



MARCH 2002

LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

DULUTH, MN

INTERNATIONAL AIRPORT (DLH)

Lat: 46°50' N Long: 92°11' W Elev (Ground): 1426 Feet

Time Zone: CENTRAL WBAN: 14913 ISSN #:0198-2702

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		0600 LST	1200 LST	2400 LST	2400 LST	AVERAGE STATION	AVERAGE SEA LEVEL	RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM									
																			5-SEC		2-MIN							
																			SPEED	DIR	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	10	-11	0	-20	-13	-1	65	0		5		0.0	0.00	28.76	30.40	6.4	31	7.1	16	31	13	30	01					
02	15	-3	6	-14	-11	4	59	0		4		0.0	0.00	28.63	30.25	9.3	35	9.5	22	02	17	01	02					
03	2	-13*	-5*	-25	-19	-6	70	0		4		0.0	0.00	28.53	30.17	10.2	33	11.7	24	33	20	31	03					
04	14	-8	3	-18	-3	3	62	0	SN HZ	4		0.1	T	28.36	29.98	6.6	24	8.0	15	20	13	26	04					
05	24	4	14	-7	5	13	51	0	SN BR	4		T	T	28.50	30.10	6.9	31	8.0	22	32	17	33	05					
06	16	3	10	-12	-6	7	55	0	SN	4		0.1	T	28.67	30.29	7.3	36	7.6	21	34	16	35	06					
07	21	3	12	-10	6	12	53	0	SN FG+ FZFG BR	4		9.0	0.50	28.67	30.28	11.2	09	12.7	37	11	28	11	07					
08	25	21	23	1	21	22	42	0	RA FZRA SN BR UP	12		4.2	0.25	28.38	29.95	20.4	09	20.6	44	08	32	11	08					
09	25	4	15	-8	9	13	50	0	SN FG+ FZFG BR UP HZ BLSN	15		6.5	0.41	28.17	29.74	19.2	33	23.0	52*	32	40*	31	09					
10	17	1	9	-14	-2	7	56	0	SN HZ	15		T	T	28.73	30.36	13.4	31	14.1	35	31	28	31	10					
11	29	10	20	-3	11	16	45	0	SN BR	14		0.8	0.03	28.50	30.09	0.8	08	5.4	16	33	14	30	11					
12	43	16	30	6	22	28	35	0		11		0.0	0.00	28.21	29.76	11.8	21	15.1	37	24	30	23	12					
13	39	20	30	6	17	25	35	0		8		0.0	0.00	28.30	29.86	10.6	33	11.9	33	34	25	32	13					
14	26	20	23	-1	19	22	42	0	SN FZFG BR	8		2.4	0.11	28.46	30.03	14.0	08	14.8	35	09	29	08	14					
15	34	17	26	1	12	20	39	0	SN FZFG BR	13		2.6	0.15	28.50	30.08	4.3	36	7.3	25	02	18	02	15					
16	38	8	23	-2	10	21	42	0		11		0.0	0.00	28.75	30.34	4.7	23	6.5	17	25	14	21	16					
17	35	20	28	3	20	25	37	0		10		0.0	0.00	28.64	30.21	11.0	10	11.5	24	11	21	09	17					
18	41	13	27	1	24	28	38	0	SN BR	9		T	T	28.66	30.24	4.3	26	5.2	18	25	15	24	18					
19	33	18	26	0	18	25	39	0	SN BR	10		1.4	0.13	28.66	30.23	7.5	34	9.2	24	02	17	01	19					
20	19	3	11	-16	6	11	54	0	SN BR BLSN	10		0.8	0.07	28.71	30.31	9.8	36	10.0	28	35	22	36	20					
21	14	-4	5	-22	-4	5	60	0	HZ BLSN	10		0.0	0.00	28.82	30.45	17.1	30	17.4	35	30	29	30	21					
22	28	4	16	-12	6	13	49	0		10		0.0	0.00	28.49	30.09	17.2	28	17.4	31	28	26	28	22					
23	30	15	23	-5	9	19	42	0	UP	10		T	T	28.39	29.96	11.5	32	12.0	25	29	20	31	23					
24	17	4	11	-17	0	8	54	0		10		0.0	0.00	28.77	30.38	4.5	06	7.8	21	02	16	12	24					
25	24	1	13	-16	7	13	52	0	SN	9		T	T	28.92	30.55	5.7	08	7.7	17	12	14	12	25					
26	28	18	23	-6	19	22	42	0		9		0.0	0.00	28.74	30.34	3.5	12	4.3	14	11	12	10	26					
27	36	12	24	-6	20	25	41	0	FZFG BR	9		0.0	0.00	28.48	30.05	8.4	14	9.0	21	13	17	12	27					
28	46*	33	40*	10	31	35	25	0	RA SN FG BR	8		0.8	0.15	28.05	29.58	11.5	24	16.5	38	26	35	25	28					
29	43	29	36	5	27	33	29	0	RA SN BR	6		0.1	0.01	28.12	29.65	11.9	28	12.4	29	31	24	31	29					
30	36	23	30	-1	23	28	35	0	RA SN BR HZ	5		0.6	0.05	28.26	29.81	13.6	29	13.9	30	29	25	30	30					
31	27	16	22	-10	15	21	43	0	SN BR	6		0.3	0.01	28.40	29.98	10.5	31	10.8	24	31	21	30	31					
26.9		9.6	18.3	■ ■	9.7	16.7	46.5	0.0	< MONTHLY AVERAGES	TOTALS->		29.7	1.87	28.52	30.11	3.8	32	11.2	<- MONTHLY AVERAGES									
-7.3		-6.9	-7.1	■ ■	<-----DEPARTURE FROM NORMAL----->							0.18	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3															
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 0.50 DATE :07				SEA LEVEL PRESSURE DATE TIME															
MONTHLY									GREATEST 24-HR SNOWFALL: 9.0 DATE :07				MAXIMUM				: 30.63 25 0955											
SEASON TO DATE									GREATEST SNOW DEPTH: 15 DATE :10+				MINIMUM				: 29.45 28 0855											
TOTAL DEPARTURE									TOTAL DEPARTURE				NUMBER OF DAYS WITH ➡				MAXIMUM TEMP ≥ 90: 0				MINIMUM TEMP ≤ 32 : 30				PRECIPITATION ≥ 0.01 INCH : 12			
HEATING: 1441 182									7263 -1148								MAXIMUM TEMP ≤ 32 : 20				MINIMUM TEMP ≤ 0 : 5				PRECIPITATION ≥ 0.10 INCH : 7			
COOLING: 0 0									0 0								THUNDERSTORMS : 0				HEAVY FOG : 2				SNOWFALL ≥ 1.0 INCH : 6			

