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Status

**Table 1: Gauge visits during the spring 2021 campaign. Comments: DD=gauge data download, MN=general gauge maintenance (cleaning, re-level), CA= rain gauge calibration, CV= vegetation clearing, ECC=electric contact cleaning treatment, and BR = data logger battery replacement.**

Date	Gauges Visited	Technicians	Comments	Vehicle
3/20/2021	100T, 105 <sup>*A</sup> , 110	Doug, Paige	DD, MN, CV, CA	any vehicle
3/27/2021 <sup>*B</sup>	111, 112	Doug, Paige	DD, MN, CV, CA	any vehicle
4/3/2021	104, 108, 109 <sup>*C</sup>	Doug, Andrew, Meredith	DD, MN, CV, CA	any vehicle
4/10/2021 <sup>*D</sup>	4; 106; 107	Doug, Zach	DD, MN, CV, CA	4wd needed
4/11/2021	106, 107, 109	Doug, Zach	DD, MN, CV, CA	4wd needed
4/16/2021	101, 102, 103	Doug, Alice, Lyn	DD, MN, CV, CA	any vehicle
4/17/2021	305, 309, 310	Doug, Jared, Marlee	DD, MN, CV, CA	4wd needed
4/23/2021	10; 311	Doug, Samuel	DD, MN, CV, CA	any vehicle
4/24/2021 <sup>*D</sup>	301, 302	Doug, Zach, Jared	DD, MN, CV, CA	any vehicle
4/30/2021	111, 112, 105	Doug	DD, MN, CV, CA	4wd needed
5/1/2021	303s, 306	Doug, Lyn, Sarah	DD, MN, CV, CA	any vehicle
5/7/2021	300, 308	Doug, Riley, Daniel	DD, MN, CV, CA	any vehicle
5/12/2021 <sup>*D</sup>	301, 302	Doug, Zach, Jared, Jacob	DD, MN, CV, CA	any vehicle
5/14/2021	11; 3	Doug, Lisa	DD, MN, CV, CA	4wd needed
5/15/2021	304, 307	Doug, Meredith, Marlee	DD, MN, CV, CA	4wd needed
5/19/2021	301, 302	Doug, Zach, Jared	DD, MN, CV, CA	any vehicle
5/21/2021	2; 5; 8, 4	Doug, Don	DD, MN, CV, CA	any vehicle

<sup>\*A</sup> => postponed due to ice block in siphon - visit later, <sup>\*B</sup> => postponed due to T-storms - visit later, <sup>\*C</sup> => postponed due to ice/ cold morning – visit later, <sup>\*D</sup> => postponed due to heavy rainfall - visit later

Gauge visitation in support of the Duke Great Smoky Mountain Rain Gauge Network (GSMRGN) during the spring 2021 campaign occurred over thirteen days spanning a period of nine weeks in March - May 2021. The primary purpose of the visits in the spring 2021 was [1] to perform downloads of gauge tip observations since the previous gauge visits in the autumn 2020, [2] to complete rain gauge and data logger maintenance tasks, [3] to clear vegetation and tree limbs and, [4] to calibrate ALL rain gauges since field calibrations were last completed in the spring 2020. Fourteen technicians and volunteers (listed on the front page) made the visits and performed the required work. It is important to note that the volunteers were NOT directly involved in any critical gauge visit tasks, but were volunteering primarily to assist with personal safety should someone get injured during a particular series of gauge visits.

The general tasks completed at **every** gauge visit consist of (1) gauge data download from the data loggers [DD in Table 1], (2) general gauge maintenance and ML1 logger condition monitoring [MN in Table 1], (3) clear vegetation within a five foot radius of the rain gauge [CV in Table 1], and, (4) calibration of rain gauges using a single trial of the 50, 100, and 300 mm nozzles [CA in Table 1]. The primary specialized task was the necessary data logger lithium battery replacement at six rain gauge locations (as indicated using a multimeter to test logger battery voltage after a long winter), at JR Rich (g #103, 3.54V), Utah Mountain (g #108, 3.52V),

Hurricane Ridge (g #111, 3.55V), Camel Hump Knob (g #300, 3.54V), Big Cataloochee Mountain (g #304, 3.49V), and Big Creek (g #311, ???V). We have had significant problems with ML1-420 loggers draining the lithium batteries down in a very short period of time. Task (1) merely required a serial port link between the field study laptop and the gauge data logger and consisted of pulling the data (often in files having raw [\*].txt and CSV formats) onto a desktop folder on the laptop, checking for completeness of the data, and comparing the data logger time and date to the actual GPS time and date (making a screenshot of the time comparison). The standard that has been chosen for this study is to maintain the clocks on Eastern Daylight Time, since most of the “warm” precipitation will be occurring during the season when EDT is in effect. Most ML1-FL data logger times have been adjusted (using “TA” command) during previous gauge visits to coincide with the EDT given by the GPS locator. Task (2) required the cleaning of debris from the funnel filter, cleaning the tipping buckets of debris (if necessary), cleaning the gauge drain ports and siphon, re-leveling the gauge if it has come unlevelled, and fixing or replacing the gauge mesh if it had been damaged. Task (3) consisted of cutting briars and other emerging vegetation during the spring season within a five foot radius of the gauge using clippers or weeding by hand. Two locations had tree limbs cleared by the GSMNP arborist (g #308 and g #311) before the spring 2021 visits. Task (4) was completed successfully in every data logger at each of the rain gauge locations.

