00	-SN		27	22	25	81	22	20	28.81	29.62
22 OVC 039		10.00			20	14	18	78	15	26	28.72	29.53	22 OVC 039		10.00			31	21	27	67	24	22	28.67	29.48
SUNRISE: 0745 DEC 29 SUNSET: 1648																									
01 OVC 075		10.00			25	19	23	78	16	25	28.73	29.54	01 OVC 029		10.00			37	28	33	70	25	23	28.67	29.47
04 OVC 035		3.00	-SN BR		24	21	23	88	10	31	28.83	29.64	04 OVC 047		9.00			39	31	36	73	21	24	28.74	29.54
07 BKN 032		10.00			20	14	18	78	13	29	28.94	29.77	07 OVC 047		9.00			38	34	36	86	22	24	28.82	29.62
10 SCT NC		10.00			20	11	17	68	8	25	29.01	29.83	10 OVC 022		5.00	-SN		25	18	23	75	21	24	28.94	29.77
13 OVC 022		5.00	-SN		25	18	23	75	13	24	28.96	29.78	13 OVC 024		8.00			25	17	22	72	23	21	28.89	29.71
16 OVC 032		8.00			25	17	22	72	23	21	28.89	29.71	16 OVC 030		8.00	-SN		27	22	25	81	22	20	28.81	29.62
19 OVC 029		4.00	-SN		27	22	25	81	22	20	28.81	29.62	19 OVC 030		4.00	-SN		31	21	27	67	24	22	28.81	29.62
22 OVC 039		10.00			31	21	27	67	24	22	28.67	29.48	22 OVC 030		10.00			37	28	33	70	25	23	28.67	29.47
SUNRISE: 0746 DEC 30 SUNSET: 1649																									
01 OVC 029		10.00			37	28	33	70	25	23	28.67	29.47	01 OVC 019		10.00			39	31	36	73	21	24	28.74	29.54
04 OVC 019		10.00			39	31	36	73	21	24	28.74	29.54	04 OVC 047		9.00			38	34	36	86	22	24	28.82	29.62
07 OVC 047		9.00			38	34	36	86	22	24	28.82	29.62	07 BKN 049		9.00			38	32	35	79	15	29	28.94	29.75
10 BKN 049		9.00</																							

**SUPPLEMENTARY HOURLY PRECIPITATION**  
 UNIVERSAL RAIN GAUGE (WATER EQUIVALENT IN INCHES)

DECEMBER 1999  
 BUFFALO, NY

LATITUDE 42° 56' N  
 LONGITUDE 78° 44'

DATE	A.M. HOUR (L.S.T.) ENDING AT												DATE	P.M. HOUR (L.S.T.) ENDING AT												DATE	DAILY TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12			
01	T												01												01	T		
02													02												02	0.00		
03													03	T											03	T		
04	T	T	0.05	0.03	0.01	0.01	0.01						04												04	0.10		
05	T	T	T	0.01	0.03	0.01							05	T	T		0.01	T	T	T	0.02	0.04	0.03		05	0.16		
06					T	T	0.03	0.01					06													06	0.04	
07													07													07	0.00	
08													08													08	0.00	
09													09													09	T	
10	T	T					0.01	0.04		0.08	0.12	0.07	0.02	10	0.02	0.02	T	T				T				10	0.38	
11													11														11	0.00
12													12														12	T
13	T	T	T	T	T	T		0.01	T				13	T	0.20	0.12	0.17	0.13	0.06	0.01	T	0.02	0.01	0.01	T	14	0.73	
14													14														14	0.15
15													15														15	
16	T	T					T	T	T	0.02	0.22	16	0.01				T									T	16	0.25
17													17														17	T
18													18	0.01	T			T									18	0.02
19													19														19	0.00
20													20	0.01	T			T	0.02	0.05	0.02	T					20	0.21
21	T	T	T	T	T	T	T	T	T	T	T	T	21	T												21	T	
22		0.02	0.01	0.01	0.01	0.01	T	T	T	T	T	T	22													22	0.04	
23													23														23	0.05
24													24	T	T	0.02	0.02										24	T
25													25	T	T	T	T										25	0.04
26													26														26	0.01
27													27														27	T
28	T												28	T	T	T	T	T	T	T	T	T	T	T	T	28	0.10	
29													29														29	T
30													30														30	0.00
31													31														31	0.00

PUBLISHED BY: NCDC, ASHEVILLE, NC.

MONTHLY TOTAL 2.29

**SUPPLEMENTARY MAXIMUM SHORT DURATION PRECIPITATION (MSDP)**

TIME PERIOD (MINUTES)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (INCHES)	0.10	0.11	0.13	0.14	0.17	0.20	0.23	0.27	0.31	0.37	0.44	0.48
ENDED: DATE	16	16	16	16	16	16	14	14	14	14	14	14
ENDED: TIME	1159	1159	1159	1159	1159	1159	1430	1430	1504	1534	1534	1534

The time indicated is the ending time of the interval.  
 Date and time are not entered for trace amounts.

The National Weather Service has determined that the ASOS Heated Tipping-Bucket (HTB) rain gauge may not measure water equivalent precipitation accurately during frozen precipitation events. Precipitation data from a nearby site is provided on this page to supplement the ASOS HTB data.

M = Missing Data.

\* = Data distribution unknown.

First HPD value that follows is the total accumulated amount.



DECEMBER 1999  
BUFFALO, NY

## LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

I certify that this is an official publication of the National Oceanic and Atmospheric Administration (NOAA). It is compiled using information from weather observing sites operated by NOAA – National Weather Service / Department Of Transportation – Federal Aviation Administration and received at the National Climatic Data Center (NCDC), Asheville, North Carolina 28801.

DIRECTOR

### NOTICE

Effective July 1, 1996, the National Weather Service & Federal Aviation Administration began using the METAR format for Hourly Observations.

We welcome your questions or comments, please contact us at  
828-271-4800 (voice), 828-271-4876 (fax),  
828-271-4010(TDD)  
or [orders@ncdc.noaa.gov](mailto:orders@ncdc.noaa.gov)  
Local Climatological Data is available at [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov)

FIRST CLASS  
POSTAGE AND FEES PAID  
NOAA  
PERMIT G-19

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

NATIONAL CLIMATIC DATA CENTER  
151 PATTON AVE RM 120  
ASHVILLE, NC 28801-5001

For address correction, please return a photocopy of this page to Subscription Services indicating changes