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

DULUTH, MN

MARCH 2002

DLH

WBAN # 14913

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			Water Equiv.	
01													01												01			0.00	
02													02												02			0.00	
03													03	T	T		T	T	T	T					03			0.00	
04													04												04			T	
05	T	T	T	T								T	05				T	T	T	T				T	05			T	
06													06												06			T	
07	T												07	T	T		T	T	T	T	T	T		T	07	T		0.50	
08	T	T	T	T	T	T	T	T	T	T	T	T	08	T	T	T	T	T	T	T	T	T	T	T	08	T		0.25	
09	T	T	T	T	T	T	T	T	T	T	T	T	09												09	T		0.41	
10													10											T	10			T	
11	T	T		T	T	T	T	T	T		0.01		11												11	0.01		0.03	
12													12	0.01											12	0.01		0.00	
13													13												13			0.00	
14													14	T											14	T		0.11	
15	T	T	T								0.05	0.01	15		T			T	T	T	T	T	T	T	15	0.06		0.15	
16													16	T	T	T									16	T		0.00	
17													17					T							17			0.00	
18													18											T	18			T	
19	T	T	T	T	T	T	T	T	T		0.04	0.05	19												19	0.09		0.13	
20													20	T	T	T	T	T	T	T	T	T	T		20	T		0.07	
21						0.01							21												21	0.01		0.00	
22													22												22			0.00	
23													23												23			T	
24													24												24			0.00	
25													25		T										25			T	
26													26												26			0.00	
27													27	T	T	T									27	T		0.00	
28			T	0.02			0.04	0.03	T	0.02	0.02	T	28						T	T					28	0.13		0.15	
29													29			0.01	T	T							29			0.01	
30													30	T	T	T	T	T	T			T	T		30	T		0.05	
31	T	T	T	T	T	T	T	T	T	T	T	T	31			T									31	T		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.