Challenges encountered during some of the gauge visits in the spring 2021 were primarily the result of a persistent trough over the eastern U.S., resulting in cooler than normal temperatures in March and April, and numerous precipitation events causing the postponement of scheduled rain gauge calibrations (Table 1). One rain gauge was found pushed over by a bear (g #110 pushed over at 3:00 am on 16 November 2020). Otherwise, the primary challenge continues to be the poor performance of the ML1 software ‘TA’ setting in the older loggers, which seems to have a poor time adjustment algorithm, forcing TA to be shut “off” until the next gauge visit. The other challenge, as explained above, is the premature battery voltage drainage in the newer ML1-420 loggers. Fortunately, no data loggers were found to have run the battery completely down between November 2020 and March 2021, meaning there was no loss of rainfall data over this period (other than at the gauge pushed over by the bear).

Details of every gauge visit along with raw precipitation text and CSV format files are found via Google Drive [https://drive.google.com/file/d/1wtJxdxwVq6RE5M2uwHuDsh\\_hkJrVMgL5/view?usp=sharing](https://drive.google.com/file/d/1wtJxdxwVq6RE5M2uwHuDsh_hkJrVMgL5/view?usp=sharing) which contains sub-folders for each gauge that consist of the individual data files (often having at least two different formats), pictures taken at the gauge site during the visit, screenshots of the GPS (laptop) and ML1 logger time comparison, and a MS Word document that mirrors the notes made in the field journal during each visit.

Noteworthy precipitation events of October 2020 – February 2021 as observed at KAVL are highlighted in yellow in **Appendix A**. The first of the five month period (October 2019) saw a significant amount of above normal rainfall, otherwise monthly amounts fluctuated at, or just above/ below normal.

Plans for the summer months of 2021

**Table 2: Planned gauge visits during the summer 2021 campaign. DD=gauge data download, MN=general gauge maintenance (cleaning, re-level), CA= rain gauge calibration, CV= vegetation clearing, ECC=electric contact cleaning treatment, and BR = data logger battery replacement.**

<b>Date</b>	<b>Gauges Visited</b>	<b>Technicians</b>	<b>Comments</b>
7/??/2021	3; 11; 107; 109	Doug + 1 field technician	DD, MN, CV, ECC
7/??/2021	2; 5; 8; 106; 10	Doug + 1 field technician	DD, MN, CV, ECC
7/??/2021	4; 104, 110, 105	Doug + 1 field technician	DD, MN, CV, ECC
7/??/2021	111, 112, 311	Doug + 1 field technician	DD, MN, CV, ECC
7/??/2021	101, 102, 103, 100T, 108	Doug + 1 field technician	DD, MN, CV, ECC
7/??/2021	303s, 306, 308	Doug + 2 field technicians	DD, MN, CV, ECC
8/??/2021	304, 307, 305, 309, 310	Doug + 2 field technicians	DD, MN, CV, ECC
8/??/2021	301, 302, 300	Doug + 2 field technicians	DD, MN, CV, ECC

Gauge visitation in support of the Duke GSMRGN during the summer 2021 will occur over at least eight days spanning July and August 2021. The primary purpose of the visits will be to download precipitation observations that were made since the previous gauge visits in March - May 2021 [DD in Table 2], perform maintenance and check if the ML1 logger times have drifted between visits and make the corresponding needed adjustments [MN in Table 2], and clear vegetation (and tree branches) from overhanging gauges [CV in Table 2], and electronic contact cleaning [ECC in Table 2]. Gauge parts and loggers may have to be replaced during some of the visits if less-than-acceptable conditions show no signs of improvement, as noted in the previous section description.

Details of every gauge visit along with each gauge precipitation record will be posted online and shall contain sub-folders for each gauge that consist of the individual data files (often having at least two different formats), pictures taken at the gauge site during the visit, screenshots of the GPS (laptop) and ML1 logger time comparison, and a MS Word document that mirrors the notes made in the field journal during the visit.

The technician roster during the 2020-2021 academic year consisted of Meredith Avison, Marlee Burgess, Lyn Comer, Daniel Fairchild, Andrew Hill, Sarah Langille, Alice Monroe, Zachary Moss, Samuel Peterson, Riley Ross, Jared Sellers, Paige Stedina, and Samantha Wood. New undergraduate research students at UNC Asheville will be recruited as field technicians for the Duke GSMRGN project in the fall 2021. Field technicians Lyn Comer, Andrew Hill, Riley Ross, and Jared Sellers graduated in May 2021.

