



# JANUARY 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	17	4	11	2	3	7	54	0	SN BR	3		0.2	T	28.82	30.45	8.6	35	8.9	16	02	13	36	01	
02	18	-1	9	0	3	6	56	0		3		0.0	0.00	28.76	30.39	8.4	30	9.3	21	28	18	28	02	
03	23	0	12	3	6	11	53	0		3		0.0	0.00	28.43	30.04	10.7	24	11.3	30	25	23	24	03	
04	27	10	19	10	15	19	46	0	BR	3		0.0	0.00	28.24	29.82	9.1	29	9.4	17	26	14	31	04	
05	31	18	25	17	22	24	40	0	SN	3		T	T	28.30	29.86	10.0	32	10.6	25	01	20	36	05	
06	22	3	13	5	5	10	52	0	SN BR	3		0.1	T	28.55	30.15	9.4	35	9.6	25	35	18	35	06	
07	24	0	12	4	6	12	53	0		3		0.0	0.00	28.31	29.91	12.1	25	12.6	26	27	23	26	07	
08	45*	19	32	24	28	30	33	0		3		0.0	0.00	27.94	29.49	11.0	28	11.2	24	28	20	27	08	
09	42	35	39*	31	32	36	26	0		T		0.0	0.00	28.01	29.53	16.1	31	16.2	36*	31	29	31	09	
10	36	26	31	23	28	30	34	0	SN BR	T		0.2	0.01	28.33	29.88	12.3	32	12.5	25	32	20	32	10	
11	37	23	30	22	26	28	35	0	BR	T		0.0	0.00	28.31	29.87	9.1	30	9.5	24	33	17	33	11	
12	34	21	28	21	22	26	37	0	SN BR	T		0.1	0.01	28.18	29.73	14.9	32	15.3	32	36	23	32	12	
13	31	12	22	15	20	23	43	0		T		0.0	0.00	28.16	29.72	12.4	10	14.4	35	11	28	10	13	
14	27	25	26	19	24	25	39	0	SN FZFG BR	T		0.7	0.05	28.23	29.79	10.3	08	11.0	29	10	23	09	14	
15	26	15	21	13	15	18	44	0	SN BR	2		1.0	0.05	28.49	30.08	8.2	34	8.6	25	34	21	34	15	
16	18	4	11	3	10	13	54	0	SN BR	2		0.3	0.01	28.45	30.04	4.7	30	5.5	13	27	12	27	16	
17	15	0	8	0	4	8	57	0	SN BR	2		T	T	28.45	30.05	12.5	31	12.7	29	30	23	32	17	
18	6	-14*	-4*	-12	-10	-3	69	0		2		0.0	0.00	28.52	30.16	8.8	28	11.8	24	27	21	25	18	
19	26	6	16	8	11	15	49	0	SN BR	2		0.1	T	28.13	29.71	12.7	27	14.8	35	27	30*	26	19	
20	20	-2	9	1	9	11	56	0	SN BR	2		0.2	T	28.14	29.73	3.3	07	5.7	20	11	17	12	20	
21	25	13	19	11	16	19	46	0	SN BR	2		0.2	0.01	28.14	29.71	3.3	26	7.1	15	16	13	16	21	
22	33	15	24	16	23	24	41	0	FG+ FZFG BR	2		0.0	0.00	28.13	29.69	3.9	09	7.7	21	11	17	11	22	
23	27	1	14	6	12	15	51	0	SN BR	2		T	T	28.37	29.95	8.5	34	8.8	21	33	16	34	23	
24	21	-1	10	2	6	10	55	0	SN BR	2		T	T	28.32	29.92	7.9	27	8.4	21	29	17	29	24	
25	42	17	30	21	23	27	35	0	SN FG+ FZFG BR	2		0.4	0.02	28.15	29.71	6.2	27	10.9	26	23	22	25	25	
26	30	21	26	17	24	25	39	0	FG+ FZFG BR	1		0.0	0.00	28.29	29.85	10.3	10	11.4	24	11	20	11	26	
27	33	19	26	17	27	29	39	0	FG+ FZFG BR	1		0.0	0.00	28.30	29.86	7.1	08	9.0	21	10	16	11	27	
28	19	4	12	3	5	8	53	0	SN BR	1		0.5	0.02	28.56	30.16	8.1	01	8.1	17	02	13	03	28	
29	14	-2	6	-4	5	7	59	0	SN FZFG BR	1		6.1	0.15	28.59	30.22	5.2	05	6.3	15	08	13	08	29	
30	22	-4	9	-1	7	10	56	0	SN BR	7		0.8	0.04	28.71	30.33	0.4	01	.9	6	18	6	18	30	
31	24	2	13	3	13	15	52	0	SN BR	5		0.4	0.03	28.65	30.26	2.5	05	3.1	10	02	8	36	31	
26.3		9.3	17.8	■ ■	14.2	17.4	47.0	0.0	< MONTHLY AVERAGES		TOTALS->		11.3	0.40	28.35	29.94	4.6	32	9.8	<- MONTHLY AVERAGES				
8.4		10.5	9.4	■ ■	<-----DEPARTURE FROM NORMAL----->							- .72	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3											
DEGREE DAYS									GREATEST 24-HR PRECIPITATION: 0.15 DATE :29					SEA LEVEL PRESSURE DATE TIME										
MONTHLY TOTAL DEPARTURE									GREATEST 24-HR SNOWFALL: 6.1 DATE :29					MAXIMUM : 30.55 01 2055										
SEASON TO DATE TOTAL DEPARTURE									GREATEST SNOW DEPTH: 7 DATE :30					MINIMUM : 29.34 09 0055										
HEATING: 1456 -342									NUMBER OF DAYS WITH ➔		MAXIMUM TEMP ≥ 90: 0			MINIMUM TEMP ≤ 32 :30			PRECIPITATION ≥ 0.01 INCH : 11							
COOLING: 0 0											MAXIMUM TEMP ≤ 32 :23			MINIMUM TEMP ≤ 0 : 9			PRECIPITATION ≥ 0.10 INCH : 1							
											THUNDERSTORMS : 0			HEAVY FOG : 4			SNOWFALL ≥ 1.0 INCH : 2							