* = 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

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

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

WEATHER NOTATIONS

**DULUTH, MN
MARCH 2002**

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.

ERRATA for Jan & Feb 2002 LCD's: To stay consistent with the Heating Degree Day Season (July 2001 – June 2002), NCDC reinstalled the 1961 – 1990 Heating Degree Day Normals and corrected the Jan & Feb 2002 LCD's. The corrected LCD's are available on NCDC's Website. The 1971 – 2000 Heating Degree Day Normals will go into effect with the July 2002 LCD. The new Cooling Degree Day Normals went into effect with the Jan 2002 LCD.

PAGE 3

OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

MARCH 2002

DLH

WBAN # 14913

HOUR (LST)				SATELLITE		WEATHER	TEMPERATURE °F				RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)		HOUR (LST)				SATELLITE		WEATHER	TEMPERATURE °F				RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)	
	SKY COVER	CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT <small>Okas</small>	VISIBILITY (MILES)		DRY BULB	DEW POINT	WET BULB	SPEED (MPH)		DIRECTION TENS OF DEG	STATION	SEA LEVEL	SKY COVER		CEILING 100'S OF FT	OBSERVATION TIME (LST)	EFF CLD AMT <small>Okas</small>	VISIBILITY (MILES)	DRY BULB		DEW POINT	WET BULB	STATION	SEA LEVEL					
SUNRISE: 0648				MAR 01		SUNSET: 1754				SUNRISE: 0637				MAR 07		SUNSET: 1802															
03	CLR	NC			10.00		-5	-13	-6	68	9	32	28.70	30.33	03	OVC	080			10.00		4	-9	2	54	7	01	28.75	30.38		
06	CLR	NC			10.00		-11	-16	-12	78	5	30	28.77	30.42	06	OVC	080			10.00		5	-7	3	57	7	03	28.74	30.36		
09	CLR	NC			10.00		-6	-14	-7	67	9	33	28.80	30.45	09	OVC	070			10.00		11	2	9	67	9	09	28.74	30.37		
12	CLR	NC			10.00		5	-14	2	40	7	30	28.82	30.46	12	OVC	040			10.00		15	4	12	61	12	11	28.71	30.33		
15	CLR	NC			10.00		10	-15	6	31	5	32	28.74	30.38	15	OVC	012			1.25	-SN BR	15	12	14	88	12	10	28.66	30.27		
18	CLR	NC			10.00		9	-13	6	36			28.74	30.39	18	OVC	005			0.25	SN FZFG	17	15	16	92	13	11	28.60	30.22		
21	CLR	NC			10.00		6	-10	4	47	5	30	28.76	30.41	21	OVC	005			0.50	SN FZFG	20	18	19	92	24	10	28.52	30.12		
24	CLR	NC			10.00		4	-14	1	42	7	34	28.73	30.36	24	OVC	011			0.50	-SN FZFG	21	20	21	96	22	11	28.47	30.06		
SUNRISE: 0647				MAR 02		SUNSET: 1756				SUNRISE: 0635				MAR 08		SUNSET: 1803															
03	CLR	NC			10.00		3	-13	1	47	5	35	28.72	30.34	03	OVC	009			2.00	-SN BR	22	21	22	96	22	10	28.39	29.98		
06	FEW	NC			10.00		2	-13	0	49	5	01	28.69	30.32	06	OVC	009			6.00	UP BR	24	22	23	91	21	09	28.38	29.96		
09	CLR	NC			10.00		4	-10	2	52	8	01	28.69	30.31	09	OVC	010			3.00	-SN BR	25	22	24	88	15	08	28.40	29.97		
12	CLR	NC			10.00		12	-14	8	29	14	33	28.62	30.24	12	OVC	006			2.50	UP BR	23	21	22	92	25	08	28.40	29.98		
15	CLR	NC			10.00		14	-7	10	38	15	35	28.55	30.16	15	OVC	006			2.50	UP BR	23	21	22	92	16	08	28.43	30.00		
18	CLR	NC			10.00		10	-9	7	41	10	36	28.56	30.18	18	OVC	006			2.50	UP BR	23	22	23	96	23	09	28.40	29.97		
21	CLR	NC			10.00		3	-11	1	51	13	36	28.59	30.22	21	OVC	006			1.50	-SN BR	22	21	22	96	25	09	28.32	29.89		
24	CLR	NC			10.00		-3	-14	-4	58	14	35	28.57	30.19	24	OVC	010			1.00	-SN BR	24	23	24	96	20	10	28.24	29.80		
SUNRISE: 0645				MAR 03		SUNSET: 1757				SUNRISE: 0633				MAR 09		SUNSET: 1804															
