



# FEBRUARY 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	19	-1	9	-2	6	10	56	0		4		0.0	0.00	28.63	30.23	6.9	33	7.5	24	30	21	31	01		
02	23	0	12	1	14	16	53	0	SN BR HZ	4		0.5	0.02	28.48	30.08	3.6	24	9.5	25	33	18	32	02		
03	20	1	11	0	5	10	54	0	SN	4		0.0	0.00	28.59	30.19	12.0	34	12.7	29	35	22	34	03		
04	20	-11*	5*	-7	-1	6	60	0		4		0.0	0.00	28.75	30.39	8.9	26	11.2	31	25	22	25	04		
05	27	11	19	7	9	17	46	0		3		0.0	0.00	28.60	30.20	9.4	29	11.3	23	24	18	25	05		
06	43	19	31	19	23	28	34	0	BR	1		0.0	0.00	28.25	29.81	14.1	27	15.9	36	31	28	31	06		
07	37	20	29	17	22	27	36	0		1		0.0	0.00	28.32	29.87	5.1	29	9.5	40	31	29	32	07		
08	33	24	29	16	27	29	36	0		1		0.0	0.00	28.41	29.97	6.6	09	10.8	26	10	22	09	08		
09	32	26	29	16	28	29	36	0	SN BR	1		0.2	0.02	28.63	30.20	16.1	07	17.3	35	10	28	08	09		
10	28	13	21	8	11	17	44	0		1		0.0	0.00	28.81	30.41	7.5	01	9.1	21	01	17	36	10		
11	37	16	27	13	18	24	38	0	RA SN BR	1		T	T	28.16	29.72	15.1	25	21.6	54*	28	44*	29	11		
12	25	6	16	2	7	14	49	0	SN FZFG BR	1		0.3	0.02	28.40	29.98	15.3	32	15.8	47	32	37	32	12		
13	38	8	23	9	16	22	42	0		1		0.0	0.00	28.43	30.01	12.0	25	12.2	25	26	22	25	13		
14	40	28	34	20	25	30	31	0		1		0.0	0.00	28.15	29.69	5.6	26	9.3	21	23	20	23	14		
15	37	24	31	16	24	29	34	0	SN BR	1		0.4	0.01	28.24	29.79	11.3	31	12.7	26	29	22	30	15		
16	33	18	26	11	19	24	39	0	SN	T		T	T	28.40	29.97	9.3	34	9.7	26	34	20	35	16		
17	36	7	22	7	15	21	43	0		T		0.0	0.00	28.52	30.10	9.3	18	10.0	26	20	21	21	17		
18	48*	32	40*	24	28	34	25	0		0		0.0	0.00	28.26	29.81	8.7	23	9.2	32	23	28	22	18		
19	36	28	32	16	30	31	33	0	SN BR	T		1.6	0.15	28.30	29.85	14.3	08	14.5	31	07	25	08	19		
20	28	19	24	8	21	23	41	0	SN BR	1		2.2	0.09	28.28	29.85	12.0	05	12.9	29	09	24	08	20		
21	31	7	19	2	8	15	46	0		3		0.0	0.00	28.68	30.28	3.9	02	6.5	21	02	17	02	21		
22	32	9	21	4	10	20	44	0	SN	2		0.2	T	28.58	30.16	4.6	21	7.9	20	15	17	14	22		
23	40	28	34	17	29	32	31	0	BR	0		0.0	0.00	28.23	29.77	3.7	26	10.4	21	35	18	31	23		
24	31	18	25	7	20	23	40	0	SN FZFG BR	1		4.6	0.31	28.44	30.01	10.6	36	10.7	22	01	17	01	24		
25	19	8	14	-4			51	0	SN BR HZ	5		0.6	0.01	28.61		10.8	34	11.1	20	35	15	35	25		
26	17	2	10	-9			55	0	SN BR UP	5		0.4	0.01					14.3	28	01	21	36	26		
27	21	-6	8	-11	-5	7	57	0		5		0.0	0.00	28.44	30.05	7.7	29	10.2	22	26	17	28	27		
28	17	-1	8	-11	1	8	57	0	SN BR UP	5		0.2	T	28.37	29.97	11.3	32	11.9	28	30	22	30	28		
										< MONTHLY AVERAGES		TOTALS-->								11.6	<-- MONTHLY AVERAGES				