JANUARY 2002  
DULUTH, MN

# HOURLY PRECIPITATION

(WATER EQUIVALENT IN INCHES)

DULUTH, MN

JANUARY 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			T	T							01												01			T	
02													02												02			0.00	
03													03												03			0.00	
04													04												04			0.00	
05													05			T	T			T	T	T	T		05			T	
06		T	T	T	T		T	T	T	T			06												06			T	
07													07												07			0.00	
08													08												08			0.00	
09													09												09			0.00	
10								T	T	T	T	T	10	T	T										10	T		0.01	
11													11												11			0.00	
12		T	T										12												12	T		0.01	
13													13												13			0.00	
14													14												14			0.00	
15	T	T	T	T	T	T					T	T	15	T	T			T	T	T	T	T	T	T	15	T		0.05	
16													16												16			0.01	
17	T	T											17	T	T	T	T					T			17	T		T	
18													18												18			0.00	
19	T	T	T	T									19						T	T					19			T	
20													20	T	T	T						T	T		20			T	
21													21												21			0.01	
22													22		0.01				T						22			0.00	
23													23												23			T	
24													24												24			T	
25				T	T	T	T						25	T											25			0.02	
26													26												26			0.00	
27													27												27			0.00	
28		T											28												28			0.02	
29													29	T			T	T				T	T	T	29	T		0.15	
30	T	T	T	T	T								30	0.04	0.01		T	T	T	T	T	T	T	T	30	0.09		0.04	
31													31				T	T	T	T	T	T	T	T	31	T		0.03	

## MAXIMUM SHORT DURATION PRECIPITATION (See Note)

Time Period (Minutes)	5	10	15	20	30	45	60	80	100	120	150	180
Precipitation (Inches)	.03	.04	.04	.04	.05	.06	.07	.08	.08	.09	.09	.09
Ending Date	17	17	17	30	30	30	30	30	30	30	30	30
Ending Time (Hour/Min)	2253	2258	2258	1219	1219	1219	1219	1219	1303	1303	1303	1303

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  
JANUARY 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).

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							4.00	10.00	
02							8.00	10.00	
03							8.00	10.00	
04							5.00	10.00	
05							3.00	10.00	
06							2.50	10.00	
07							10.00	10.00	
08							8.00	10.00	
09							10.00	10.00	
10							1.00	10.00	
11							5.00	10.00	
12							1.50	10.00	
13							10.00	10.00	
14							.50	10.00	
15							1.25	10.00	
16							1.00	10.00	
17							1.75	10.00	
18							10.00	10.00	
19							3.00	10.00	
20							.75	10.00	
21							1.75	10.00	
22							.25	9.00	
23							2.50	10.00	
24							2.50	10.00	
25							.25	10.00	
26							<.25	10.00	
27							<.25	10.00	
28							1.25	10.00	
29							.50	10.00	
30							2.50	10.00	
31							2.50	10.00	
MONTHLY AVGS							3.79	9.97	

SUNSHINE (MINUTES)

Total: Possible:

Percent Possible:

NUMBER OF DAYS WITH:

SKY CONDITION

CLR PTLY CLDY CLOUDY MISSING

31

MINIMUM VISIBILITY (MILES)