**Table 3: The Duke Great Smoky Mountain Rain Gauge Network is currently (valid as of 25 May 2021) composed of 32 tipping bucket rain gauges.**

Gauge #	Location	Latitude	Longitude	Altitude
RG002	Lickstone Bald	35°25.5' N	82°58.2' W	5680 ft.
RG003	High Top	35°23.0' N	82°54.9' W	5280 ft.
RG004	Lickstone Ridge S	35°22.0' N	82°59.4' W	6305 ft.
RG005	Deep Gap	35°24.5' N	82°57.8' W	4986 ft.
RG008	Double Summer Gap	35°22.9' N	82°58.4' W	5700 ft.
RG010	Beaty Summer Gap	35°27.3' N	82°56.8' W	4849 ft.
RG011	near Deep Gap	35°23.7' N	82°54.9' W	4081 ft.
RG100T	Purchase Knob	35°35.1' N	83°04.3' W	4905 ft.
RG101	The Swag	35°34.5' N	83°05.2' W	4986 ft.
RG102	Hemphill Bald	35°33.8' N	83°06.2' W	5365 ft.
RG103	JR Property	35°33.2' N	83°07.0' W	5539 ft.
RG104	Cat. Ski Area	35°33.2' N	83°05.2' W	5208 ft.
RG105	KH Property	35°38.0' N	83°02.4' W	4412 ft
RG106	Pinnacle Ridge	35°25.9' N	83°01.7' W	3969 ft
RG107	Lookout Point	35°34.0' N	82°54.4' W	4459 ft
RG108	Utah Mountain	35°33.2' N	82°59.3' W	4188 ft
RG109	Eaglesnest Ridge	35°29.7' N	83°02.4' W	4922 ft
RG110	JH Property	35°32.8' N	83°08.8' W	5128 ft
RG111	Hurricane Ridge	35°43.7' N	82°56.8' W	4573 ft
RG112	Ore Knob	35°45.0' N	82°57.8' W	3884 ft
RG300	Camel Hump Knob	35°43.5' N	83°13.0'W	5110 ft
RG301	Mt Guyot	35°42.3'N	83°15.3'W	6570 ft
RG302	Snake Den Ridge	35°43.2'N	83°14.8'W	6104 ft
RG303s	Mt Cammerer	35°45.7'N	83°09.7'W	4887 ft
RG304	Big Cataloochee	35°40.2'N	83°10.9'W	5971 ft

RG305	Mt Sterling 1	35°41.4'N	83°07.9'W	5349 ft
RG306	Sunup Knob	35°44.7'N	83°10.2'W	5039 ft
RG307	Balsam Mountain	35°39.0'N	83°11.9'W	5327 ft
RG308	Cosby Knob	35°43.8' N	83°10.9'W	4826 ft
RG309	Mt Sterling 2	35°40.9'N	83°09.0'W	5262 ft
RG310	Mt Sterling 3	35°42.1'N	83°07.3'W	5761 ft
RG311	Big Creek	35°45.9'N	83°08.4'W	3398 ft

**Appendix A**

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - <http://www.ncdc.noaa.gov>.

**WFO Monthly/Daily Climate Data**

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 000  
 CXUS52 KGSP 010917  
 CF6AVL  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: ASHEVILLE NC  
 MONTH: OCTOBER  
 YEAR: 2020  
 LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

TEMPERATURE IN F:					:PCPN:			SNOW:		WIND			:SUNSHINE:			SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
				DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
				12Z	AVG		MX	2MIN											
1	77	47	62	1	3	0	0.00	0.0	0	7.2	22	340	M	M	0		29	330	
2	64	45	55	-6	10	0	0.00	0.0	0	7.0	20	330	M	M	0		24	350	
3	66	39	53	-7	12	0	0.00	0.0	0	2.7	12	170	M	M	2	128	16	180	
4	70	41	56	-4	9	0	0.00	0.0	0	1.0	7	140	M	M	1	12	10	160	
5	74	47	61	1	4	0	0.00	0.0	0	3.5	12	180	M	M	2	1	14	340	
6	74	50	62	3	3	0	0.00	0.0	0	2.4	12	160	M	M	4	12	16	150	
7	78	51	65	6	0	0	0.00	0.0	0	5.1	14	340	M	M	3	12	20	320	
8	82	54	68	9	0	3	0.00	0.0	0	6.5	15	350	M	M	0		19	350	
9	68	59	64	6	1	0	0.04	0.0	0	3.7	10	180	M	M	3	18	13	190	
10	64	59	62	4	3	0	1.50	0.0	0	2.5	10	340	M	M	10	1	12	340	
11	73	63	68	10	0	3	0.60	0.0	0	2.4	10	130	M	M	10	1	16	120	
12	80	63	72	14	0	7	0.00	0.0	0	2.1	13	330	M	M	8	1	16	340	
13	72	54	63	6	2	0	0.00	0.0	0	9.2	23	350	M	M	4	12	29	350	
14	75	43	59	2	6	0	0.00	0.0	0	4.9	13	160	M	M	0		18	150	
15	78	46	62	5	3	0	0.00	0.0	0	6.3	21	210	M	M	2	12	28	220	
16	60	46	53	-3	12	0		T	0.0	0	13.0	28	330	M	M	4	12	37	340
17	60	39	50	-6	15	0	0.00	0.0	0	4.3	14	320	M	M	0		17	330	
18	64	34	49	-7	16	0	0.00	0.0	0	2.8	12	170	M	M	0		14	170	
19	71	40	56	1	9	0	0.00	0.0	0	2.3	10	150	M	M	0		16	160	
20	78	46	62	7	3	0	0.00	0.0	0	2.3	10	160	M	M	4	128	15	160	
21	79	51	65	10	0	0	0.00	0.0	0	2.4	13	150	M	M	3	18	18	170	
22	77	53	65	11	0	0	0.00	0.0	0	2.4	14	170	M	M	4	1	18	150	
23	78	54	66	12	0	1	0.02	0.0	0	2.8	12	160	M	M	5	8	16	160	
24	77	54	66	12	0	1	0.37	0.0	0	2.1	12	330	M	M	7	1238	16	360	
25	70	58	64	10	1	0	0.33	0.0	0	3.5	10	160	M	M	10	1	14	170	
26	73	57	65	12	0	0	0.03	0.0	0	3.3	10	150	M	M	7	1	14	150	
27	78	55	67	14	0	2	0.00	0.0	0	1.7	9	150	M	M	6	12	16	360	
28	68	59	64	11	1	0	1.58	0.0	0	3.8	10	170	M	M	9	1	13	170	
29	82	57	70	18	0	5	1.69	0.0	0	12.2	24	330	M	M	6	1	40	180	
30	58	42	50	-2	15	0		T	0.0	0	13.6	31	330	M	M	4		37	330
31	54	35	45	-7	20	0		T	0.0	0	5.0	13	160	M	M	4		16	180
SM	2222	1541			148	22	6.16	0.0		144.0			M		122				
AV	71.7	49.7								4.6	FASTST	M	M	4		MAX (MPH)			
										MISC	---->	31	330					40	180

