FEBRUARY 2003
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 MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	DEG DAYS BASE 65° HEATING	COOLING	WEATHER	SNOW/ICE ON GND(IN) 0600 LST DEPTH	1200 LST WATER EQUIV	PRECIPITATION (INCHES) 2400 LST SNOW−FALL	2400 LST WATER EQUIV	PRESSURE (INCHES OF HG) AVERAGE STATION	AVERAGE SEA LEVEL	WIND SPEED = MPH DIR = TENS OF DEGREES RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM 5−SEC SPEED	5−SEC DIR	MAXIMUM 2−MIN SPEED	2−MIN 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	27	25	26	15	25	26	39	0	SN BR	2		0.1	T	28.27	29.83	3.3	13	4.3	10	12	9	13	01
02	30	27	29	18	28	28	36	0	FG+ FZFG BR	2		0.0	0.00	28.35	29.92	7.0	08	7.2	15	08	13	08	02
03	29	8	19	8	19	21	46	0	SN BR BLSN	3		2.4	0.12	28.21	29.77	10.0	35	11.1	33	33	25	33	03
04	9	−8	1	−11	−8	0	64	0	SN HZ BLSN	3		T	T	28.43	30.05	14.7	33	14.9	32	32	25	33	04
05	12	−9	2	−10	−4	2	63	0	SN BR	3		0.1	T	28.50	30.12	4.7	25	5.9	15	24	13	24	05
06	6	−10	−2	−14	−9	−2	67	0	SN	3		T	T	28.70	30.33	9.0	33	9.3	21	33	16	33	06
07	17	−14	2	−10	−5	1	63	0	SN BR UP	3		0.5	T	28.35	29.97	13.8	25	14.7	33	23	28	23	07
08	17	−8	5	−8	−6	3	60	0	SN BR BLSN	4		0.1	T	28.32	29.92	14.1	31	14.5	29	29	23	29	08
09	15	−12	2	−11	−8	0	63	0	SN BLSN	4		0.1	T	28.20	29.81	16.0	27	17.5	41*	27	33*	27	09
10	0	−17*	−8	−21	−20	−9	73	0		4		0.0	0.00	28.34	29.97	8.3	29	11.3	22	34	17	23	10
11	10	−11	0	−14	−9	−2	65	0	SN UP BLSN	4		T	T	28.09	29.70	14.9	29	17.4	40	31	31	29	11
12	6	−13	−3	−17	−15	−4	68	0	SN HZ	3		T	T	28.43	30.06	11.5	29	11.9	29	30	23	29	12
13	14	−4	5	−9	−7	4	60	0	SN HZ	3		T	T	28.53	30.15	8.5	30	8.9	24	33	20	33	13
14	14	−1	7	−7	−7	6	58	0	SN	3		T	T	28.63	30.25	6.0	01	6.3	15	01	13	01	14
15	8	−5	2	−13	−5	0	63	0	SN BR HZ	3		0.2	T	28.97	30.63	5.4	08	7.7	18	13	15	13	15
16	23	−4	10	−5	1	8	55	0		3		0.0	0.00	28.83	30.46	7.1	16	8.1	18	17	16	20	16
17	31	9	20	5	5	17	45	0	SN	3		T	T	28.38	29.97	11.7	17	11.9	24	14	20	17	17
18	27	10	19	3	16	19	46	0	RA FZRA SN FZFG BR UP	3		1.4	0.07	28.18	29.75	14.6	26	16.9	33	29	28	27	18
19	36	9	23	7	15	20	42	0	SN	3		T	T	28.44	30.02	12.5	26	13.5	24	29	20	25	19
20	43*	26	35*	19	26	29	30	0	BR HZ	3		0.0	0.00	28.34	29.89	5.5	27	10.9	22	25	18	24	20
21	26	8	17	0	13	15	48	0	SN FZFG BR	1		1.5	0.04	28.40	29.98	11.3	06	12.2	26	07	22	08	21
22	11	−3	4	−13	−2	3	61	0	SN BCFG	3		T	T	28.48	30.09	6.7	04	8.8	20	06	16	06	22
23	9	−8	1	−16	−13	−2	64	0		3		0.0	0.00	28.58	30.21	7.2	35	7.7	16	31	14	31	23
24	−2	−15	−8*	−26	−19	−9	73	0		3		0.0	0.00	28.73	30.38	10.5	30	11.0	31	28	21	29	24
25	14	−15	0	−18	−9	−1	65	0		3		0.0	0.00	28.67	30.32	10.9	22	11.2	28	22	21	22	25
26	24	2	13	−6	5	11	52	0		3		0.0	0.00	28.44	30.05	10.8	22	10.9	23	22	18	21	26
27	35	10	23	4	13	21	42	0	BR HZ	3		0.0	0.00	28.44	30.02	3.7	25	6.1	18	26	15	23	27
28	33	10	22	3	9	18	43	0		1		0.0	0.00	28.49	30.07	1.3	04	4.8	13	36	10	13	28
	18.7	−0.5	9.1		1.0	8.0	55.5	0.0	< MONTHLY AVERAGES	TOTALS−>		6.4	0.23	28.45	30.06	4.6	29	10.6					<− MONTHLY AVERAGES
	−5.7	−5.6	−5.7		<−−−−−−−−−−−−−DEPARTURE FROM NORMAL−−−−−−−−−−−−−>								−.60	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									