<=0.25 <=3.0 >=7.0

4 20 7

## OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

JANUARY 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 Oktas		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 Oktas	VISIBILITY (MILES)	DRY BULB		DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL
					SUNRISE: 0754	JAN 01			SUNSET: 1631										SUNRISE: 0753	JAN 07									
03	OVC	080			10.00		6	2	5	83	9	36	28.69	30.31	03	CLR	NC			10.00	1	-2	1	87	6	27	28.52	30.14	
06	OVC	080			10.00		6	3	5	87	9	36	28.73	30.36	06	CLR	NC			10.00	3	-2	2	79	10	23	28.45	30.06	
09	CLR	NC			10.00		5	0	4	79	10	01	28.82	30.46	09	SCT	NC			10.00	6	1	5	80	15	23	28.38	29.99	
12	FEW	NC			10.00		12	4	10	70	9	36	28.85	30.47	12	OVC	090			10.00	19	6	16	57	16	25	28.28	29.88	
15	CLR	NC			10.00		17	6	14	62	8	32	28.87	30.49	15	CLR	NC			10.00	24	11	20	57	16	24	28.21	29.79	
18	CLR	NC			10.00		11	4	9	73	6	33	28.90	30.53	18	CLR	NC			10.00	20	12	18	71	14	25	28.21	29.80	
21	CLR	NC			10.00		7	3	6	84	9	35	28.91	30.55	21	CLR	NC			10.00	19	14	18	81	13	26	28.15	29.73	
24	CLR	NC			10.00		4	1	3	88	10	34	28.89	30.52	24	CLR	NC			10.00	20	17	19	89	14	27	28.10	29.66	
					SUNRISE: 0754	JAN 02				SUNSET: 1632									SUNRISE: 0753	JAN 08									
03	CLR	NC			10.00		1	-1	1	91	7	34	28.89	30.52	03	CLR	NC			10.00	19	17	18	92	9	26	28.05	29.62	
06	CLR	NC			10.00		0	-3	0	87	7	33	28.84	30.48	06	CLR	NC			9.00	21	20	21	96	13	27	28.01	29.57	
09	OVC	004			9.00		1	0	1	95	7	33	28.83	30.47	09	CLR	NC			9.00	26	24	25	92	8	29	27.99	29.54	
12	CLR	NC			10.00		12	8	11	84	7	30	28.78	30.41	12	SCT	NC			10.00	36	31	34	82	10	29	27.92	29.47	
15	CLR	NC			10.00		17	8	15	68	12	28	28.71	30.33	15	CLR	NC			10.00	44	35	40	71	17	27	27.88	29.41	
18	CLR	NC			10.00		11	5	10	77	9	29	28.68	30.31	18	CLR	NC			10.00	41	34	38	76	15	27	27.87	29.41	
21	CLR	NC			10.00		8	4	7	83	14	28	28.64	30.26	21	CLR	NC			10.00	37	33	35	86	10	27	27.86	29.39	
24	CLR	NC			10.00		4	2	4	91	12	27	28.60	30.22	24	CLR	NC			10.00	39	34	37	82	12	31	27.84	29.36	
					SUNRISE: 0754	JAN 03				SUNSET: 1633									SUNRISE: 0752	JAN 09									
03	CLR	NC			10.00		2	-1	1	88	9	27	28.60	30.22	03	BKN	090			10.00	38	34	36	86	14	30	27.86	29.37	
06	CLR	NC			10.00		1	-2	1	87	6	22	28.55	30.17	06	CLR	NC			10.00	37	34	36	89	15	31	27.89	29.40	
09	CLR	NC			9.00		4	2	4	91	12	24	28.51	30.13	09	BKN	015			10.00	37	33	35	86	18	32	27.95	29.48	
12	CLR	NC			10.00		15	7	13	70	12	23	28.44	30.05	12	OVC	027			10.00	41	33	38	74	18	32	28.00	29.52	
15	CLR	NC			10.00		23	9	19	55	15	22	28.37	29.97	15	OVC	025			10.00	40	32	37	73	18	30	28.04	29.56	
18	CLR	NC			10.00		19	9	16	65	12	23	28.32	29.92	18	OVC	031			10.00	38	30	35	73	12	32	28.10	29.63	
21	CLR	NC			10.00		20	14	18	78	15	25	28.27	29.86	21	OVC	031			10.00	37	30	34	76	14	30	28.17	29.70	
24	CLR	NC			10.00		19	14	18	81	12	26	28.25	29.83	24	OVC	023			10.00	36	30	34	79	10	32	28.19	29.72	
					SUNRISE: 0754	JAN 04				SUNSET: 1634									SUNRISE: 0752	JAN 10									
03	CLR	NC			10.00		16	13	15	88	9	27	28.24	29.81	03	OVC	016			10.00	34	31	33	89	12	30	28.22	29.76	
06	CLR	NC			7.00		13	12	13	96	8	29	28.22	29.80	06	OVC	010			9.00	33	32	33	96	10	32	28.26	29.79	
09	CLR	NC			5.00	BR	12	11	12	95	6	27	28.24	29.82	09	OVC	007			1.75	32	32	32	100	13	32	28.28	29.83	
12	CLR	NC			10.00		23	16	21	74	12	29	28.25	29.82	12	OVC	014			1.75	30	28	29	92	13	33	28.34	29.89	
15	CLR	NC			10.00		27	18	24	69	8	29	28.23	29.80	15	OVC	016			10.00	31	26	29	82	16	33	28.36	29.92	
18	BKN	095			10.00		25	17	22	72	12	30	28.26	29.83	18	OVC	016			10.00	29	25	28	85	13	32	28.40	29.96	
21	OVC	080			10.00		24	16	22	71	10	31	28.27	29.85	21	OVC	012			10.00	26	23	25	88	12	31	28.42	29.99	
24	OVC	100			10.00		24	17	22	75	8	30	28.27	29.84	24	OVC	010			10.00	27	24	26	89	14	32	28.42	29.98	
					SUNRISE: 0753	JAN 05				SUNSET: 1635									SUNRISE: 0752	JAN 11									
03	CLR	NC			10.00		21	16	19	81	8	30	28.29	29.85	03	OVC	008			10.00	28	26	27	92	10	29	28.39	29.95	
06	SCT	NC			10.00		20	17	19	89	6	32	28.28	29.85	06	CLR	NC			8.00	24	24	24	100	10	26	28.33	29.89	
09	OVC	065			8.00		23	21	22	92	8	31	28.29	29.86	09	CLR	NC			6.00	25	24	25	96	8	31	28.32	29.89	
12	BKN	060			10.00		29	24	27	82	13	32	28.26	29.83	12	OVC	006			7.00	28	27	28	96	10	31	28.30	29.87	
15	OVC	030			3.00	-SN	30	25	28	82	15	33	28.27	29.83	15	CLR	NC			10.00	37	27	33	67	9	31	28.26	29.81	
18	BKN	037			10.00		28	25	27	88	10	29	28.30	29.87	18	CLR	NC			10.00	31	25	29	79	7	29	28.28	29.84	
21	OVC	020			10.00		29	24	27	82	14	33	28.32	29.88	21	CLR	NC			10.00	29	25	28	85	6	30	28.25	29.81	
24	OVC	017			10.00		22	17	20	82	13	35	28.36	29.93	24	OVC	065			10.00	32	27	30	82	15	33	28.26	29.81	
					SUNRISE: 0753	JAN 06				SUNSET: 1636									SUNRISE: 0751	JAN 12									
03	OVC	019			4.00	-SN BR	16	12	15	84	12	36	28.42	30.00	03	OVC	014			10.00	30	27	29	88	14	33	28.25	29.79	
06	OVC	023			10.00		14	8	13	77	12	34	28.46	30.04	06	BKN	024			10.00	30	24	28	79	16	33	28.23	29.78	
09	OVC	030			2.50	-SN	13	8	12	81	10	36	28.52	30.11	09	OVC	022			10.00	29	22	26	75	20	34	28.23	29.78	
12	BKN	024			10.00		11	2	9	67	13	01	28.61	30.20	12	CLR	NC			10.00	31	21	27	67	18	33	28.20	29.75	
15	CLR	NC			10.00		14	3	11	61	9	34	28.61	30.21	15	CLR	NC			10.00	33	20	28	59	18	32	28.16	29.71	
18	CLR	NC			10.00		9	2	7	73	6																		

## OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

JANUARY 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 Oktas		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 Oktas	VISIBILITY (MILES)	DRY BULB		DEW POINT	WET BULB	SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
SUNRISE: 0751 JAN 13 SUNSET: 1645						SUNRISE: 0747 JAN 19 SUNSET: 1653																								
03	CLR	NC			10.00	20	17	19	89	6	35	28.12	29.67	03	OVC	050			6.00	-SN	BR	8	5	7	87	12	26	28.26	29.87	
06	CLR	NC			10.00	14	13	14	95	0	00	28.12	29.69	06	OVC	006			5.00	BR		9	8	9	96	10	24	28.18	29.78	
09	FEW	NC			10.00	21	19	20	92	9	11	28.14	29.70	09	OVC	004			4.00	BR		14	12	13	92	13	25	28.13	29.72	
12	CLR	NC			10.00	29	22	26	75	20	12	28.14	29.70	12	SCT	NC			10.00			22	17	20	82	20	24	28.01	29.58	
15	BKN	020			10.00	29	22	26	75	22	10	28.14	29.70	15	OVC	033			10.00			25	15	22	66	22	28	27.98	29.54	
18	OVC	016			10.00	27	22	25	81	22	10	28.18	29.75	18	OVC	036			8.00	-SN		23	17	21	78	17	30	28.06	29.64	
21	OVC	014			10.00	26	23	25	88	22	10	28.21	29.77	21	OVC	027			9.00	-SN		18	13	17	81	15	32	28.16	29.74	
24	OVC	010			10.00	25	23	24	92	21	09	28.21	29.77	24	FEW	NC			10.00			11	6	10	81	7	35	28.21	29.78	
SUNRISE: 0750 JAN 14 SUNSET: 1646						SUNRISE: 0746 JAN 20 SUNSET: 1654																								
03	OVC	008			10.00	25	24	25	96	17	09	28.21	29.76	03	OVC	110			10.00			6	2	5	83	6	34	28.24	29.82	
06	OVC	008			10.00	25	23	24	92	15	09	28.20	29.76	06	FEW	NC			10.00			3	0	2	87	0	00	28.24	29.82	
09	OVC	006			10.00	26	24	25	92	13	09	28.22	29.78	09	OVC	045			10.00			3	0	2	87	0	00	28.23	29.82	
12	OVC	008			1.50	-SN	BR	26	25	26	96	16	10	28.21	29.77	12	OVC	022		3.00	-SN	BR	13	9	12	84	8	10	28.17	29.75
15	OVC	012			10.00	27	24	26	89	9	08	28.22	29.78	15	BKN	045			6.00	-SN	BR	16	14	15	92	9	10	28.08	29.67	
18	OVC	010			6.00	BR	26	24	25	92	6	05	28.25	29.81	18	OVC	007			10.00			19	17	18	92	7	10	28.06	29.64
21	OVC	007			1.75	-SN	BR	26	25	26	96	7	VR	28.26	29.82	21	OVC	022		10.00			20	18	19	92	5	02	28.03	29.62
24	OVC	010			2.00	-SN	BR	26	25	26	96	7	02	28.30	29.87	24	OVC	022		10.00			19	18	19	96	5	35	28.02	29.59
SUNRISE: 0749 JAN 15 SUNSET: 1647						SUNRISE: 0745 JAN 21 SUNSET: 1656																								
03	OVC	021			5.00	-SN	BR	25	24	25	96	5	35	28.35	29.92	03	OVC	020		10.00			18	16	17	92	10	32	28.03	29.60
06	OVC	030			9.00	21	18	20	88	14	34	28.40	29.97	06	OVC	018			10.00			15	11	14	84	8	33	28.05	29.63	
09	OVC	010			10.00	20	17	19	89	13	34	28.47	30.05	09	OVC	014			10.00			16	12	15	84	7	31	28.13	29.70	
12	OVC	014			10.00	18	13	17	81	12	33	28.52	30.11	12	OVC	010			10.00			19	15	18	85	7	26	28.19	29.76	
15	SCT	NC			10.00	20	11	17	68	10	36	28.54	30.13	15	BKN	085			10.00			24	16	22	71	9	20	28.18	29.74	