03	CLR	NC			10.00		-8	-19	-9	58	12	36	28.53	30.16	03	OVC	011			1.75	-SN BR	24	22	23	91	14	05	28.07	29.63		
06	CLR	NC			10.00		-11	-21	-12	61	10	36	28.55	30.19	06	OVC	035			2.50	-SN BR	14	10	13	84	16	36	28.02	29.57		
09	CLR	NC			10.00		-9	-22	-10	52	10	35	28.59	30.23	09	VV	009			1.00	BR	13	9	12	84	20	35	28.02	29.58		
12	CLR	NC			10.00		-2	-19	-4	43	17	35	28.57	30.22	12	VV	015			1.00	HZ	14	8	12	77	25	33	28.03	29.59		
15	CLR	NC			10.00		2	-19	0	36	14	34	28.52	30.16	15	OVC	017			1.00	HZ	16	10	14	77	32	31	28.11	29.67		
18	CLR	NC			10.00		0	-20	-2	37	12	31	28.50	30.15	18	OVC	025			1.00	-SN	12	7	11	80	30	31	28.26	29.85		
21	CLR	NC			10.00		-4	-18	-5	50	7	29	28.47	30.12	21	BKN	026			2.50	BLSN	6	-1	5	73	22	31	28.40	30.01		
24	CLR	NC			10.00		-7	-21	-8	50	7	26	28.43	30.07	24	FEW	NC			4.00	HZ	4	-3	3	73	24	31	28.52	30.14		
SUNRISE: 0643				MAR 04		SUNSET: 1759				SUNRISE: 0631				MAR 10		SUNSET: 1806															
03	CLR	NC			10.00		-6	-16	-7	61	8	23	28.37	30.00	03	CLR	NC			8.00		2	-3	1	80	24	31	28.62	30.24		
06	FEW	NC			10.00		-5	-14	-6	64	10	23	28.33	29.96	06	CLR	NC			9.00		2	-4	1	76	21	31	28.73	30.35		
09	FEW	NC			8.00		1	-8	0	65	6	20	28.32	29.95	09	CLR	NC			10.00		5	-4	3	66	21	32	28.79	30.43		
12	BKN	019			2.50	-SN	7	0	6	73	8	19	28.31	29.93	12	CLR	NC			10.00		13	-2	10	51	16	30	28.82	30.45		
15	OVC	026			8.00		13	5	11	70	6	19	28.32	29.93	15	CLR	NC			10.00		16	-1	12	47	16	28	28.79	30.41		
18	OVC	032			2.50	-SN	13	8	12	81	8	28	28.38	29.99	18	CLR	NC			10.00		16	-4	12	41	5	33	28.73	30.36		
21	CLR	NC			10.00		6	2	5	83	8	27	28.41	30.03	21	OVC	060			10.00		14	-1	11	51	6	26	28.73	30.35		
24	OVC	031			10.00		10	5	9	80	8	27	28.42	30.02	24	OVC	028			3.00	-SN	13	8	12	81	0	00	28.68	30.29		
SUNRISE: 0641				MAR 05		SUNSET: 1800				SUNRISE: 0630				MAR 11		SUNSET: 1807															
03	OVC	025			8.00		9	7	9	92	8	29	28.44	30.04	03	OVC	100			10.00		11	8	10	88	6	12	28.60	30.21		
06	CLR	NC			10.00		7	4	6	87	10	33	28.48	30.09	06	OVC	040			10.00		13	9	12	84	8	13	28.55	30.15		
09	CLR	NC			10.00		10	3	9	73	8	32	28.52	30.14	09	BKN	037			7.00		14	11	13	88	7	11	28.50	30.09		
12	CLR	NC			10.00		19	5	15	54	10	29	28.53	30.13	12	CLR	NC			10.00		21	11	18	65	0	00	28.46	30.05		
15	CLR	NC			10.00		23	6	18	48	12	29	28.49	30.08	15	FEW	NC			10.00		27	13	23	55	7	28	28.42	30.01		
18	FEW	NC			10.00		22	5	18	48	5	35	28.49	30.08	18	CLR	NC			10.00		26	13	22	57	8	36	28.44	30.02		
21	OVC	075			10.00		19	6	16	57	5	01	28.51	30.12	21	CLR	NC			10.00		20	11	17	68	3	03	28.46	30.05		
24	OVC	026			3.00	-SN	14	5	12	67	7	01	28.55	30.15	24	OVC	080			10.00		15	11	14	84	0	00	28.46	30.04		
SUNRISE: 0639				MAR 06		SUNSET: 1800				SUNRISE: 0628				MAR 12		SUNSET: 1809															
03	OVC	060			10.00		10	-1	8	61	7	03	28.58	30.17	03	OVC	070			10.00		19	17	18	92	6	12	28.43	30.00		
06	OVC	050			10.00		8	-3	6	60	7	36	28.62	30.23	06	OVC	085			10.00		20	17	19	89	10	14	28.38	29.95		
09	CLR	NC			10.00		8	-4	6	57	8	35	28.67	30.27	09	OVC	100			9.00		22	15	20	75	14	17	28.29	29.87		
12	CLR	NC			10.00		12	-7	8	42	10	36	28.70	30.31	12	CLR	NC			10.00		36	21	31	55	16	19	28.18	29.74		
15	CLR	NC			10.00		16	-7	11	35	10	33	28.69	30.30	15	CLR	NC			10.00		42	24	35	49	22	23	28.09	29.63		
18	CLR	NC			10.00		13	-10	9	35	8	34	28.72	30.33	18	CLR	NC			10.00		41	27	35	57	21	23	28.			

OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

MARCH 2002

DLH

WBAN # 14913

HOUR (LST)			SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)		HOUR (LST)			SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES, HG)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			OBSERVATION TIME (LST)	EFF CLD AMT <small>Okta</small>		VISIBILITY (MILES)	RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT			WET BULB	STATION							SEA LEVEL	OBSERVATION TIME (LST)	EFF CLD AMT <small>Okta</small>	VISIBILITY (MILES)			RELATIVE HUMIDITY (PCT)	DRY BULB	DEW POINT	WET BULB	STATION	SEA LEVEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	SKY COVER	CEILING 100'S OF FT													SKY COVER	CEILING 100'S OF FT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</

OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

MARCH 2002

DLH

WBAN # 14913

HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)		HOUR (LST)	SKY COVER		CEILING 100'S OF FT	SATELLITE		VISIBILITY (MILES)	WEATHER	TEMPERATURE °F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES, HG)		
				OBSERVATION TIME (LST)	EFF CLD AMT Okta			DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL					OBSERVATION TIME (LST)	EFF CLD AMT Okta			DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
03	CLR	NC				10.00		3	-9	1	57	7	03	28.93	30.56	03	OVC	024				2.50	-SN BR	24	22	23	91	10	30	28.33	29.90	
06	CLR	NC				10.00		2	-9	0	60	7	02	28.94	30.58	06	OVC	022				4.00	-SN	22	17	20	82	10	34	28.36	29.93	
09	FEW	NC				10.00		16	3	13	56	0	00	28.98	30.61	09	OVC	030				10.00		21	13	19	71	17	29	28.41	29.98	
12	OVC	023				8.00		22	12	19	66	6	35	28.96	30.58	12	OVC	034				10.00		24	11	20	57	12	32	28.42	30.00	
15	SCT	NC				10.00		23	18	21	81	12	13	28.91	30.54	15	OVC	038				10.00		25	13	21	60	14	29	28.41	29.98	
18	CLR	NC				10.00		21	14	19	74	10	09	28.89	30.52	18	OVC	042				10.00		25	14	22	63	10	30	28.43	30.00	
21	CLR	NC				10.00		18	15	17	88	8	10	28.90	30.51	21	CLR	NC				10.00		20	14	18	78	7	30	28.45	30.03	
24	OVC	012				10.00		20	17	19	89	7	09	28.87	30.47	24	CLR	NC				10.00		17	12	16	80	7	30	28.44	30.03	
SUNRISE: 0602 MAR 25 SUNSET: 1827																																
03	OVC	014				10.00		21	17	20	85	9	10	28.82	30.43	3-HOURLY OBSERVATION NOTES																
06	OVC	014				10.00		22	18	21	85	6	07	28.81	30.42	Sky Cover is the amount of the sky obscured. CLR or SKC = 0, FEW = 1/8-2/8,																
09	OVC	016				10.00		22	18	21	85	0	00	28.80	30.40	SCT = 3/8-4/8, BKN = 5/8-7/8, OVC = 8/8, VV = Vertical Visiblity = 8/8.																
12	OVC	020				10.00		26	19	24	75	6	09	28.75	30.35	Ceiling is reported in hundreds of feet above ground level for clouds at or below 12,000 feet.																
15	CLR	NC				10.00		28	20	25	72	7	13	28.70	30.29	NC= No ceiling detected.																