FEBRUARY 2003
DULUTH, MN

DEGREE DAYS

	MONTHLY TOTAL	MONTHLY DEPARTURE	SEASON TO DATE TOTAL	SEASON TO DATE DEPARTURE
HEATING:	1554	132	7082	−10
COOLING:	0	0	0	0

GREATEST 24−HR PRECIPITATION: 0.12 DATE :03
GREATEST 24−HR SNOWFALL: 2.4 DATE :03
GREATEST SNOW DEPTH: 4 DATE : 11+

SEA LEVEL PRESSURE		DATE	TIME
MAXIMUM	30.69	15	1955
MINIMUM	29.54	11	0855

NUMBER OF DAYS WITH →

MAXIMUM TEMP ≥ 90:	0	MINIMUM TEMP ≤ 32 :	28
MAXIMUM TEMP ≤ 32 :	24	MINIMUM TEMP ≤ 0 :	17
THUNDERSTORMS :	0	HEAVY FOG :	1
PRECIPITATION ≥ 0.01 INCH :	3		
PRECIPITATION ≥ 0.10 INCH :	1		
SNOWFALL ≥ 1.0 INCH :	3		

HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

DULUTH, MN

FEBRUARY 2003 DLH WBAN # 14913

DATE	FOR HOUR (LST) ENDING AT												DATE	FOR HOUR (LST) ENDING AT											DATE	Sum if Different (See Note)	2400 LST Water Equiv.
	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			01													01		T
02													02													02		0.00
03	T	T	T	T	T	T	T	T	T	T	T	T	03	T		T		T	T	T	T	T	T	T	T	03	T	0.12
04	T												04													04		T
05													05						T	T	T	T	T	T	T	05		T
06	T	T			T	T						T	06													06		T
07													07									T	T	T	T	07		T
08	T	T	T	T	T	T	T	T					08													08		T
09													09	T										T		09		T
10													10													10		0.00
11			T	T	T	T	T	T	T				11			T	T	T			T	T				11		T
12					T	T	T	T					12													12		T
13				T	T								13	T												13		T
14										T	T	T	14	T												14		T
15					T	T	T	T	T	T	T	T	15	T	T	T	T										15		T
16													16													16		0.00
17													17													17	0.00	T
18	T	T	T	T	T	T	T	T	T	T	T	T	18	T	T	T	T	T	T	T	T	T	T	T	T	18	T	0.07
19	T	T		T	T	T	T	T					19													19		T
20													20													20		0.00
21						T	T	T	T	T	T	T	21	T	T	T	T	T	T	T	T	T		T	T	21	T	0.04
22	T	T	T	T						T		T	22	T	T	T	T		T						22		T
23													23													23		0.00
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

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 occurence 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 1971−2000

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	SQ Squalls
PR Partial	RA Rain	PY Spray	SS Sandstorm
SH Shower(s)	SG Snow Grains	SA Sand	GL Glaze
TS Thunderstorm	SN Snow	VA Volcanic Ash	
VC In the Vicinity	UP Unknown Precipitation		

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

DULUTH, MN
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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:

Note: 2002 LCD Annual, the element "Normal Dry Bulb" was not updated using the 1971−2000 Normals. Correction will be made in the 2003 LCD Annual.

DATE	SUNSHINE		CLOUDINESS (OKTAS)				VISIBILITY (MILES)		RESERVED
			SR−SS		MN−MN				
	TOTAL MINUTES	PERCENT POSSIBLE	CEILOMETER	SATELLITE	CEILOMETER	SATELLITE	MINIMUM	MAXIMUM	
01							.75	5.00	
02							<.25	9.00	
03							.75	10.00	
04							6.00	10.00	
05							2.50	10.00	
06							8.00	10.00	
07							2.50	10.00	
08							.75	10.00	
09							2.50	10.00	
10							8.00	10.00	
11							.25	10.00	
12							2.50	10.00	
13							4.00	10.00	
14							9.00	10.00	
15							.75	10.00	
16							10.00	10.00	
17							10.00	10.00	
18							.50	10.00	
19							9.00	10.00	
20							2.00	10.00	
21							.00	9.00	
22							1.25	10.00	
23							10.00	10.00	
24							10.00	10.00	
25							10.00	10.00	
26							7.00	10.00	
27							4.00	10.00	
28							10.00	10.00	
MONTHLY AVGS							5.26	9.75	

SUNSHINE (MINUTES)

Total: Possible:
Percent Possible:

NUMBER OF DAYS WITH:

SKY CONDITION

CLR	PTLY CLDY	CLOUDY	MISSING
			28

MINIMUM VISIBILITY (MILES)