NOTES:

# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: ASHEVILLE NC
MONTH: OCTOBER
YEAR: 2020
LATITUDE: 35 25 N
LONGITUDE: 82 33 W

[TEMPERATURE DATA] [PRECIPITATION DATA] SYMBOLS USED IN COLUMN 16
AVERAGE MONTHLY: 60.7 TOTAL FOR MONTH: 6.16 1 = FOG OR MIST
DPTR FM NORMAL: 4.3 DPTR FM NORMAL: 3.25 2 = FOG REDUCING VISIBILITY
HIGHEST: 82 ON 29, 8 GRTST 24HR 3.16 ON 28-29 TO 1/4 MILE OR LESS
LOWEST: 34 ON 18 3 = THUNDER
SNOW, ICE PELLETS, HAIL 4 = ICE PELLETS
TOTAL MONTH: 0.0 INCH 5 = HAIL
GRTST 24HR 0.0 6 = FREEZING RAIN OR DRIZZLE
GRTST DEPTH: 0 7 = DUSTSTORM OR SANDSTORM:
VSBY 1/2 MILE OR LESS
8 = SMOKE OR HAZE
9 = BLOWING SNOW
X = TORNADO

[NO. OF DAYS WITH] [WEATHER - DAYS WITH]
MAX 32 OR BELOW: 0 0.01 INCH OR MORE: 9
MAX 90 OR ABOVE: 0 0.10 INCH OR MORE: 6
MIN 32 OR BELOW: 0 0.50 INCH OR MORE: 4
MIN 0 OR BELOW: 0 1.00 INCH OR MORE: 3

[HDD (BASE 65) ]
TOTAL THIS MO. 148 CLEAR (SCALE 0-3) 13
DPTR FM NORMAL -130 PTCLDY (SCALE 4-7) 14
TOTAL FM JUL 1 196 CLOUDY (SCALE 8-10) 4
DPTR FM NORMAL -138

[CDD (BASE 65) ]
TOTAL THIS MO. 22
DPTR FM NORMAL 12 [PRESSURE DATA]
TOTAL FM JAN 1 1153 HIGHEST SLP 30.46 ON 31
DPTR FM NORMAL 291 LOWEST SLP 29.41 ON 29

[REMARKS]
#FINAL-10-20#

000
CXUS52 KGSP 010941
CF6AVL
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: ASHEVILLE NC
MONTH: NOVEMBER
YEAR: 2020
LATITUDE: 35 25 N
LONGITUDE: 82 33 W

TEMPERATURE IN F: :PCPN: SNOW: WIND :SUNSHINE: SKY :PK WND
1 2 3 4 5 6A 6B 7 8 9 10 11 12 13 14 15 16 17 18
12Z AVG MX 2MIN
DY MAX MIN AVG DEP HDD CDD WTR SNW DPTH SPD SPD DIR MIN PSBL S-S WX SPD DR