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

DULUTH, MN

FEBRUARY 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				T	T								01	T		T	T	T	T	T					01	T	0.00	
02													02												02		0.02	
03													03			T	T	T	T	T					03		0.00	
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			T				T	T	T	T		09	T	0.02	
10													10												10		0.00	
11													11							T	T				11		T	
12	T	T	T				T	T	T	T			12											T	12	T	0.02	
13													13												13		0.00	
14													14												14		0.00	
15		T	T										15								T	T	T	T	15	T	0.01	
16	T											T	16	T	T										16		T	
17													17												17		0.00	
18													18												18		0.00	
19							T	T	0.01	0.02	0.01	T	19	T	0.01	0.01	T	T	T	T	T	T	T	T	19	0.06	0.15	
20	T	T	T		T	T	T	T	T	T	T	T	20	T	T	T	T	T	T	T					20	T	0.09	
21													21												21		0.00	
22													22								T			T	22		T	
23													23												23		0.00	
24			T	T	T	T		T		T	T	T	24	T	T	T	T	T	T	T	T	T			24	T	0.31	
25							T	T	T	T		T	25	T	T	T	T	T	T	T					25	T	0.01	
26												T	26												26	T	0.01	
27													27												27		0.00	
28			T	T		T			T	T			28												28		T	

## 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  
FEBRUARY 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.

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
	TOTAL MINUTES	PERCENT POSSIBLE	SR-SS		MN-MN		MINIMUM	MAXIMUM	
			CEILOMETER	SATELLITE	CEILOMETER	SATELLITE			
01							10.00	10.00	
02							1.00	10.00	
03							4.00	10.00	
04							10.00	10.00	
05							10.00	10.00	
06							4.00	10.00	
07							10.00	10.00	
08							8.00	10.00	
09							1.50	10.00	
10							10.00	10.00	
11							1.75	10.00	
12							.50	10.00	
13							10.00	10.00	
14							10.00	10.00	
15							2.50	10.00	
16							3.00	10.00	
17							10.00	10.00	
18							9.00	10.00	
19							.75	10.00	
20							.75	10.00	
21							10.00	10.00	
22							9.00	10.00	
23							6.00	10.00	
24							.50	10.00	
25							.00	10.00	
26							.00	10.00	
27							10.00	10.00	
28							4.00	10.00	
<b>MONTHLY AVGS</b>							5.98	10.00	
<p align="center"><b>SUNSHINE (MINUTES)</b></p> <p>Total:                  Possible:</p> <p>                              Percent Possible:</p>									
<p align="center"><b>NUMBER OF DAYS WITH:</b></p> <p align="center"><b>SKY CONDITION</b></p> <p align="center">CLR   PTLY CLDY   CLOUDY   MISSING</p> <p align="center">28</p> <p align="center"><b>MINIMUM VISIBILITY (MILES)</b></p> <p align="center">&lt;=0.25      &lt;=3.0      &gt;=7.0</p> <p align="center">0                     10                     13</p>									

## OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

FEBRUARY 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 <i>Oktas</i>		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 <i>Oktas</i>	VISIBILITY (MILES)	DRY BULB		DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
SUNRISE: 0733 FEB 01						SUNSET: 1712						SUNRISE: 0725 FEB 07						SUNSET: 1721											
03	CLR	NC			10.00		14	13	14	95	5	35	28.50	30.10	03	CLR	NC			10.00	26	20	24	78	22	32	28.30	29.85	
06	CLR	NC			10.00		12	9	11	87	7	34	28.52	30.12	06	CLR	NC			10.00	23	18	21	81	12	33	28.35	29.91	
09	CLR	NC			10.00		10	6	9	84	9	34	28.59	30.19	09	FEW	NC			10.00	23	18	21	81	7	32	28.41	29.97	
12	CLR	NC			10.00		14	6	12	71	10	33	28.63	30.23	12	CLR	NC			10.00	32	21	28	64	3	VR	28.38	29.93	
15	CLR	NC			10.00		18	5	15	57	18	31	28.65	30.25	15	CLR	NC			10.00	35	23	31	61	8	21	28.31	29.86	
18	CLR	NC			10.00		13	3	11	64	9	32	28.71	30.32	18	SCT	NC			10.00	33	24	30	70	0	00	28.27	29.83	
21	CLR	NC			10.00		6	2	5	83	0	00	28.73	30.36	21	CLR	NC			10.00	31	23	28	72	6	17	28.25	29.80	
24	CLR	NC			10.00		-1	-4	-1	87	0	00	28.72	30.34	24	CLR	NC			10.00	28	24	27	85	5	25	28.24	29.79	
SUNRISE: 0732 FEB 02						SUNSET: 1714						SUNRISE: 0724 FEB 08						SUNSET: 1723											
03	OVC	075			10.00		12	7	11	80	8	14	28.67	30.27	03	CLR	NC			10.00	28	25	27	88	7	30	28.27	29.83	
06	OVC	065			10.00		14	12	13	92	8	15	28.60	30.21	06	CLR	NC			10.00	26	25	26	96	7	32	28.33	29.89	
09	FEW	NC			8.00		15	11	14	84	8	15	28.51	30.12	09	CLR	NC			10.00	28	26	27	92	7	36	28.39	29.95	
12	OVC	033			6.00	HZ	19	14	18	81	9	24	28.43	30.04	12	OVC	009			10.00	32	30	31	92	8	11	28.45	30.01	
15	FEW	NC			4.00	BR	21	18	20	88	8	24	28.36	29.95	15	OVC	011			10.00	32	29	31	88	13	11	28.45	30.01	
18	OVC	033			3.00	-SN BR	21	18	20	88	12	29	28.38	29.96	18	OVC	013			10.00	31	30	31	96	14	10	28.48	30.05	
21	OVC	012			10.00		22	19	21	89	12	32	28.40	29.98	21	OVC	006			10.00	31	29	30	92	17	10	28.50	30.07	
24	FEW	NC			9.00		16	14	15	92	10	30	28.42	30.01	24	OVC	006			10.00	30	29	30	96	16	09	28.50	30.07	
SUNRISE: 0731 FEB 03						SUNSET: 1715						SUNRISE: 0722 FEB 09						SUNSET: 1724											
03	OVC	009			10.00		20	18	19	92	13	30	28.41	29.99	03	CLR	NC			10.00	30	28	29	92	14	09	28.50	30.07	
06	BKN	019			10.00		19	13	17	77	13	34	28.42	30.00	06	BKN	009			10.00	30	28	29	92	23	09	28.51	30.08	
09	FEW	NC			10.00		12	5	10	73	14	33	28.49	30.08	09	OVC	007			10.00	31	29	30	92	25	08	28.59	30.16	
12	CLR	NC			10.00		12	2	10	64	16	36	28.56	30.16	12	OVC	005			10.00	32	30	31	92	22	09	28.63	30.20	
15	CLR	NC			10.00		11	-1	8	58	16	33	28.61	30.21	15	OVC	003			9.00	31	30	31	96	15	07	28.66	30.23	
18	CLR	NC			10.00		7	-1	5	70	8	36	28.73	30.35	18	OVC	015			10.00	31	28	30	89	14	06	28.72	30.29	