<=0.25	<=3.0	>=7.0
1	11	12

OBSERVATIONS AT 3−HOURLY INTERVALS

DULUTH, MN

FEBRUARY 2003 DLH WBAN # 14913

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	SATELLITE: OBSERVATION TIME (LST)	SATELLITE: EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE ℉: DRY BULB	TEMPERATURE ℉: DEW POINT	TEMPERATURE ℉: WET BULB	RELATIVE HUMIDITY (PCT)	WIND: SPEED (MPH)	WIND: DIRECTION TENS OF DEG	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL
SUNRISE: 0733						**FEB 01**			**SUNSET: 1712**					
03	OVC	002			2.50	BR	25	25	25	100	7	18	28.30	29.87
06	OVC	002			4.00	-SN BR	25	24	25	96	6	17	28.27	29.84
09	OVC	002			1.75	-SN BR	25	24	25	96	7	13	28.25	29.80
12	OVC	004			1.50	BR	26	25	26	96	3	13	28.24	29.80
15	OVC	006			1.50	BR	27	26	27	96	3	12	28.23	29.78
18	OVC	004			2.00	BR	26	26	26	100	3	05	28.26	29.83
21	OVC	010			2.00	BR	26	25	26	96	3	01	28.28	29.85
24	OVC	002			2.00	BR	27	26	27	96	3	05	28.29	29.85
SUNRISE: 0732						**FEB 02**			**SUNSET: 1713**					
03	VV	001			0.25	FZFG	27	27	27	100	3	05	28.32	29.88
06	OVC	003			3.00	BR	28	27	28	96	5	09	28.34	29.91
09	OVC	003			1.50	BR	28	28	28	100	6	08	28.38	29.95
12	VV	001			0.50	FZFG	29	29	29	100	8	09	28.38	29.95
15	OVC	008			9.00		28	27	28	96	10	09	28.35	29.92
18	OVC	006			7.00		28	27	28	96	8	06	28.36	29.93
21	OVC	004			6.00	BR	29	28	29	96	9	08	28.35	29.91
24	OVC	004			7.00		29	28	29	96	8	08	28.34	29.90
SUNRISE: 0731						**FEB 03**			**SUNSET: 1715**					
03	OVC	008			1.25	-SN BR	28	26	27	92	6	05	28.27	29.84
06	OVC	022			2.50	-SN BR	27	26	27	96	8	02	28.26	29.81
09	OVC	019			0.75	-SN BR	27	25	26	92	6	01	28.24	29.80
12	BKN	023			2.00	-SN BR	29	25	28	85	8	34	28.18	29.73
15	OVC	007			9.00		22	20	21	92	13	33	28.15	29.70
18	OVC	011			4.00	-SN BR	15	12	14	88	13	33	28.17	29.74
21	OVC	055			4.00	-SN BLSN	13	7	11	77	18	34	28.17	29.74
24	OVC	048			5.00	-SN BLSN	9	3	8	77	21	34	28.18	29.75
SUNRISE: 0730						**FEB 04**			**SUNSET: 1716**					
03	SCT	NC			7.00		2	-4	1	76	16	33	28.25	29.84
06	CLR	NC			10.00		-6	-13	-7	71	18	33	28.33	29.94
09	CLR	NC			7.00		-7	-15	-8	68	13	32	28.42	30.04
12	FEW	NC			10.00		2	-9	0	60	16	33	28.46	30.07
15	CLR	NC			10.00		8	-6	6	52	17	32	28.48	30.09
18	CLR	NC			10.00		5	-7	3	57	9	32	28.53	30.17
21	CLR	NC			10.00		1	-8	0	65	7	31	28.56	30.20
24	CLR	NC			10.00		-2	-9	-3	72	8	31	28.56	30.19
SUNRISE: 0728						**FEB 05**			**SUNSET: 1718**					
03	CLR	NC			10.00		-4	-10	-5	75	6	31	28.53	30.16
06	BKN	040			10.00		-8	-12	-8	82	3	29	28.51	30.15
09	OVC	050			10.00		-1	-6	-2	79	5	22	28.50	30.14
12	OVC	050			10.00		7	-5	5	57	8	23	28.49	30.11
15	OVC	055			10.00		12	-3	9	51	7	22	28.45	30.06
18	OVC	041			6.00	-SN	10	2	8	69	6	23	28.47	30.10
21	BKN	033			2.50	-SN BR	7	4	6	87	5	28	28.50	30.12
24	OVC	050			4.00	-SN BR	4	1	3	88	7	31	28.52	30.14
SUNRISE: 0727						**FEB 06**			**SUNSET: 1719**					
03	OVC	100			8.00		2	-1	1	88	12	32	28.57	30.19
06	CLR	NC			10.00		-1	-5	-2	82	10	33	28.64	30.27
09	CLR	NC			10.00		-3	-8	-4	79	9	36	28.72	30.35