18	OVC	022			10.00	17	10	15	74	5	34	28.57	30.16	18	OVC	028			10.00			25	17	22	72	9	16	28.19	29.76	
21	OVC	018			10.00	16	11	15	80	5	32	28.58	30.18	21	OVC	014			10.00			25	20	23	81	7	23	28.21	29.77	
24	OVC	014			10.00	16	12	15	84	6	24	28.58	30.18	24	CLR	NC			5.00	BR		20	18	19	92	5	19	28.22	29.78	
SUNRISE: 0749 JAN 16 SUNSET: 1649						SUNRISE: 0744 JAN 22 SUNSET: 1657																								
03	OVC	018			10.00	15	11	14	84	5	32	28.55	30.15	03	CLR	NC			3.00	BR		17	16	17	96	6	30	28.23	29.80	
06	OVC	016			10.00	15	11	14	84	3	32	28.50	30.10	06	OVC	095			5.00	BR		18	17	18	96	0	00	28.22	29.78	
09	OVC	016			6.00	-SN	BR	15	11	14	84	5	26	28.48	30.07	09	SCT	NC		2.50	BR		24	22	23	91	9	12	28.15	29.71
12	OVC	020			2.00	-SN		17	12	16	80	7	27	28.44	30.03	12	CLR	NC		5.00	BR		29	27	28	92	15	12	28.10	29.65
15	OVC	018			1.50	-SN	BR	17	14	16	88	7	31	28.38	29.96	15	CLR	NC		9.00			32	27	30	82	8	08	28.03	29.57
18	BKN	040			7.00	12	9	11	87	7	31	28.39	29.98	18	CLR	NC			6.00	BR		28	27	28	96	3	06	28.04	29.60	
21	FEW	NC			10.00	10	8	10	92	5	31	28.40	29.99	21	BKN	005			5.00	BR		26	25	26	96	7	01	28.07	29.63	
24	CLR	NC			10.00	6	3	5	87	6	29	28.41	30.01	24	OVC	003			4.00	BR		27	27	27	100	6	35	28.13	29.68	
SUNRISE: 0748 JAN 17 SUNSET: 1650						SUNRISE: 0743 JAN 23 SUNSET: 1659																								
03	OVC	065			10.00	9	7	9	92	6	28	28.40	29.99	03	OVC	007			9.00			26	25	26	96	10	36	28.20	29.75	
06	CLR	NC			10.00	10	8	10	92	12	31	28.41	30.01	06	OVC	009			10.00			25	22	24	88	10	33	28.27	29.84	
09	CLR	NC			10.00	8	4	7	83	15	30	28.43	30.03	09	OVC	013			10.00			20	16	19	85	15	33	28.35	29.92	
12	OVC	019			2.50	-SN		13	6	11	74	18	32	28.45	30.05	12	OVC	017		8.00			18	11	16	74	9	01	28.42	29.99
15	OVC	030			9.00	15	3	12	59	17	31	28.45	30.05	15	CLR	NC			10.00			18	9	16	68	10	32	28.43	30.01	
18	SCT	NC			10.00	10	4	9	76	8	29	28.46	30.07	18	CLR	NC			10.00			10	3	8	73	6	34	28.48	30.06	
21	CLR	NC			10.00	5	-3	4	69	13	31	28.50	30.11	21	CLR	NC			10.00			5	1	4	83	5	32	28.49	30.09	
24	CLR	NC			10.00	0	-7	-1	72	13	32	28.53	30.15	24	CLR	NC			10.00			1	-2	1	87	3	31	28.47	30.08	
SUNRISE: 0747 JAN 18 SUNSET: 1651						SUNRISE: 0742 JAN 24 SUNSET: 1700																								
03	CLR	NC			10.00	-5	-13	-6	68	14	34	28.58	30.21	03	BKN	090			10.00			1	-3	0	83	0	00	28.42	30.03	
06	CLR	NC			10.00	-11	-16	-12	78	9	34	28.61	30.25	06	FEW	NC			10.00			1	-3	0	83	3	27	28.39	30.00	
09	CLR	NC			10.00	-12	-18	-13	74	9	33	28.62	30.27	09	OVC	085			10.00			5	1	4	83	10	28	28.38	29.99	
12	CLR	NC			10.00	0	-11	-1	59	8	27	28.60	30.24	12	BKN	009			3.00	-SN	BR	11	8	10	88	7	23	28.32	29.93	
15	CLR	NC			10.00	5	-9	3	52	14	26	28.52	30.15	15	BKN	039			10.00			21	12	18	68	12	27	28.26	29.85	
18	BKN	060			10.00	3	-9</																							