21	CLR	NC			10.00		5	-1	4	76	10	36	28.79	30.42	21	OVC	031			4.00	-SN BR	29	26	28	89	14	04	28.74	30.33
24	CLR	NC			10.00		1	-3	0	83	10	34	28.82	30.46	24	BKN	025			10.00	26	21	24	81	14	02	28.76	30.35	
SUNRISE: 0729 FEB 04						SUNSET: 1717						SUNRISE: 0721 FEB 10						SUNSET: 1726											
03	CLR	NC			10.00		-3	-6	-3	87	7	36	28.84	30.49	03	CLR	NC			10.00	21	17	20	85	12	01	28.77	30.37	
06	CLR	NC			10.00		-7	-10	-7	87	3	33	28.84	30.50	06	CLR	NC			10.00	16	11	15	80	15	36	28.78	30.38	
09	CLR	NC			10.00		-4	-7	-4	86	0	00	28.85	30.50	09	CLR	NC			10.00	14	9	13	80	10	01	28.84	30.44	
12	CLR	NC			10.00		13	2	10	61	13	23	28.82	30.45	12	CLR	NC			10.00	23	11	20	60	13	02	28.85	30.45	
15	CLR	NC			10.00		20	2	16	45	18	24	28.73	30.35	15	CLR	NC			10.00	27	9	22	47	8	02	28.83	30.43	
18	CLR	NC			10.00		16	3	13	56	14	23	28.64	30.27	18	CLR	NC			10.00	22	8	18	55	5	36	28.84	30.45	
21	CLR	NC			10.00		15	5	13	64	16	26	28.62	30.24	21	CLR	NC			10.00	16	8	14	71	0	00	28.80	30.42	
24	CLR	NC			10.00		12	5	10	73	13	27	28.60	30.21	24	CLR	NC			10.00	17	12	16	80	7	17	28.73	30.32	
SUNRISE: 0728 FEB 05						SUNSET: 1718						SUNRISE: 0719 FEB 11						SUNSET: 1727											
03	OVC	015			10.00		15	9	14	77	12	29	28.62	30.22	03	OVC	100			10.00	19	12	17	74	12	22	28.61	30.20	
06	CLR	NC			10.00		15	11	14	84	8	34	28.66	30.26	06	CLR	NC			10.00	20	12	18	71	13	20	28.44	30.03	
09	CLR	NC			10.00		16	12	15	84	9	34	28.69	30.29	09	CLR	NC			10.00	24	14	21	65	22	20	28.26	29.83	
12	CLR	NC			10.00		23	6	18	48	12	30	28.69	30.29	12	CLR	NC			10.00	32	18	27	56	26	23	28.05	29.60	
15	CLR	NC			10.00		27	4	21	37	12	30	28.62	30.22	15	CLR	NC			10.00	36	22	31	57	23	24	27.89	29.43	
18	CLR	NC			10.00		24	9	20	52	9	25	28.57	30.16	18	BKN	044			10.00	33	25	30	72	21	25	27.84	29.38	
21	CLR	NC			10.00		23	11	20	60	15	25	28.48	30.06	21	OVC	032			10.00	29	20	26	69	29	32	27.90	29.44	
24	CLR	NC			10.00		23	14	20	68	15	26	28.44	30.01	24	OVC	024			3.00	-SN	24	18	22	77	29	32	28.04	29.59
SUNRISE: 0726 FEB 06						SUNSET: 1720						SUNRISE: 0718 FEB 12						SUNSET: 1729											
03	CLR	NC			10.00		22	18	21	85	15	25	28.37	29.95	03	BKN	029			9.00	22	18	21	85	18	31	28.13	29.68	
06	CLR	NC			8.00		22	19	21	89	14	26	28.33	29.90	06	OVC	034			10.00	25	18	23	75	17	30	28.14	29.69	
09	CLR	NC			5.00	BR	22	19	21	89	8	24	28.30	29.88	09	BKN	015			5.00	-SN	17	7	14	64	24	33	28.27	29.84
12	CLR	NC			10.00		34	23	30	64	13	24	28.24	29.79	12	FEW	NC			10.00	15	2	12	56	21	33	28.45	30.03	
15	CLR	NC			10.00		41	25	35	53	18	25	28.17	29.71	15	CLR	NC			10.00	19	1	15	45	17	31	28.53	30.12	
18	CLR	NC			10.00		38	25	33	60	13	24	28.14	29.68	18	CLR	NC			10.00	15	-1	12	49	9	31	28.60	30.20	
21	CLR	NC			10.00		38	29	34	70	21	30	28.17	29.72	21	CLR	NC			10.00	10	0	8	63	9				