12	FEW	NC			10.00		3	-8	1	60	9	31	28.75	30.39
15	CLR	NC			10.00		4	-13	2	45	13	33	28.73	30.37
18	CLR	NC			10.00		-1	-15	-2	51	6	32	28.75	30.40
21	CLR	NC			10.00		-6	-17	-7	58	6	32	28.74	30.40
24	CLR	NC			10.00		-9	-17	-10	67	9	30	28.71	30.35
SUNRISE: 0725						**FEB 07**			**SUNSET: 1721**					
03	CLR	NC			10.00		-13	-17	-13	82	10	28	28.63	30.28
06	CLR	NC			10.00		-12	-19	-13	70	10	26	28.56	30.21
09	CLR	NC			10.00		-6	-12	-7	75	14	25	28.46	30.10
12	CLR	NC			10.00		8	-1	6	66	14	24	28.35	29.97
15	CLR	NC			10.00		13	2	10	61	20	21	28.22	29.83
18	SCT	NC			10.00		10	1	8	67	18	23	28.15	29.76
21	OVC	028			8.00	UP	12	6	11	77	15	23	28.09	29.70
24	OVC	075			6.00	-SN	17	12	16	80	14	26	28.09	29.67
SUNRISE: 0724						**FEB 08**			**SUNSET: 1722**					
03	BKN	027			10.00		16	11	15	80	15	31	28.14	29.72
06	OVC	028			6.00	-SN	11	5	10	77	16	31	28.23	29.82
09	SCT	NC			5.00	BLSN	5	-4	3	66	15	31	28.31	29.91
12	FEW	NC			10.00		4	-9	2	54	16	31	28.35	29.95
15	FEW	NC			7.00	BLSN	5	-13	2	43	20	30	28.35	29.95
18	CLR	NC			10.00		0	-14	-2	51	13	29	28.40	30.02
21	CLR	NC			10.00		-4	-15	-5	59	14	31	28.44	30.07
24	CLR	NC			10.00		-8	-15	-9	71	12	28	28.44	30.06
SUNRISE: 0722						**FEB 09**			**SUNSET: 1724**					
03	CLR	NC			10.00		-11	-17	-12	74	13	26	28.39	30.02
06	CLR	NC			10.00		-11	-15	-11	82	14	25	28.30	29.94
09	CLR	NC			10.00		-5	-10	-6	79	17	25	28.25	29.87
12	CLR	NC			7.00	BLSN	8	-3	6	60	26	27	28.17	29.78
15	BKN	037			10.00		12	-1	9	56	23	25	28.08	29.68
18	SCT	NC			10.00		13	0	10	56	17	26	28.05	29.66
21	SCT	NC			10.00		7	-8	4	50	14	30	28.08	29.69
24	FEW	NC			10.00		-3	-13	-4	61	14	33	28.18	29.79
SUNRISE: 0721						**FEB 10**			**SUNSET: 1725**					
03	CLR	NC			10.00		-10	-16	-11	74	10	33	28.27	29.89
06	CLR	NC			10.00		-15	-20	-15	77	8	32	28.34	29.97
09	CLR	NC			10.00		-15	-23	-16	66	12	33	28.43	30.06
12	CLR	NC			10.00		-6	-22	-7	45	10	29	28.47	30.10
15	CLR	NC			10.00		-1	-20	-3	39	9	28	28.41	30.04
18	CLR	NC			10.00		-3	-21	-4	41	10	25	28.35	30.00
21	CLR	NC			10.00		-5	-19	-6	50	15	24	28.26	29.90
24	BKN	075			10.00		-6	-17	-7	58	15	23	28.17	29.79
SUNRISE: 0720						**FEB 11**			**SUNSET: 1727**					
03	VV	014			1.00	-SN	-6	-12	-7	75	13	23	28.03	29.65
06	OVC	030			4.00	-SN	-4	-9	-5	79	13	25	27.96	29.57
09	SCT	NC			7.00		2	-3	1	80	13	28	27.93	29.54
12	SCT	NC			9.00		9	-6	6	50	25	30	27.98	29.58
15	OVC	027			1.50	BLSN	8	0	6	69	22	31	28.04	29.65
18	SCT	NC			10.00		1	-16	-1	44	17	32	28.19	29.80
21	CLR	NC			6.00	BLSN	-5	-17	-6	56	17	30	28.29	29.92
24	CLR	NC			10.00		-10	-22	-11	54	15	28	28.37	30.00
SUNRISE: 0718						**FEB 12**			**SUNSET: 1728**					
03	BKN	120			10.00		-11	-19	-12	67	8	24	28.38	30.01
06	BKN	006			3.00	-SN	-13	-18	-14	78	9	27	28.37	30.01
09	CLR	NC			7.00		-8	-16	-9	67	13	30	28.42	30.06
12	CLR	NC			10.00		0	-16	-2	46	15	29	28.46	30.09
15	CLR	NC			10.00		5	-13	2	43	22	29	28.45	30.09
18	FEW	NC			10.00		3	-12	1	49	9	28	28.47	30.10
21	SCT	NC			10.00		2	-11	0	54	8	30	28.46	30.09
24	OVC	065			10.00		4	-8	2	57	10	28	28.46	30.08