1	67	40	54	2	11	0	0.16	0.0	0	11.3	36	340	M	M	4	1	46	320
2	50	31	41	-10	24	0	0.00	0.0	0	15.0	36	330	M	M	0		46	340
3	61	30	46	-5	19	0	0.00	0.0	0	6.6	14	350	M	M	0		22	340
4	66	32	49	-2	16	0	0.00	0.0	0	2.2	12	150	M	M	0	8	17	170
5	66	34	50	0	15	0	0.00	0.0	0	1.3	9	150	M	M	0	18	13	160
6	70	39	55	5	10	0	0.00	0.0	0	2.2	9	170	M	M	0	8	14	170
7	66	43	55	5	10	0	0.00	0.0	0	1.3	8	190	M	M	6	1	10	160
8	70	50	60	10	5	0	0.00	0.0	0	1.3	9	110	M	M	9		14	130
9	72	56	64	15	1	0	0.02	0.0	0	3.5	13	160	M	M	8	1	17	180
10	68	59	64	15	1	0	0.09	0.0	0	5.2	14	170	M	M	10	1	18	160
11	73	64	69	20	0	4	1.00	0.0	0	4.0	13	340	M	M	10	1	16	220
12	72	59	66	18	0	1	0.83	0.0	0	7.9	16	340	M	M	8	1	20	340
13	68	45	57	9	8	0	0.00	0.0	0	8.5	20	340	M	M	3		23	350
14	65	38	52	4	13	0	0.00	0.0	0	4.8	14	130	M	M	0		19	120
15	67	46	57	9	8	0		T 0.0	0	9.9	31	180	M	M	5		42	190
16	56	34	45	-2	20	0	0.00	0.0	0	11.8	24	340	M	M	0		31	340
17	54	29	42	-5	23	0	0.00	0.0	0	9.6	26	340	M	M	0		35	330
18	53	30	42	-4	23	0	0.00	0.0	0	9.2	25	340	M	M	0		29	340
19	57	28	43	-3	22	0	0.00	0.0	0	3.9	12	130	M	M	0	8	17	120
20	68	30	49	3	16	0	0.00	0.0	0	1.8	10	340	M	M	0	18	14	340
21	70	34	52	6	13	0	0.00	0.0	0	2.2	14	340	M	M	0		17	340
22	65	38	52	7	13	0	0.00	0.0	0	4.4	17	180	M	M	3		22	180
23	54	36	45	0	20	0	0.01	0.0	0	15.1	26	340	M	M	2		35	340
24	51	28	40	-5	25	0	0.00	0.0	0	6.2	14	130	M	M	1		21	150
25	55	40	48	4	17	0	0.29	0.0	0	6.8	13	180	M	M	10	1	18	120
26	70	42	56	12	9	0	0.30	0.0	0	3.3	10	190	M	M	5	12	12	200
27	64	33	49	5	16	0	0.00	0.0	0	2.6	14	340	M	M	1	12	18	330
28	63	38	51	7	14	0	0.03	0.0	0	7.4	16	340	M	M	3		20	340
29	54	34	44	1	21	0	0.45	0.0	0	3.9	10	180	M	M	5	1	14	120
30	48	32	40	-3	25	0	0.46	0.0	0	10.5	23	350	M	M	10	1	31	340

SM 1883 1172 418 5 3.64 0.0 183.7 M 103  
 AV 62.8 39.1 6.1 FASTST M M 3 MAX(MPH)  
 MISC ----> # 36 340 # 46 320

NOTES:

# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: ASHEVILLE NC  
 MONTH: NOVEMBER  
 YEAR: 2020  
 LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
AVERAGE MONTHLY: 50.9	TOTAL FOR MONTH: 3.64	1 = FOG OR MIST
DPTR FM NORMAL: 3.6	DPTR FM NORMAL: -0.01	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
HIGHEST: 73 ON 11	GRTST 24HR 1.25 ON 11-12	3 = THUNDER
LOWEST: 28 ON 24,19		4 = ICE PELLETS
	SNOW, ICE PELLETS, HAIL	5 = HAIL
	TOTAL MONTH: 0.0 INCH	6 = FREEZING RAIN OR DRIZZLE
	GRTST 24HR 0.0	7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS
	GRTST DEPTH: 0	8 = SMOKE OR HAZE
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	9 = BLOWING SNOW
		X = TORNADO
MAX 32 OR BELOW: 0	0.01 INCH OR MORE: 11	
MAX 90 OR ABOVE: 0	0.10 INCH OR MORE: 7	

MIN 32 OR BELOW: 9 0.50 INCH OR MORE: 2  
 MIN 0 OR BELOW: 0 1.00 INCH OR MORE: 1

[HDD (BASE 65) ]  
 TOTAL THIS MO. 418 CLEAR (SCALE 0-3) 16  
 DPTR FM NORMAL -114 PTCLDY (SCALE 4-7) 7  
 TOTAL FM JUL 1 614 CLOUDY (SCALE 8-10) 7  
 DPTR FM NORMAL -253

[CDD (BASE 65) ]  
 TOTAL THIS MO. 5  
 DPTR FM NORMAL 4 [PRESSURE DATA]  
 TOTAL FM JAN 1 1158 HIGHEST SLP 30.64 ON 19  
 DPTR FM NORMAL 295 LOWEST SLP 29.50 ON 30