## OBSERVATIONS AT 3-HOURLY INTERVALS

DULUTH, MN

JANUARY 2002

DLH

WBAN # 14913

HOUR (LST)			SATELLITE		WEATHER	TEMPERATURE °F			RELATIVE HUMIDITY (PCT)	WIND		PRESSURE (INCHES,HG)		
	SKY COVER	CEILING 100'S OFFT	OBSERVATION TIME (LST)	EFF CLD AMT Oktas		DRY BULB	DEW POINT	WET BULB		SPEED (MPH)	DIRECTION TENS OF DEG	STATION	SEA LEVEL	
					SUNRISE: 0741	JAN 25			SUNSET: 1701					
03	OVC	042		10.00		21	15	19	78	7	29	28.24	29.81	
06	OVC	004		4.00	-SN BR	20	20	20	100	6	09	28.15	29.73	
09	VV	001		0.25	FZFG	21	21	21	100	7	14	28.13	29.70	
12	CLR	NC		10.00		32	23	29	69	12	23	28.08	29.64	
15	CLR	NC		10.00		39	26	34	60	17	26	28.04	29.59	
18	CLR	NC		10.00		40	28	35	63	16	28	28.10	29.65	
21	CLR	NC		10.00		36	28	33	73	12	32	28.20	29.75	
24	CLR	NC		10.00		26	21	24	81	12	36	28.27	29.83	
					SUNRISE: 0740	JAN 26			SUNSET: 1703					
03	OVC	090		10.00		22	18	21	85	9	06	28.31	29.87	
06	OVC	008		10.00		22	20	21	92	14	11	28.29	29.85	
09	OVC	004		8.00		26	25	26	96	16	12	28.28	29.84	
12	OVC	002		0.50	FZFG	27	27	27	100	18	12	28.29	29.85	
15	VV	001		<.25	FZFG	26	26	26	100	13	10	28.26	29.83	
18	VV	001		0.25	FZFG	26	26	26	100	12	08	28.28	29.85	
21	VV	001		0.25	FZFG	29	26	28	89	9	09	28.30	29.87	
24	VV	001		0.25	FZFG	30	27	29	88	9	11	28.28	29.84	
					SUNRISE: 0739	JAN 27			SUNSET: 1704					
03	VV	001		0.25	FZFG	31	29	30	92	10	08	28.26	29.82	
06	VV	001		0.50	FZFG	31	29	30	92	12	10	28.25	29.80	
09	VV	001		<.25	FG	32	29	31	88	13	10	28.26	29.80	
12	VV	001		0.25	FG	32	30	31	92	12	11	28.23	29.78	
15	OVC	001		4.00	BR	31	27	29	85	7	06	28.25	29.80	
18	OVC	003		1.00	BR	30	27	29	88	5	06	28.32	29.88	
21	OVC	003		6.00	BR	26	23	25	88	6	35	28.40	29.97	
24	OVC	007		10.00		20	16	19	85	7	34	28.48	30.05	
					SUNRISE: 0738	JAN 28			SUNSET: 1706					
03	BKN	120		10.00		12	9	11	87	9	36	28.51	30.10	
06	CLR	NC		10.00		7	4	6	87	8	01	28.55	30.15	
09	OVC	011		7.00		6	4	6	91	8	36	28.57	30.17	
12	OVC	009		3.00	BR	8	6	8	92	7	01	28.55	30.16	
15	OVC	017		4.00	BR	10	7	9	87	10	02	28.56	30.18	
18	OVC	090		10.00		8	5	7	87	9	01	28.56	30.18	
21	OVC	014		2.50	-SN BR	6	2	5	83	7	01	28.60	30.23	
24	OVC	035		6.00	-SN BR	4	1	3	88	8	01	28.60	30.22	
					SUNRISE: 0737	JAN 29			SUNSET: 1707					
03	SCT	NC		10.00		1	-2	1	87	9	01	28.59	30.22	
06	OVC	026		10.00		-1	-5	-2	82	6	36	28.62	30.25	
09	FEW	NC		10.00		1	-3	0	83	6	04	28.62	30.25	
12	OVC	010		0.75	-SN BR	12	8	11	84	10	08	28.60	30.22	
15	OVC	021		1.00	-SN BR	14	11	13	88	10	08	28.56	30.18	
18	OVC	019		2.50	-SN BR	14	12	13	92	5	07	28.59	30.21	
21	OVC	022		1.75	-SN BR	13	10	12	88	0	00	28.59	30.21	
24	OVC	029		2.00	-SN BR	11	9	10	92	0	00	28.59	30.20	
					SUNRISE: 0736	JAN 30			SUNSET: 1709					
03	OVC	026		3.00	-SN BR	11	9	10	92	5	02	28.62	30.23	
06	CLR	NC		10.00		5	3	5	91	0	00	28.66	30.27	
09	CLR	NC		10.00		2	-1	1	88	0	00	28.72	30.35	
12	CLR	NC		10.00		18	13	17	81	0	00	28.75	30.36	
15	CLR	NC		10.00		20	13	18	74	0	00	28.73	30.34	
18	CLR	NC		10.00		14	11	13	88	0	00	28.75	30.37	
21	CLR	NC		10.00		6	4	6	91	0	00	28.76	30.40	
24	CLR	NC		10.00		5	3	5	91	0	00	28.74	30.37	
					SUNRISE: 0734	JAN 31			SUNSET: 1710					
03	FEW	NC		10.00		8	5	7	87	0	00	28.73	30.34	
06	FEW	NC		10.00		8	6	8	92	0	00	28.71	30.32	
09	BKN	006		10.00		11	8	10	88	0	00	28.70	30.32	
12	CLR	NC		10.00		21	16	20	81	5	12	28.69	30.30	
15	BKN	048		10.00		24	18	22	77	6	08	28.60	30.21	
18	OVC	026		3.00	-SN BR	22	19	21	89	6	07	28.59	30.19	
21	OVC	011		5.00	-SN BR	21	20	21	96	5	03	28.55	30.15	
24	OVC	029		8.00	-SN	18	17	18	96	7	01	28.50	30.10	