OBSERVATIONS AT 3–HOURLY INTERVALS

DULUTH, MN

FEBRUARY 2003 DLH WBAN # 14913

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	SATELLITE: OBSERVATION TIME (LST)	SATELLITE: EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE ℉: DRY BULB	TEMPERATURE ℉: DEW POINT	TEMPERATURE ℉: WET BULB	RELATIVE HUMIDITY (PCT)	WIND: SPEED (MPH)	WIND: DIRECTION TENS OF DEG	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL
					SUNRISE: 0716	**FEB 13**			**SUNSET: 1730**					
03	CLR	NC			10.00		4	-3	3	73	7	29	28.49	30.10
06	CLR	NC			10.00		-1	-9	-2	68	7	32	28.50	30.13
09	CLR	NC			10.00		0	-10	-1	62	13	33	28.54	30.17
12	CLR	NC			10.00		7	-10	4	45	17	30	28.57	30.19
15	CLR	NC			10.00		13	-8	9	38	10	29	28.55	30.16
18	BKN	120			10.00		12	-8	8	40	9	31	28.54	30.17
21	BKN	120			10.00		9	-6	6	50	5	28	28.52	30.15
24	BKN	100			10.00		8	-7	5	50	5	35	28.52	30.14
					SUNRISE: 0715	**FEB 14**			**SUNSET: 1731**					
03	OVC	060			10.00		8	-5	6	55	3	03	28.52	30.14
06	OVC	070			10.00		9	-7	6	48	3	03	28.54	30.16
09	OVC	050			10.00		9	-6	6	50	3	05	28.61	30.23
12	OVC	050			9.00	-SN	11	-4	8	51	7	35	28.62	30.24
15	OVC	085			10.00		13	-4	10	46	10	01	28.62	30.23
18	CLR	NC			10.00		10	-9	7	41	7	36	28.68	30.29
21	CLR	NC			10.00		4	-12	2	47	10	36	28.74	30.37
24	CLR	NC			10.00		0	-14	-2	51	9	02	28.81	30.45
					SUNRISE: 0713	**FEB 15**			**SUNSET: 1733**					
03	FEW	NC			10.00		-4	-15	-5	59	8	01	28.86	30.50
06	OVC	018			5.00	-SN BR	-4	-10	-5	75	5	02	28.93	30.58
09	OVC	018			1.50	-SN BR	-2	-7	-3	79	3	36	28.99	30.65
12	OVC	020			4.00	-SN	6	-2	5	69	8	08	29.02	30.68
15	BKN	020			10.00		7	0	6	73	8	10	29.00	30.66
18	CLR	NC			10.00		4	-1	3	80	7	10	29.01	30.67
21	FEW	NC			10.00		1	-2	1	87	6	11	29.01	30.68
24	CLR	NC			10.00		-1	-3	-1	91	7	11	28.98	30.64
					SUNRISE: 0712	**FEB 16**			**SUNSET: 1735**					
03	CLR	NC			10.00		-2	-5	-2	87	5	11	28.97	30.63
06	CLR	NC			10.00		-1	-5	-2	82	3	15	28.97	30.62
09	CLR	NC			10.00		4	-2	3	76	10	17	28.93	30.58
12	CLR	NC			10.00		15	4	12	61	10	22	28.85	30.49
15	CLR	NC			10.00		22	3	17	44	13	17	28.75	30.37
18	CLR	NC			10.00		17	8	15	68	8	13	28.74	30.37
21	CLR	NC			10.00		13	6	11	74	6	14	28.66	30.28
24	CLR	NC			10.00		14	-1	11	51	8	17	28.62	30.23
					SUNRISE: 0710	**FEB 17**			**SUNSET: 1736**					
03	CLR	NC			10.00		12	1	10	61	10	18	28.56	30.16
06	CLR	NC			10.00		10	-2	8	58	10	17	28.51	30.11
09	CLR	NC			10.00		14	2	11	58	17	17	28.47	30.06
12	CLR	NC			10.00		26	3	20	37	14	18	28.40	29.98
15	FEW	NC			10.00		31	7	24	36	15	16	28.32	29.90
18	FEW	NC			10.00		28	5	22	37	13	15	28.26	29.84
21	OVC	080			10.00		27	11	22	51	15	17	28.21	29.78
24	OVC	022			10.00		27	18	24	69	12	19	28.16	29.72
					SUNRISE: 0708	**FEB 18**			**SUNSET: 1738**					
03	OVC	004			2.00	-FZRA BR	25	23	24	92	13	18	28.12	29.67
06	OVC	002			0.50	FZFG	26	25	26	96	13	22	28.09	29.65
09	OVC	010			5.00	-SN BR	22	19	21	89	21	26	28.13	29.69
12	OVC	012			0.75	-SN BR	23	20	22	88	15	25	28.13	29.68
15	OVC	024			1.50	-SN BR	20	15	18	81	22	27	28.16	29.72
18	OVC	033			9.00		18	10	16	71	21	27	28.23	29.80
21	BKN	027			5.00	BLSN	12	4	10	70	21	28	28.30	29.89
24	OVC	019			5.00	-SN BLSN	11	5	10	77	18	29	28.35	29.94