[REMARKS]  
 #FINAL-11-20#

000  
 CXUS52 KGSP 010951  
 CF6AVL  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: ASHEVILLE NC  
 MONTH: DECEMBER  
 YEAR: 2020  
 LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPHT	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	36	26	31	-12	34	0	T	T	0	12.0	21	350	M	M	5		28	340
2	48	25	37	-5	28	0	0.00	0.0	0	11.8	26	350	M	M	0		38	340
3	59	21	40	-2	25	0	0.00	0.0	0	3.9	13	180	M	M	2		18	190
4	54	42	48	6	17	0	0.71	0.0	0	7.9	21	340	M	M	9	1	25	350
5	48	34	41	-1	24	0	0.00	0.0	0	11.6	25	340	M	M	2		33	340
6	53	27	40	-1	25	0	0.00	0.0	0	2.1	9	340	M	M	1		12	150
7	44	31	38	-3	27	0	T	T	0	12.5	29	340	M	M	8		39	340
8	38	27	33	-8	32	0	0.00	0.0	0	15.0	28	340	M	M	1		35	330
9	54	28	41	0	24	0	0.00	0.0	0	10.9	20	340	M	M	0		23	340
10	63	33	48	8	17	0	0.00	0.0	0	3.6	15	360	M	M	0		19	350
11	63	30	47	7	18	0	0.00	0.0	0	2.7	12	180	M	M	0		15	130
12	62	41	52	12	13	0	T	0.0	0	6.9	21	210	M	M	6	18	27	220
13	65	44	55	15	10	0	0.01	0.0	0	3.1	13	170	M	M	3	1	16	170
14	50	34	42	2	23	0	1.46	0.0	0	14.6	36	340	M	M	7	1	42	340
15	46	27	37	-2	28	0	0.00	0.0	0	5.5	15	340	M	M	1		18	340
16	39	32	36	-3	29	0	0.36	0.0	0	6.3	16	340	M	M	10	16	20	330
17	44	30	37	-2	28	0	0.00	0.0	0	11.8	20	340	M	M	8		27	330
18	40	27	34	-5	31	0	0.00	0.0	0	11.3	26	340	M	M	4		32	340
19	46	22	34	-5	31	0	0.00	0.0	0	3.6	13	140	M	M	2		17	140
20	57	35	46	8	19	0	0.01	0.0	0	3.0	10	150	M	M	7	1	13	150
21	57	30	44	6	21	0	0.00	0.0	0	6.5	24	310	M	M	3	12	36	320
22	51	30	41	3	24	0	0.00	0.0	0	11.5	26	310	M	M	0		37	340
23	51	26	39	1	26	0	0.01	0.0	0	5.5	15	150	M	M	3		22	160
24	53	24	39	1	26	0	1.35	1.0	0	13.4	36	340	M	M	10	1246	45	350
25	24	13	19	-19	46	0	0.03	1.1	1	10.9	24	340	M	M	6	18	30	340
26	36	12	24	-14	41	0	0.00	0.0	1	9.7	24	340	M	M	0	9	32	340
27	51	20	36	-2	29	0	0.00	0.0	1	4.0	13	130	M	M	0		20	140

```

28 52 30 41 4 24 0 0.00 0.0 T 5.6 15 340 M M 3 18 340
29 57 37 47 10 18 0 0.00 0.0 0 7.2 15 350 M M 0 23 340
30 40 35 38 1 27 0 0.04 0.0 0 3.8 12 170 M M 10 18 14 180
31 66 44 55 18 10 0 0.03 0.0 0 2.8 12 200 M M 7 1 15 190
=====
SM 1547 917 775 0 4.01 2.1 241.0 M 118
=====
AV 49.9 29.6 7.8 FASTST M M 4 MAX(MPH)
MISC ----> # 36 340 45 350
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NOTES:

# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: ASHEVILLE NC  
MONTH: DECEMBER  
YEAR: 2020  
LATITUDE: 35 25 N  
LONGITUDE: 82 33 W

[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
AVERAGE MONTHLY: 39.7	TOTAL FOR MONTH: 4.01	1 = FOG OR MIST
DPTR FM NORMAL: 0.3	DPTR FM NORMAL: 0.42	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
HIGHEST: 66 ON 31	GRTST 24HR 1.47 ON 13-14	3 = THUNDER
LOWEST: 12 ON 26		4 = ICE PELLETS
	SNOW, ICE PELLETS, HAIL	5 = HAIL
	TOTAL MONTH: 2.1 INCHES	6 = FREEZING RAIN OR DRIZZLE
	GRTST 24HR 1.1 ON 25-25	7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS
	GRTST DEPTH: 1 ON 27,26	8 = SMOKE OR HAZE
		9 = BLOWING SNOW
		X = TORNADO
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	
MAX 32 OR BELOW: 1	0.01 INCH OR MORE: 10	
MAX 90 OR ABOVE: 0	0.10 INCH OR MORE: 4	
MIN 32 OR BELOW: 21	0.50 INCH OR MORE: 3	
MIN 0 OR BELOW: 0	1.00 INCH OR MORE: 2	

[HDD (BASE 65) ]	
TOTAL THIS MO. 775	CLEAR (SCALE 0-3) 17
DPTR FM NORMAL -19	PTCLDY (SCALE 4-7) 8
TOTAL FM JUL 1 1389	CLOUDY (SCALE 8-10) 6
DPTR FM NORMAL -272	

[CDD (BASE 65) ]		[PRESSURE DATA]
TOTAL THIS MO. 0		HIGHEST SLP 30.46 ON 29
DPTR FM NORMAL 0		LOWEST SLP 29.47 ON 24
TOTAL FM JAN 1 1158		
DPTR FM NORMAL 295		

[REMARKS]  
#FINAL-12-20#

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000  
CXUS52 KGSP 010917  