### 3-HOURLY OBSERVATION NOTES

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

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

NC= No ceiling detected.

& = Original observation contained additional weather elements.

See page 3 for additional notes.

## SUMMARY BY HOUR

HOUR (LST)	AVERAGES								RESULTANT WIND (MPH)			
	CEILOMETER	EFF CLD AMT	DRY BULB	DEW POINT	WET BULB	RELATIVE HUMIDITY	PRESSURE (INCHES,HG)		VISIBILITY (MILES)	WIND SPEED (MPH)	SPEED	DIRECTION
							STATION	SEA LEVEL				
01			17	13	16	86	28.36	29.94	8.48	9	6	32
02			16	13	15	87	28.36	29.94	8.08	9	6	33
03			16	13	15	88	28.36	29.95	8.72	9	5	33
04			15	12	14	88	28.36	29.94	8.78	8	6	32
05			14	12	14	89	28.36	29.94	8.72	9	5	32
06			14	11	14	89	28.36	29.94	8.92	8	4	32
07			13	11	13	89	28.36	29.94	8.62	8	4	32
08			14	11	13	90	28.36	29.95	7.97	9	4	32
09			15	12	14	88	28.37	29.95	7.68	10	4	32
10			17	14	16	86	28.37	29.96	7.19	11	4	33
11			19	15	18	84	28.37	29.96	7.59	11	4	31
12			21	16	20	80	28.35	29.94	7.04	12	3	31
13			22	16	20	77	28.34	29.92	7.97	12	4	31
14			23	16	21	74	28.33	29.90	8.37	12	5	30
15			24	16	22	73	28.33	29.91	8.31	12	5	31
16			24	16	21	74	28.33	29.91	8.33	11	4	31
17			22	16	20	77	28.34	29.92	8.54	10	4	31
18			21	16	20	79	28.35	29.93	8.51	9	4	31
19			21	16	20	83	28.35	29.94	8.30	10	5	31
20			20	16	19	83	28.35	29.94	8.63	10	5	31
21			19	15	18	84	28.35	29.94	8.43	9	6	31
22			19	15	18	85	28.35	29.93	8.44	9	6	32
23			18	14	17	86	28.35	29.94	8.60	9	5	32
24			18	14	17	86	28.36	29.94	8.59	9	6	32