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	SATELLITE: OBSERVATION TIME (LST)	SATELLITE: EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE ℉: DRY BULB	TEMPERATURE ℉: DEW POINT	TEMPERATURE ℉: WET BULB	RELATIVE HUMIDITY (PCT)	WIND: SPEED (MPH)	WIND: DIRECTION TENS OF DEG	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL
					SUNRISE: 0707	**FEB 19**			**SUNSET: 1739**					
03	FEW	NC			10.00		9	5	8	84	14	28	28.39	29.98
06	OVC	055			9.00	-SN	12	8	11	84	14	28	28.43	30.03
09	OVC	050			10.00		16	10	14	77	12	28	28.48	30.08
12	CLR	NC			10.00		26	15	23	63	15	29	28.48	30.07
15	CLR	NC			10.00		35	21	30	57	14	25	28.44	30.02
18	CLR	NC			10.00		32	20	28	61	9	25	28.45	30.03
21	CLR	NC			10.00		29	21	26	72	12	23	28.44	30.02
24	FEW	NC			10.00		28	23	26	81	15	23	28.40	29.97
					SUNRISE: 0705	**FEB 20**			**SUNSET: 1741**					
03	CLR	NC			6.00	BR	26	24	25	92	13	23	28.35	29.91
06	SCT	NC			4.00	BR	28	27	28	96	12	25	28.33	29.89
09	SCT	NC			3.00	BR	30	28	29	92	14	24	28.32	29.88
12	CLR	NC			10.00		37	28	33	70	10	26	28.32	29.87
15	CLR	NC			10.00		43	28	37	56	7	34	28.30	29.85
18	CLR	NC			10.00		35	24	31	64	12	35	28.33	29.89
21	OVC	033			10.00		27	20	25	75	8	03	28.37	29.93
24	OVC	002			2.50	BR	26	25	26	96	14	08	28.35	29.91
					SUNRISE: 0703	**FEB 21**			**SUNSET: 1742**					
03	OVC	003			8.00		20	18	19	92	17	08	28.34	29.89
06	OVC	002			2.50	-SN BR	17	16	17	96	17	08	28.34	29.91
09	OVC	014			1.00	-SN BR	16	14	15	92	9	05	28.37	29.95
12	OVC	015			1.00	-SN BR	16	13	15	88	12	06	28.40	29.98
15	OVC	016			2.00	-SN	16	11	15	80	10	04	28.39	29.98
18	OVC	013			1.25	-SN BR	16	12	15	84	7	05	28.43	30.02
21	OVC	028			8.00		11	5	10	77			28.49	30.09
24	OVC	028			9.00	-SN	8	2	7	76	10	01	28.48	30.08
					SUNRISE: 0701	**FEB 22**			**SUNSET: 1744**					
03	OVC	021			6.00	-SN BCFG	4	-1	3	80	8	04	28.49	30.10
06	BKN	023			10.00		2	-4	1	76	9	01	28.48	30.09
09	SCT	NC			7.00		1	-7	0	68	8	36	28.50	30.11
12	OVC	027			2.00	-SN	9	2	7	73	13	09	28.49	30.10
15	BKN	031			10.00		10	0	8	63	5	VR	28.43	30.04
18	FEW	NC			10.00		6	1	5	80	8	07	28.46	30.07
21	CLR	NC			10.00		2	-5	1	72	8	36	28.50	30.12
24	CLR	NC			10.00		-1	-12	-2	59	8	35	28.50	30.12
					SUNRISE: 0660	**FEB 23**			**SUNSET: 1745**					
03	CLR	NC			10.00		-5	-13	-6	68	9	01	28.50	30.13
06	FEW	NC			10.00		-8	-15	-9	71	7	35	28.54	30.18
09	SCT	NC			10.00		-3	-13	-4	61	10	02	28.59	30.23
12	FEW	NC			10.00		3	-12	1	49	8	01	28.62	30.25
15	FEW	NC			10.00		8	-11	5	41	13	30	28.56	30.19
18	CLR	NC			10.00		5	-12	3	45	6	33	28.58	30.22
21	CLR	NC			10.00		0	-13	-1	54	5	34	28.62	30.26
24	CLR	NC			10.00		-4	-14	-5	61	8	33	28.63	30.27
					SUNRISE: 0658	**FEB 24**			**SUNSET: 1747**					
03	CLR	NC			10.00		-7	-16	-8	64	9	32	28.64	30.28
06	CLR	NC			10.00		-13	-19	-14	74	8	32	28.68	30.33
09	CLR	NC			10.00		-11	-21	-12	61	14	32	28.73	30.38
12	FEW	NC			10.00		-6	-20	-7	50	20	28	28.74	30.40
15	FEW	NC			10.00		-2	-18	-4	46	16	29	28.73	30.39
18	CLR	NC			10.00		-5	-19	-6	50	12	30	28.77	30.44
21	CLR	NC			10.00		-9	-21	-10	55	7	30	28.78	30.45
24	CLR	NC			10.00		-14	-23	-15	63	6	27	28.79	30.46