CF6AVL  
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: ASHEVILLE NC  
MONTH: JANUARY  
YEAR: 2021

LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

=====

TEMPERATURE IN F:					:PCPN:			SNOW:		WIND			:SUNSHINE:			SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
				12Z		AVG MX		2MIN											
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	

=====

1	51	41	46	9	19	0	1.56	0.0	0	6.9	15	170	M	M	10	18	19	180
2	61	42	52	15	13	0	0.00	0.0	0	5.3	15	340	M	M	5	12	18	330
3	50	36	43	6	22	0	0.00	0.0	0	10.7	22	350	M	M	8	12	28	330
4	50	31	41	4	24	0	0.00	0.0	0	6.8	14	350	M	M	2		20	330
5	48	33	41	4	24	0	T	0.0	0	8.9	25	320	M	M	7		35	330
6	45	29	37	0	28	0	0.00	0.0	0	10.8	24	340	M	M	2		31	350
7	41	23	32	-5	33	0	0.05	0.2	0	3.7	12	180	M	M	3	1	15	130
8	37	32	35	-2	30	0	0.26	1.1	1	7.3	24	340	M	M	10	1	33	350
9	36	28	32	-5	33	0	0.00	0.0	T	19.4	30	340	M	M	7		36	360
10	46	24	35	-2	30	0	0.00	0.0	0	4.9	15	340	M	M	0		21	340
11	37	28	33	-4	32	0	0.05	T	0	2.5	9	340	M	M	9	1	11	340
12	46	30	38	1	27	0	0.00	0.0	0	9.2	18	340	M	M	5	1	24	330
13	54	26	40	3	25	0	0.00	0.0	0	4.6	13	350	M	M	3	1	17	350
14	55	28	42	5	23	0	0.00	0.0	0	5.4	17	340	M	M	0		22	340
15	50	28	39	2	26	0	T	0.0	0	5.2	22	330	M	M	3		28	330
16	39	25	32	-5	33	0	T	T	0	6.3	22	320	M	M	6		28	300
17	44	24	34	-3	31	0	0.00	0.0	0	6.0	15	220	M	M	5		21	210
18	44	26	35	-2	30	0	T	T	0	7.7	20	330	M	M	3	18	29	340
19	55	25	40	3	25	0	0.00	0.0	0	2.4	14	310	M	M	7		20	320
20	48	32	40	3	25	0	0.00	0.0	0	9.3	31	340	M	M	0		39	340
21	44	32	38	1	27	0	0.01	0.0	0	10.1	17	350	M	M	7		22	340
22	53	35	44	7	21	0	0.00	0.0	0	10.1	20	340	M	M	0		26	330
23	48	28	38	1	27	0	0.00	0.0	0	10.3	20	340	M	M	0		27	10
24	50	29	40	3	25	0	T	0.0	0	5.9	18	180	M	M	8		22	180
25	58	39	49	12	16	0	0.38	0.0	0	6.0	20	200	M	M	8	13	26	190
26	71	49	60	23	5	0	0.19	0.0	0	6.3	29	300	M	M	8	12	39	290
27	62	39	51	13	14	0	0.05	0.0	0	9.7	25	330	M	M	7	1	34	330
28	39	24	32	-6	33	0	T	T	0	22.3	40	340	M	M	4	1	51	330
29	42	20	31	-7	34	0	0.00	0.0	0	10.7	20	350	M	M	0		26	330
30	38	22	30	-8	35	0	0.07	1.1	0	5.0	16	210	M	M	5	1	23	180
31	38	31	35	-3	30	0	0.41	0.6	1	4.2	10	170	M	M	10	1246	13	180

=====

SM	1480	939		800	0	3.03	3.0	243.9		M		152						
AV	47.7	30.3							7.9	FASTST	M	M	5		MAX(MPH)			
								MISC	---->	40	340				51	330		

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NOTES:  
 # LAST OF SEVERAL OCCURRENCES  
 COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: ASHEVILLE NC  
 MONTH: JANUARY  
 YEAR: 2021  
 LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
AVERAGE MONTHLY: 39.0	TOTAL FOR MONTH: 3.03	1 = FOG OR MIST
DPTR FM NORMAL: 1.9	DPTR FM NORMAL: -0.64	2 = FOG REDUCING VISIBILITY
HIGHEST: 71 ON 26	GRTST 24HR 1.61 ON 1- 1	TO 1/4 MILE OR LESS
LOWEST: 20 ON 29		3 = THUNDER
	SNOW, ICE PELLETS, HAIL	4 = ICE PELLETS

TOTAL MONTH: 3.0 INCHES 5 = HAIL  
 GRTST 24HR 1.1 ON 8- 8 6 = FREEZING RAIN OR DRIZZLE  
 GRTST DEPTH: 1 ON 31, 8 7 = DUSTSTORM OR SANDSTORM:  
 VSBY 1/2 MILE OR LESS  
 8 = SMOKE OR HAZE  
 9 = BLOWING SNOW  
 X = TORNADO

[NO. OF DAYS WITH] [WEATHER - DAYS WITH]  
 MAX 32 OR BELOW: 0 0.01 INCH OR MORE: 10  
 MAX 90 OR ABOVE: 0 0.10 INCH OR MORE: 5  
 MIN 32 OR BELOW: 23 0.50 INCH OR MORE: 1  
 MIN 0 OR BELOW: 0 1.00 INCH OR MORE: 1

[HDD (BASE 65) ]  
 TOTAL THIS MO. 800 CLEAR (SCALE 0-3) 11  
 DPTR FM NORMAL -66 PTCLDY (SCALE 4-7) 14  
 TOTAL FM JUL 1 2189 CLOUDY (SCALE 8-10) 6  
 DPTR FM NORMAL -336

[CDD (BASE 65) ]  
 TOTAL THIS MO. 0  
 DPTR FM NORMAL 0 [PRESSURE DATA]  
 TOTAL FM JAN 1 0 HIGHEST SLP 30.39 ON 29  
 DPTR FM NORMAL 0 LOWEST SLP 29.60 ON 15