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DULUTH, MN

FEBRUARY 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>Okta</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>Okta</small>	VISIBILITY (MILES)	DRY BULB		DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG		STATION	SEA LEVEL		
			SUNRISE: 0716				FEB 13		SUNSET: 1730							SUNRISE: 0706				FEB 19		SUNSET: 1739									
03	OVC	080			10.00	11	4	9	73	6	22	28.58	30.19	03	OVC	080			10.00	34	29	32	82	6	13	28.29	29.83				
06	OVC	095			10.00	13	7	11	77	10	25	28.52	30.13	06	OVC	021			10.00	35	30	33	82	15	09	28.29	29.84				
09	CLR	NC			10.00	17	12	16	80	15	26	28.48	30.08	09	OVC	015		-SN BR	33	31	32	92	13	08	28.31	29.86					
12	CLR	NC			10.00	31	18	27	59	14	26	28.44	30.02	12	OVC	005		-SN BR	33	32	33	96	16	09	28.31	29.86					
15	CLR	NC			10.00	38	20	31	48	14	25	28.35	29.92	15	OVC	003		BR	32	31	32	96	15	08	28.28	29.83					
18	CLR	NC			10.00	33	22	29	64	8	25	28.33	29.91	18	OVC	007		-SN BR	31	30	31	96	21	07	28.30	29.85					
21	CLR	NC			10.00	32	24	29	73	13	25	28.31	29.88	21	OVC	009		-SN BR	30	28	29	92	21	08	28.30	29.85					
24	CLR	NC			10.00	30	24	28	79	10	25	28.27	29.83	24	OVC	013		-SN BR	28	27	28	96	16	07	28.27	29.83					
			SUNRISE: 0714				FEB 14		SUNSET: 1732							SUNRISE: 0705				FEB 20		SUNSET: 1741									
03	CLR	NC			10.00	29	24	27	82	13	24	28.24	29.78	03	OVC	008			10.00	27	25	26	92	14	08	28.26	29.80				
06	CLR	NC			10.00	28	24	27	85	9	20	28.16	29.71	06	OVC	020		-SN BR	22	20	21	92			28.26	29.81					
09	CLR	NC			10.00	30	24	28	79	8	19	28.12	29.66	09	VV	013		-SN BR	21	18	20	88	12	03	28.24	29.80					
12	CLR	NC			10.00	38	26	33	62	13	24	28.09	29.62	12	OVC	015		-SN BR	24	21	23	88	14	02	28.23	29.79					
15	CLR	NC			10.00	39	26	34	60	10	28	28.09	29.63	15	OVC	016		-SN BR	27	23	26	85	10	02	28.24	29.79					
18	FEW	NC			10.00	37	25	32	62	5	34	28.12	29.66	18	OVC	035		-SN BR	26	23	25	88	15	03	28.30	29.87					
21	CLR	NC			10.00	33	25	30	72	5	01	28.15	29.69	21	OVC	023			25	20	23	81	14	03	28.38	29.96					
24	OVC	110			10.00	31	25	29	79	13	36	28.21	29.75	24	OVC	022			20	13	18	74	12	03	28.44	30.02					
			SUNRISE: 0713				FEB 15		SUNSET: 1733							SUNRISE: 0703				FEB 21		SUNSET: 1742									
03	OVC	015			9.00	29	27	28	92	7	35	28.26	29.80	03	FEW	NC			10.00	13	5	11	70	12	02	28.50	30.09				
06	OVC	019			10.00	27	21	25	78	13	33	28.28	29.84	06	CLR	NC			10.00	10	0	8	63	12	02	28.59	30.19				
09	OVC	015			10.00	27	22	25	81	12	32	28.30	29.86	09	CLR	NC			10.00	11	-2	8	56	9	01	28.68	30.28				
12	OVC	021			10.00	34	25	31	70	15	26	28.26	29.81	12	CLR	NC			10.00	26	8	21	46	0	00	28.73	30.33				
15	SCT	NC			10.00	36	24	31	62	20	29	28.19	29.73	15	CLR	NC			10.00	29	12	24	49	0	00	28.75	30.35				
18	CLR	NC			10.00	34	22	30	61	13	29	28.22	29.77	18	CLR	NC			10.00	24	16	22	71	6	17	28.77	30.38				
21	BKN	050			10.00	32	27	30	82	16	29	28.18	29.73	21	CLR	NC			10.00	16	12	15	84	0	00	28.76	30.38				