OBSERVATIONS AT 3−HOURLY INTERVALS

DULUTH, MN

FEBRUARY 2003 DLH WBAN # 14913

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	SATELLITE: OBSERVATION TIME (LST)	SATELLITE: EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE ℉: DRY BULB	TEMPERATURE ℉: DEW POINT	TEMPERATURE ℉: WET BULB	RELATIVE HUMIDITY (PCT)	WIND: SPEED (MPH)	WIND: DIRECTION TENS OF DEG	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL
					SUNRISE: 0656	**FEB 25**			**SUNSET: 1748**					
03	CLR	NC			10.00		−14	−21	−15	71	5	26	28.78	30.45
06	CLR	NC			10.00		−12	−18	−13	74	10	22	28.77	30.44
09	CLR	NC			10.00		−5	−12	−6	72	13	22	28.74	30.41
12	CLR	NC			10.00		8	−5	6	55	16	22	28.68	30.33
15	CLR	NC			10.00		13	−3	10	49	16	22	28.61	30.25
18	CLR	NC			10.00		11	−4	8	51	10	22	28.56	30.20
21	CLR	NC			10.00		6	−5	4	60	6	21	28.55	30.19
24	CLR	NC			10.00		6	−2	5	69	13	22	28.52	30.14
					SUNRISE: 0654	**FEB 26**			**SUNSET: 1749**					
03	CLR	NC			10.00		5	0	4	79	14	23	28.50	30.12
06	CLR	NC			8.00		2	−1	1	88	9	22	28.49	30.10
09	CLR	NC			7.00		5	1	4	83	8	23	28.47	30.09
12	CLR	NC			10.00		18	6	15	60	12	20	28.44	30.04
15	CLR	NC			10.00		24	9	20	52	17	22	28.40	29.99
18	CLR	NC			10.00		21	8	18	57	13	22	28.40	30.00
21	CLR	NC			9.00		16	8	14	71	9	23	28.40	30.01
24	CLR	NC			8.00		16	9	14	74	10	24	28.40	29.98
					SUNRISE: 0653	**FEB 27**			**SUNSET: 1751**					
03	OVC	070			7.00		16	10	14	77	9	25	28.41	29.99
06	SCT	NC			6.00	BR	12	9	11	87	5	25	28.43	30.01
09	FEW	NC			5.00	HZ	22	15	20	75	5	26	28.46	30.04
12	FEW	NC			10.00		31	16	26	54	5	22	28.46	30.03
15	CLR	NC			10.00		35	17	29	48	9	25	28.43	30.00
18	SCT	NC			10.00		29	16	25	58	5	16	28.45	30.03
21	CLR	NC			10.00		26	13	22	57	5	32	28.47	30.04
24	CLR	NC			10.00		20	6	16	55	8	35	28.48	30.05
					SUNRISE: 0651	**FEB 28**			**SUNSET: 1752**					
03	CLR	NC			10.00		16	4	13	59	7	34	28.50	30.07
06	CLR	NC			10.00		11	3	9	70	6	36	28.52	30.11
09	CLR	NC			10.00		17	4	14	56	7	01	28.54	30.13
12	CLR	NC			10.00		27	5	21	39	3	VR	28.53	30.11
15	CLR	NC			10.00		31	7	24	36	5	VR	28.48	30.05
18	BKN	080			10.00		24	14	21	65	9	14	28.46	30.05
21	OVC	120			10.00		21	16	19	81	0	00	28.44	30.02
24	CLR	NC			10.00		20	15	18	81	3	16	28.41	29.98
					SUNRISE:	**FEB 29**			**SUNSET:**					
					SUNRISE:	**FEB 30**			**SUNSET:**					

HOUR (LST)	SKY COVER	CEILING 100'S OF FT	SATELLITE: OBSERVATION TIME (LST)	SATELLITE: EFF CLD AMT Oktas	VISIBILITY (MILES)	WEATHER	TEMPERATURE ℉: DRY BULB	TEMPERATURE ℉: DEW POINT	TEMPERATURE ℉: WET BULB	RELATIVE HUMIDITY (PCT)	WIND: SPEED (MPH)	WIND: DIRECTION TENS OF DEG	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL
					SUNRISE:	**FEB 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, 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.

SUMMARY BY HOUR

HOUR (LST)	AVERAGES: CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES,HG): STATION	PRESSURE (INCHES,HG): SEA LEVEL	VISIBILITY (MILES)	WIND SPEED (MPH)	RESULTANT WIND (MPH): SPEED	RESULTANT WIND (MPH): DIRECTION
01			7	0	6	74	28.45	30.06	8.02	10	4	30
02			6	0	5	76	28.45	30.05	8.20	10	4	29
03			6	0	5	78	28.45	30.05	7.82	10	4	29
04			6	0	5	77	28.45	30.05	7.71	9	4	29
05			5	−1	4	80	28.45	30.06	7.38	9	4	28
06			4	−1	3	80	28.45	30.06	7.41	9	4	29
07			4	−2	3	79	28.46	30.07	7.21	10	4	29
08			4	−1	3	80	28.47	30.08	6.96	10	5	29
09			6	0	5	75	28.47	30.08	7.12	11	5	29
10			9	1	8	70	28.47	30.08	7.27	11	5	28
11			12	2	10	65	28.47	30.08	7.38	12	6	29
12			13	2	11	62	28.47	30.07	7.74	12	6	28
13			15	3	12	59	28.45	30.05	7.95	13	6	28
14			16	3	13	58	28.44	30.04	8.49	13	6	28
15			16	3	13	57	28.43	30.03	8.62	13	7	27
16			16	3	13	57	28.43	30.04	8.71	13	7	28
17			15	2	13	57	28.44	30.04	8.99	12	5	28
18			13	2	11	61	28.45	30.06	8.90	10	4	28
19			12	2	10	66	28.45	30.07	8.55	9	4	28
20			11	1	9	67	28.45	30.07	8.40	9	4	29
21			10	1	8	67	28.45	30.07	8.59	9	5	29
22			9	0	7	68	28.46	30.07	9.25	10	4	29
23			8	0	7	69	28.45	30.06	8.99	9	4	29
24			8	0	6	71	28.45	30.06	8.52	10	5	29