18	CLR	NC				10.00		26	20	24	78	7	15	28.67	30.25	& = Original observation contained additional weather elements.																
21	CLR	NC				10.00		20	18	19	92	3	13	28.65	30.25	See page 3 for additional notes.																
24	CLR	NC				9.00		19	18	19	96	0	00	28.64	30.23																	
SUNRISE: 0558 MAR 27 SUNSET: 1830																																
03	SCT	NC				8.00		13	11	12	92	0	00	28.60	30.19	SUMMARY BY HOUR																
06	CLR	NC				8.00		16	14	15	92	3	13	28.58	30.17																	
09	CLR	NC				10.00		26	18	23	71	8	18	28.57	30.16																	
12	CLR	NC				10.00		34	20	29	56	12	16	28.52	30.10																	
15	CLR	NC				10.00		36	22	31	57	12	14	28.44	30.01																	
18	CLR	NC				10.00		34	22	30	61	10	12	28.38	29.95																	
21	CLR	NC				10.00		33	24	30	70	15	12	28.32	29.88																	
24	OVC	090				10.00		33	25	30	72	14	14	28.25	29.79																	
SUNRISE: 0556 MAR 28 SUNSET: 1831																																
03	OVC	060				10.00		37	27	33	67	13	16	28.11	29.65																	
06	OVC	029				8.00		37	32	35	82	14	15	28.00	29.52																	
09	OVC	008				6.00	-RA BR	35	34	35	96	17	25	27.93	29.46																	
12	OVC	012				9.00		35	32	34	89	20	27	28.00	29.53																	
15	BKN	048				10.00		43	29	37	58	17	26	28.03	29.56																	
18	OVC	033				10.00	-RA	40	30	36	68	23	27	28.07	29.60																	
21	CLR	NC				10.00		35	33	34	93	14	25	28.09	29.63																	
24	CLR	NC				10.00		33	32	33	96	14	26	28.10	29.64																	
SUNRISE: 0554 MAR 29 SUNSET: 1832																																
03	CLR	NC				10.00		33	30	32	89	13	28	28.10	29.63																	
06	CLR	NC				10.00		31	27	29	85	13	28	28.12	29.65																	
09	CLR	NC				10.00		38	28	34	68	13	28	28.10	29.64																	
12	SCT	NC				10.00		41	26	35	55	14	26	28.10	29.63																	
15	FEW	NC				10.00		38	33	36	83	15	27	28.10	29.63																	
18	SCT	NC				10.00		40	23	33	51	14	31	28.11	29.65																	
21	OVC	055				10.00		36	25	32	64	9	29	28.14	29.67																	
24	CLR	NC				10.00		29	25	27	85	9	28	28.15	29.69																	
SUNRISE: 0552 MAR 30 SUNSET: 1834																																
03	CLR	NC				10.00		31	25	29	79	14	30	28.17	29.71																	
06	CLR	NC				10.00		26	19	24	75	12	28	28.21	29.75																	
09	OVC	025				10.00		31	23	28	72	15	30	28.23	29.78																	
12	OVC	038				10.00		33	22	29	64	20	29	28.26	29.81																	
15	OVC	033				1.00	-SN	31	26	29	82	17	31	28.28	29.84																	
18	OVC	022				1.75	-SN	31	24	28	76	16	28	28.32	29.88																	
21	OVC	041				8.00	-SN	31	22	28	69	15	29	28.34	29.90																	
24	CLR	NC				10.00		24	22	23	91	10	29	28.34	29.90																	

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.