24	OVC	011			10.00	30	28	29	92	9	33	28.17	29.71	24	CLR	NC			10.00	13	10	12	88	3	25	28.73	30.33				
			SUNRISE: 0711				FEB 16		SUNSET: 1735							SUNRISE: 0701				FEB 22		SUNSET: 1744									
03	OVC	034			10.00	29	22	26	75	13	34	28.23	29.77	03	CLR	NC			10.00	18	-2	14	41	7	28	28.71	30.29				
06	FEW	NC			10.00	25	21	24	85	10	34	28.30	29.86	06	CLR	NC			9.00	15	4	12	61	6	28	28.69	30.29				
09	FEW	NC			10.00	26	20	24	78	12	33	28.37	29.93	09	CLR	NC			10.00	20	8	17	60	0	00	28.67	30.27				
12	OVC	018			6.00	-SN	29	23	27	78	13	31	28.40	29.96	12	CLR	NC			10.00	31	12	25	45	7	24	28.62	30.21			
15	OVC	036			10.00	30	21	27	69	12	33	28.42	29.98	15	CLR	NC			10.00	32	11	25	41	10	19	28.53	30.12				
18	BKN	043			10.00	28	15	24	58	13	36	28.50	30.07	18	OVC	080			10.00	29	15	24	56	9	16	28.49	30.06				
21	CLR	NC			10.00	23	14	20	68	0	00	28.56	30.15	21	OVC	075			10.00	27	17	24	66			28.42	29.99				
24	CLR	NC			10.00	18	12	16	77	7	35	28.60	30.18	24	OVC	070		-SN	9.00	28	19	25	69	13	16	28.35	29.91				
			SUNRISE: 0710				FEB 17		SUNSET: 1736							SUNRISE: 0659				FEB 23		SUNSET: 1745									
03	CLR	NC			10.00	11	9	10	92	0	00	28.62	30.22	03	OVC	065			10.00	30	25	28	82	13	19	28.26	29.81				
06	CLR	NC			10.00	8	5	7	87	0	00	28.63	30.23	06	OVC	065			10.00	30	27	29	88	9	16	28.20	29.75				
09	CLR	NC			10.00	21	17	20	85	8	17	28.63	30.22	09	OVC	009		BR	6.00	32	30	31	92	8	19	28.19	29.73				
12	CLR	NC			10.00	30	18	26	61	15	19	28.59	30.18	12	BKN	060			8.00	37	32	35	82	7	22	28.16	29.70				
15	CLR	NC			10.00	36	18	30	48	13	18	28.50	30.08	15	OVC	070			10.00	39	33	36	79	13	29	28.15	29.69				
18	CLR	NC			10.00	32	19	28	59	14	17	28.42	30.01	18	OVC	060			10.00	39	31	36	73	15	31	28.23	29.77				
21	CLR	NC			10.00	31	18	27	59	18	20	28.35	29.92	21	FEW	NC			10.00	33	27	31	78	16	35	28.28	29.83				
24	FEW	NC			10.00	33	23	29	67	15	20	28.28	29.83	24	OVC	080			10.00	31	25	29	79	10	34	28.34	29.89				
			SUNRISE: 0708				FEB 18		SUNSET: 1738							SUNRISE: 0658				FEB 24		SUNSET: 1747									
03	CLR	NC			10.00	37	26	33	65	17	22	28.24	29.78	03	OVC	045		-SN	8.00	30	25	28	82	9	35	28.39	29.94				
06	CLR	NC			10.00	33	26	30	75	14	23	28.22	29.77	06	OVC	031			10.00	27	21	25	78	8	35	28.41	29.97				
09	CLR	NC			10.00	36	26	32	67	14	23	28.24	29.78	09	OVC	029			10.00	25	18	23	75	12	36	28.44	30.01				
12	CLR	NC			10.00	44	28	37	53	10	25	28.26	29.79	12	VV	008		-SN BR	0.75	24	22	23	91	8	01	28.45	30.02				
15	CLR	NC			10.00	48	30	40	50	3	VR	28.25	29.78	15	VV	008		SN FZFG	0.50	23	22	23	96	13	01	28.38	29.95				
18	BKN	120			10.00	41	28	36	60	10	18	28.28	29.83	18	VV	013		-SN BR	1.00	22	21	22	96	13	36	28.47	30.04				
21	CLR	NC			10.00	37	28	33	70	0	00	28.32	29.87	21	OVC	033		-SN BR	3.00	20	18	19	92	10	36	28.50	30.09				
24	CLR	NC			10.00	33	27	31	78	5	15	28.31	29.85	24	FEW	NC			10.00	18	14	17	84	12	36	28.51	30.10				

## OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

FEBRUARY 2002

DLH

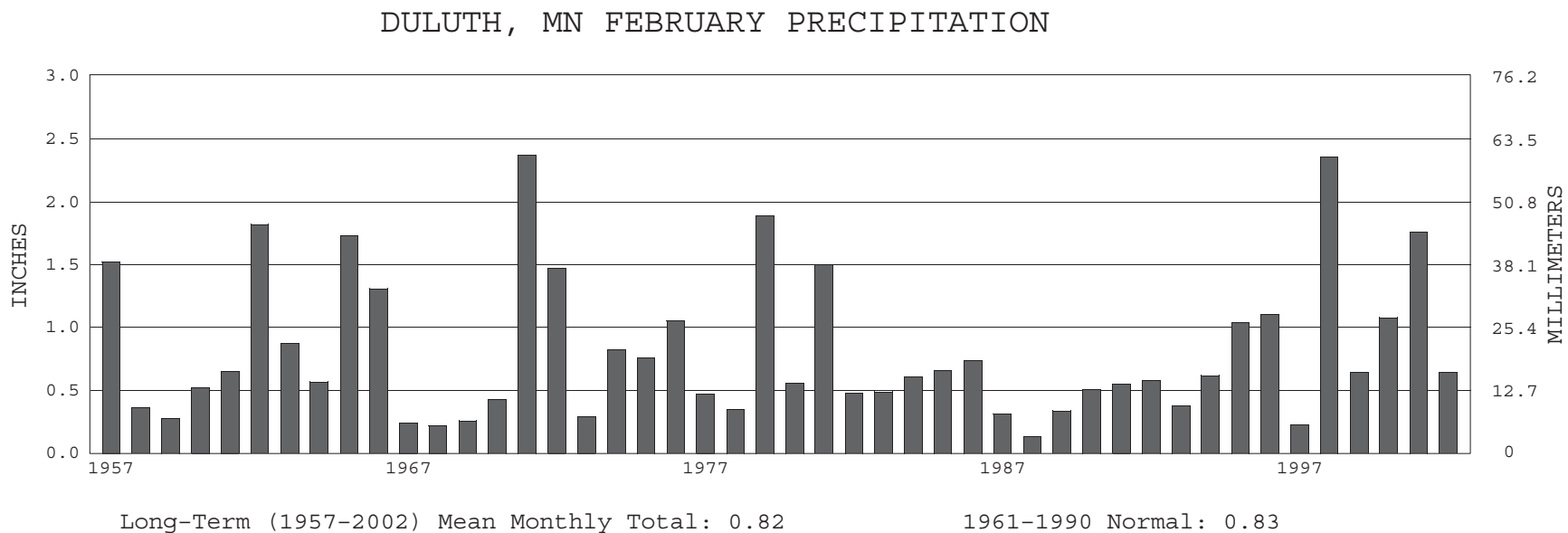
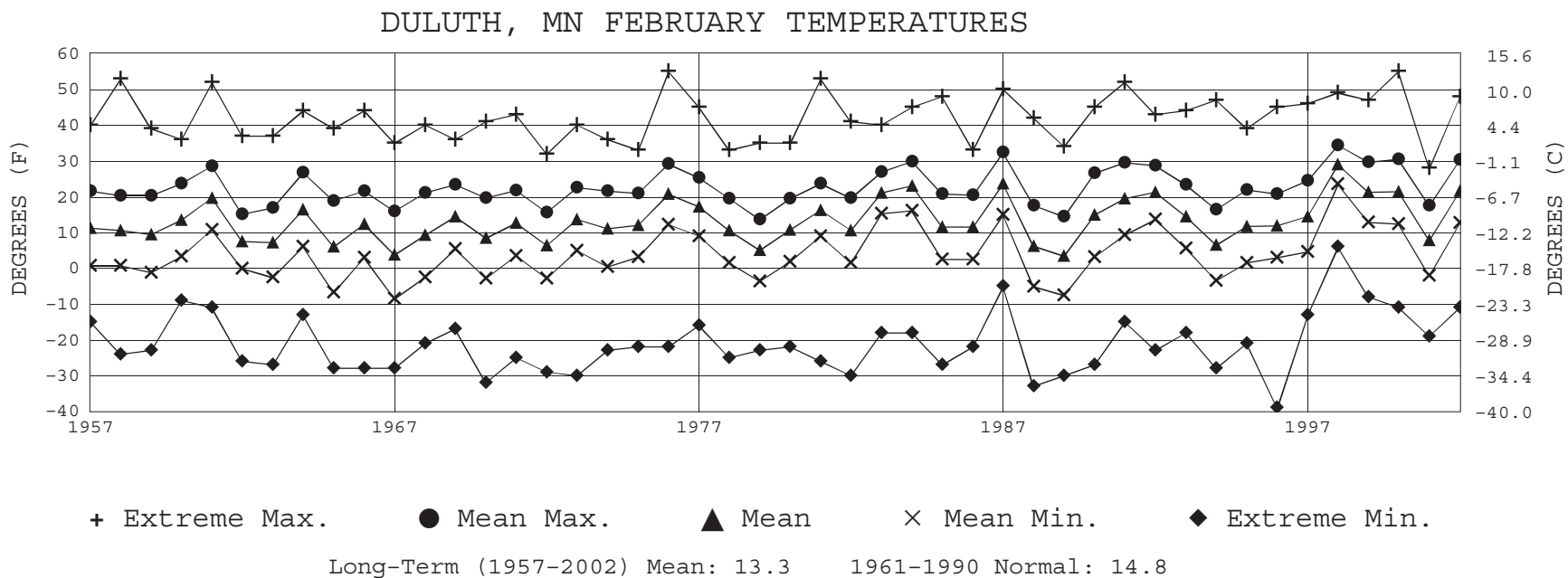
WBAN # 14913