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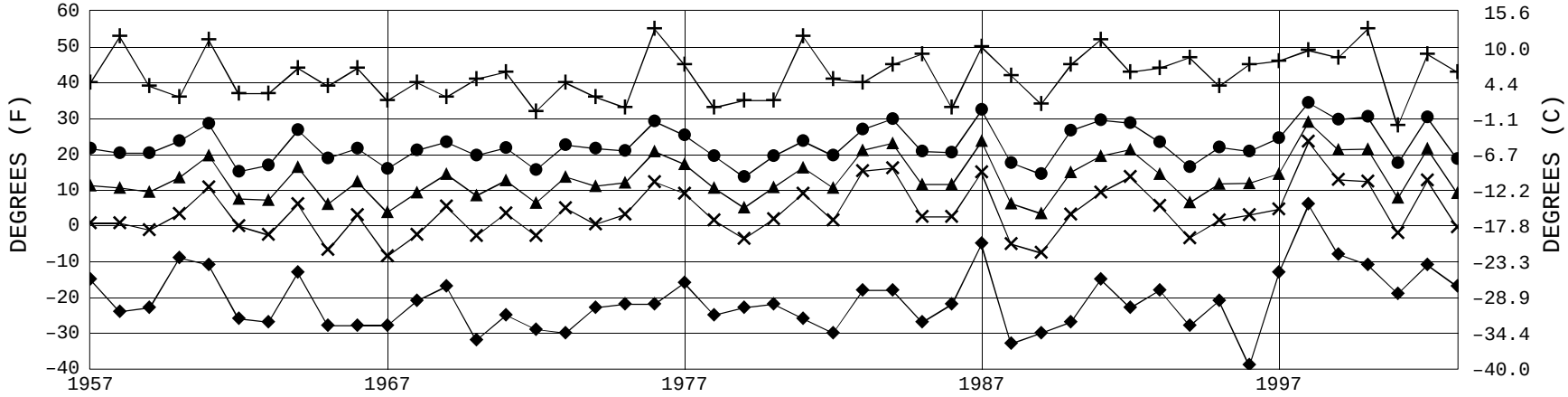
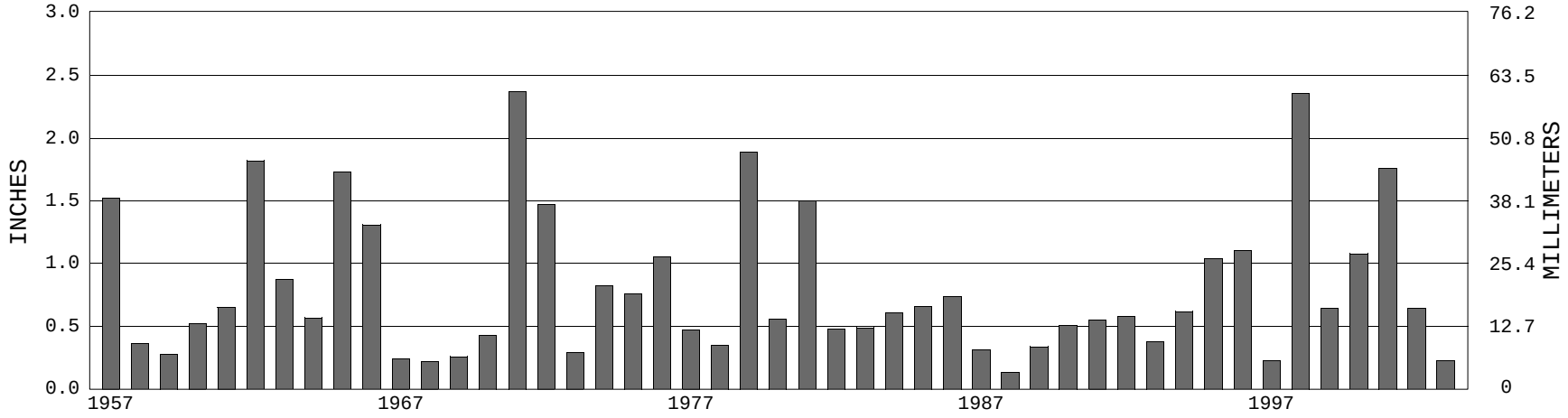
DULUTH, MN FEBRUARY TEMPERATURES



+ Extreme Max. ● Mean Max. ▲ Mean × Mean Min. ◆ Extreme Min.

Long–Term (1957–2003) Mean: 13.2 1961–1990 Normal: 14.8

DULUTH, MN FEBRUARY PRECIPITATION



Long–Term (1957–2003) Mean Monthly Total: 0.80 1961–1990 Normal: 0.83

FEBRUARY 2003

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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