[REMARKS]  
 #FINAL-01-21#

000  
 CXUS52 KGSP 010917  
 CF6AVL  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: ASHEVILLE NC  
 MONTH: FEBRUARY  
 YEAR: 2021  
 LATITUDE: 35 25 N  
 LONGITUDE: 82 33 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
DY MAX MIN AVG DEP HDD CDD		WTR	SNW	DPH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR					
1	39	26	33	-5	32	0	0.02	T	0	16.1	25	350	M	M	10	18	33	340
2	32	25	29	-9	36	0	T	T	T	22.0	35	330	M	M	5	1	46	340
3	39	23	31	-7	34	0	0.00	0.0	0	16.5	33	340	M	M	1	8	44	330
4	43	20	32	-6	33	0	T	0.0	0	5.5	13	170	M	M	3		20	170
5	49	31	40	1	25	0	0.03	0.0	0	8.0	21	330	M	M	3	1	27	310
6	45	23	34	-5	31	0	0.26	2.8	0	2.8	12	150	M	M	5	1	20	130
7	41	28	35	-4	30	0	0.08	0.1	3	10.8	25	350	M	M	5	1	35	350
8	51	23	37	-2	28	0	0.00	0.0	T	4.5	17	170	M	M	1		22	170
9	64	35	50	11	15	0	0.00	0.0	0	5.0	17	310	M	M	6		22	280
10	62	32	47	8	18	0	0.00	0.0	0	4.7	13	150	M	M	2	1	20	150
11	54	41	48	8	17	0	0.26	0.0	0	2.7	12	160	M	M	8	1	17	140
12	43	34	39	-1	26	0	0.24	T	0	6.9	14	180	M	M	10	14	18	180
13	41	34	38	-2	27	0	0.50	0.0	0	2.0	8	180	M	M	10	1	10	200
14	43	41	42	2	23	0	0.03	0.0	0	3.1	8	180	M	M	10	1	11	360
15	41	37	39	-1	26	0	0.82	0.0	0	7.0	15	220	M	M	10	1	18	180
16	40	21	31	-9	34	0	0.00	0.0	0	14.3	29	330	M	M	6	1	36	340
17	45	20	33	-8	32	0	T	0.0	0	5.8	14	150	M	M	1		21	150
18	42	32	37	-4	28	0	1.17	0.0	0	3.8	14	190	M	M	10	13	17	170
19	42	30	36	-5	29	0	T	0.0	0	15.2	26	340	M	M	3		35	330
20	43	22	33	-8	32	0	0.00	0.0	0	9.3	20	340	M	M	0		25	350

21	47	22	35	-7	30	0	T	0.0	0	6.2	16	150	M	M	1	23	140	
22	56	33	45	3	20	0	0.36	T	T	7.5	21	310	M	M	6	1	28	280
23	65	36	51	9	14	0	0.00	0.0	0	7.6	23	300	M	M	0		31	330
24	68	30	49	7	16	0	0.00	0.0	0	4.9	18	210	M	M	0		26	190
25	66	35	51	9	14	0	0.00	0.0	0	6.8	16	340	M	M	1		22	330
26	52	38	45	2	20	0	0.66	0.0	0	5.4	13	170	M	M	7	1	16	170
27	71	37	54	11	11	0	0.01	0.0	0	5.4	14	160	M	M	7	1	18	160
28	72	53	63	20	2	0	0.01	0.0	0	8.8	22	210	M	M	8		30	200

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=====
SM 1396 862          683 0 4.45 2.9      218.6          M      139
=====
AV 49.9 30.8          7.8 FASTST  M      M      5      MAX(MPH)
MISC ---->          35 330          46 340
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NOTES:  
# LAST OF SEVERAL OCCURRENCES  
COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: ASHEVILLE NC  
MONTH: FEBRUARY  
YEAR: 2021  
LATITUDE: 35 25 N  
LONGITUDE: 82 33 W

[TEMPERATURE DATA]      [PRECIPITATION DATA]      SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 40.3	TOTAL FOR MONTH: 4.45	1 = FOG OR MIST
DPTR FM NORMAL: 0.0	DPTR FM NORMAL: 0.69	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS
HIGHEST: 72 ON 28	GRTST 24HR 1.17 ON 17-18	3 = THUNDER
LOWEST: 20 ON 17, 4		4 = ICE PELLETS
	SNOW, ICE PELLETS, HAIL	5 = HAIL
	TOTAL MONTH: 3.5 INCHES	6 = FREEZING RAIN OR DRIZZLE
	GRTST 24HR 2.8 ON 6- 6	7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS
	GRTST DEPTH: 3 ON 7	8 = SMOKE OR HAZE
		9 = BLOWING SNOW
		X = TORNADO

[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]
MAX 32 OR BELOW: 1	0.01 INCH OR MORE: 14
MAX 90 OR ABOVE: 0	0.10 INCH OR MORE: 8
MIN 32 OR BELOW: 16	0.50 INCH OR MORE: 4
MIN 0 OR BELOW: 0	1.00 INCH OR MORE: 1

[HDD (BASE 65) ]  
TOTAL THIS MO. 683 CLEAR (SCALE 0-3) 12  
DPTR FM NORMAL -7 PTCLDY (SCALE 4-7) 10  
TOTAL FM JUL 1 2872 CLOUDY (SCALE 8-10) 6  
DPTR FM NORMAL -345

[CDD (BASE 65) ]  
TOTAL THIS MO. 0  
DPTR FM NORMAL 0  
TOTAL FM JAN 1 0  
DPTR FM NORMAL 0

[PRESSURE DATA]  
HIGHEST SLP 30.52 ON 21  
LOWEST SLP 29.68 ON 16

[REMARKS]  
#FINAL-02-21#