HOUR (LST)			SATELLITE		WEATHER	TEMPERATURE °F				WIND		PRESSURE (INCHES,HG)	
	SKY COVER	CEILING 100'S OFFT	OBSERVATION TIME (LST)	EFF CLD AMT <small>Okta</small>		RELATIVE HUMIDITY (PCT)	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL			
				VISIBILITY (MILES)									
					SUNRISE: 0656	FEB 25		SUNSET: 1748					
03	CLR	NC			10.00	13	10	12	88	6	34	28.56	30.15
06	CLR	NC			9.00	8	6	8	92	6	34	28.59	30.19
09	FEW	NC			10.00	13	9	12	84	12	34	28.65	30.25
12	OVC	021			9.00	19	11	17	71	12	33	28.64	30.23
15	BKN	035			10.00	19	9	16	65	14	34	28.61	30.22
18	OVC	010			2.00					15	32	28.65	
21	OVC	020			5.00					13	31	28.64	
24	OVC	050			5.00	13	9	12	84	9	35	28.60	30.20
					SUNRISE: 0654	FEB 26		SUNSET: 1750					
03					SN								
06					SN								
09	SCT	NC			2.50	11	5	10	77	15	36	28.55	
12	CLR	NC			10.00	14	4	12	64	16	36	28.53	30.14
15	CLR	NC			10.00	16	5	13	62	16	36	28.50	
18	CLR	NC			10.00	13	2	10	61	16	35	28.50	
21	CLR	NC			10.00	8	-1	6	66	14	36	28.52	30.14
24	CLR	NC			10.00	3	-5	2	69	9	34	28.50	30.11
					SUNRISE: 0652	FEB 27		SUNSET: 1751					
03	CLR	NC			10.00	0	-7	-1	72	9	35	28.49	30.10
06	CLR	NC			10.00	-4	-8	-5	83	10	35	28.50	30.12
09	CLR	NC			10.00	2	-5	1	72	8	35	28.50	30.13
12	CLR	NC			10.00	15	-3	11	44	7	27	28.49	30.10
15	CLR	NC			10.00	21	-4	15	33	12	25	28.42	30.02
18	CLR	NC			10.00	18	-6	13	34	13	25	28.38	29.99
21	FEW	NC			10.00	14	-2	11	49	14	27	28.35	29.96
24	OVC	075			10.00	11	3	9	70	10	27	28.30	29.89
					SUNRISE: 0650	FEB 28		SUNSET: 1753					
03	OVC	049			4.00	10	6	9	84	9	28	28.26	29.84
06	OVC	055			10.00	13	10	12	88	12	32	28.24	29.81
09	OVC	015			10.00	11	5	10	77	17	34	28.27	29.86
12	SCT	NC			10.00	14	3	11	61	17	32	28.32	29.91
15	BKN	037			10.00	16	2	13	54	20	31	28.37	29.96
18	FEW	NC			10.00	11	-1	8	58	10	32	28.46	30.05
21	CLR	NC			10.00	5	-5	3	63	10	34	28.55	30.17
24	CLR	NC			10.00	-1	-11	-2	62	7	33	28.64	30.27
					SUNRISE:	FEB 29		SUNSET:					
					SUNRISE:	FEB 30		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, VV = Vertical Visibilty = 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.

HOUR (LST)	AVERAGES										RESULTANT WIND (MPH)	
	CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES,HG)		VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED	DIRECTION
							STATION	SEA LEVEL				
01			21	16	19	81	28.44	30.02	9.33	11	4	32
02			20	15	19	80	28.44	30.02	9.48	11	5	31
03			20	15	19	81	28.44	30.02	9.63	10	4	31
04			20	15	18	81	28.44	30.01	9.72	11	4	32
05			20	15	18	82	28.44	30.01	9.81	11	4	32
06			19	14	17	82	28.44	30.02	9.56	10	4	33
07			18	13	16	83	28.44	30.02	8.31	11	4	32
08			18	14	17	84	28.46	30.03	8.38	10	4	34
09			19	14	18	79	28.46	30.04	8.52	11	4	34
10			22	15	20	74	28.46	30.04	8.50	12	4	32
11			24	15	21	70	28.46	30.03	8.69	13	4	30
12			26	16	23	67	28.45	30.03	8.85	12	4	29
13			27	16	24	66	28.44	30.01	8.53	13	5	29
14			28	16	24	64	28.43	30.00	8.77	12	4	29
15			29	16	25	62	28.42	29.99	8.88	13	6	29
16			28	16	24	63	28.43	30.00	8.44	13	4	30
17			28	16	24	64	28.43	29.99	8.45	13	4	30
18			26	16	23	67	28.44	30.01	8.71	11	4	31
19			25	16	22	70	28.45	30.02	8.36	11	4	30
20			24	16	22	72	28.45	30.02	8.72	12	5	31
21			23	16	21	74	28.45	30.03	9.11	12	5	32
22			22	15	20	76	28.45	30.03	9.08	11	5	33
23			21	15	19	76	28.45	30.03	9.63	11	5	33
24			20	14	18	79	28.45	30.03	9.21	11	5	32





FEBRUARY 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.*

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