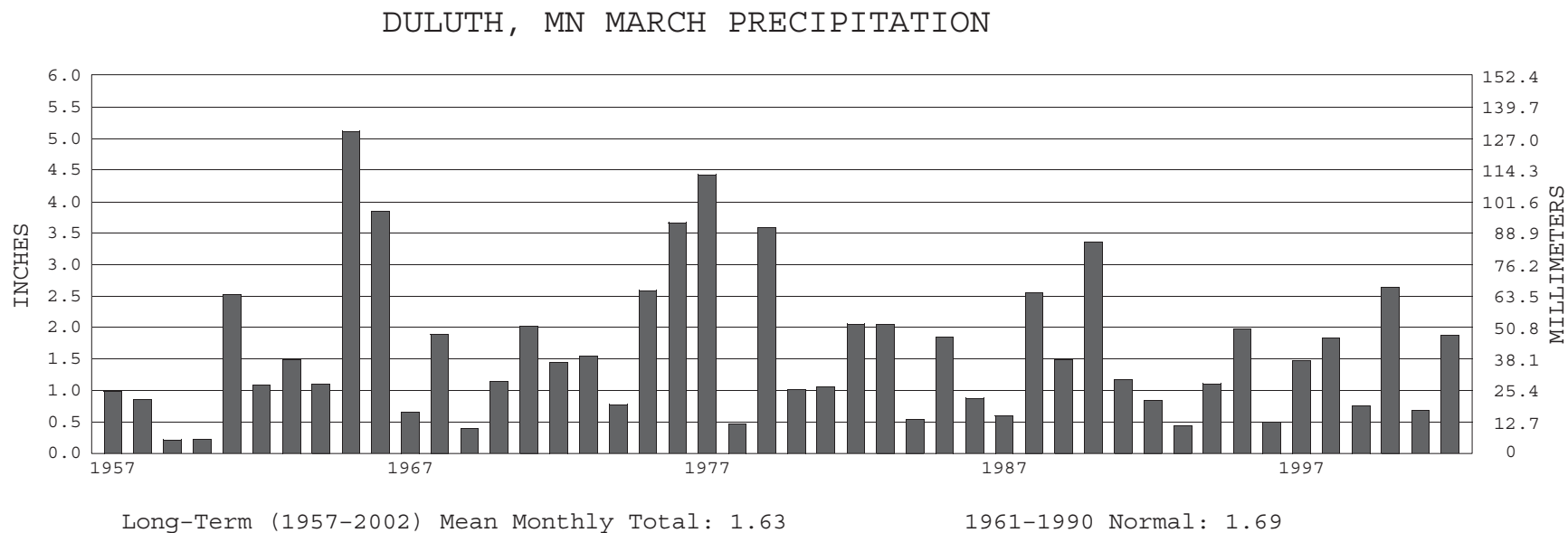
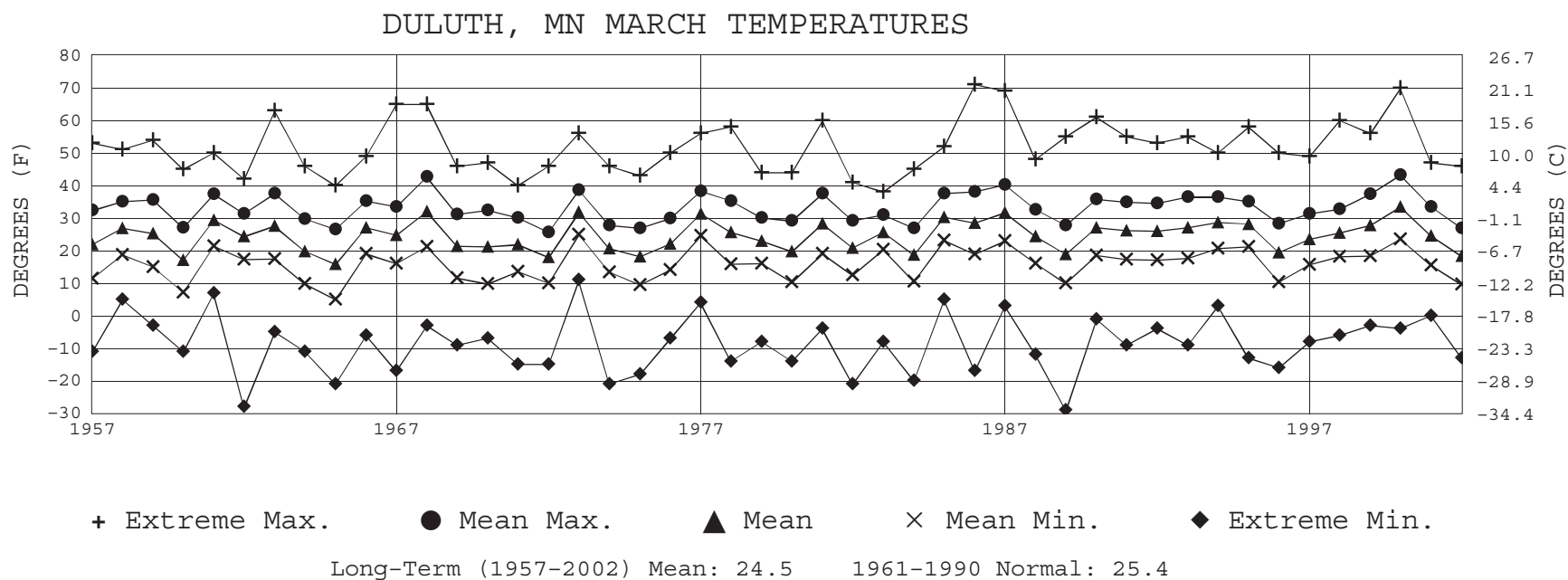
NC= No ceiling detected.

& = Original observation contained additional weather elements.

See page 3 for additional notes.

SUMMARY BY HOUR

HOUR (LST)	AVERAGES										RESULTANT	
	CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES,HG)		VISIBILITY (MILES)	WIND SPEED (MPH)	WIND (MPH)	
							STATION	SEA LEVEL			SPEED	DIRECTION
01			16	9	14	77	28.52	30.11	8.05	10	4	33
02			16	9	14	77	28.52	30.11	8.51	10	4	33
03			15	9	14	77	28.51	30.10	8.48	10	4	34
04			14	8	13	78	28.51	30.10	8.40	10	4	34
05			14	8	12	78	28.52	30.11	8.49	10	4	34
06			13	7	12	78	28.52	30.12	8.73	10	4	35
07			13	7	12	79	28.53	30.12	8.64	10	4	34
08			14	8	13	76	28.53	30.13	8.74	11	4	35
09			17	8	15	70	28.54	30.13	9.16	11	5	33
10			19	9	16	66	28.54	30.13	9.03	12	4	32
11			21	10	18	63	28.54	30.13	8.99	11	4	31
12			22	10	19	60	28.54	30.13	8.82	12	4	32
13			23	10	20	59	28.53	30.12	8.57	14	5	31
14			24	11	21	59	28.51	30.10	8.81	14	5	30
15			25	11	21	59	28.51	30.09	8.48	13	5	31
16			25	11	21	57	28.51	30.09	8.81	14	5	31
17			25	11	21	58	28.50	30.10	8.30	14	5	31
18			23	11	20	61	28.51	30.10	7.97	13	4	32
19			22	11	19	64	28.52	30.11	8.75	10	3	32
20			20	11	18	68	28.52	30.12	8.71	11	2	32
21			19	11	17	70	28.52	30.11	8.53	11	3	33
22			18	10	16	72	28.52	30.11	8.62	11	3	33
23			18	10	16	73	28.52	30.11	8.70	11	3	31
24			17	10	16	75	28.52	30.10	8.27	10	3	32





MARCH 2002

DULUTH, MN

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

NCDC now offers an annual online subscription for the **Edited Local Climatological Data Publication**. When you purchase this subscription service, you will have **immediate online access** to all previous publications back to July 1996 and all publications thereafter until the expiration of the subscription. Your subscription is valid for one year after purchase. **The total cost is \$29 for online delivery (including back issues) compared to \$34 for offline delivery.** To order this and other subscriptions online with your credit card, go to:
www.ncdc.noaa.gov and choose subscriptions.

We welcome your questions or comments, please contact us at
Toll Free Number (866) 742–3322 (voice)
Fax Number : (304) 726–4409
TDD : 828–271–4010
or Email : ncdc.info@noaa.gov
Local Climatological Data is available at www.ncdc.noaa.gov

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

NCDC Subscription Services Center
310 State Route 956 Building 300
Rocket Center, WV 26726

OFFICIAL BUSINESS. PENALTY FOR PRIVATE USE \$300

FIRST CLASS
POSTAGE AND FEES PAID
NOAA
PERMIT G-19