## 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.

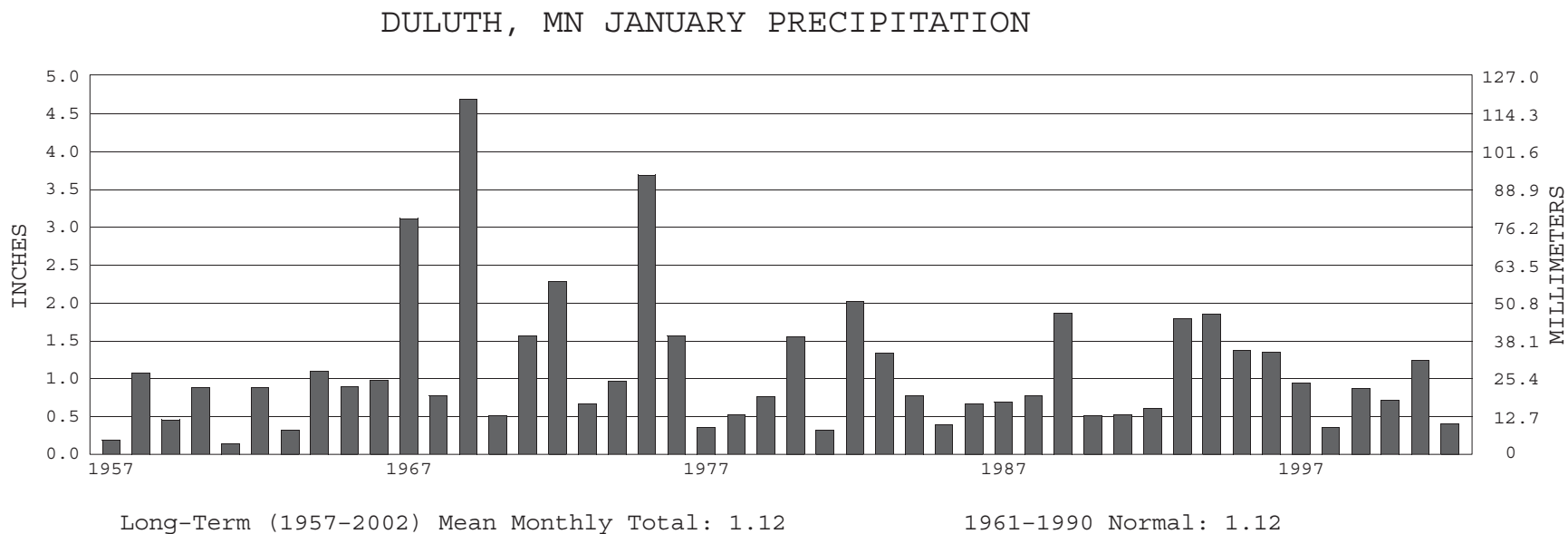
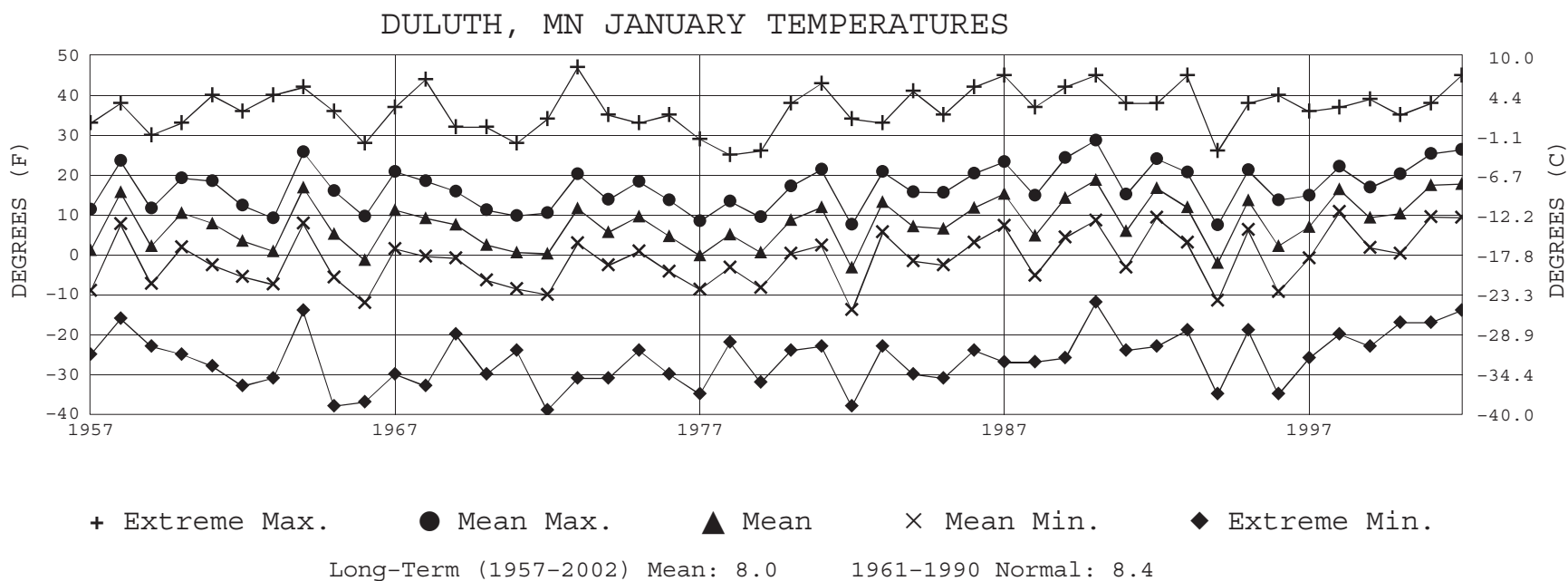
&amp; = Original observation contained additional weather elements.

See page 3 for additional notes.

## SUMMARY BY HOUR

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)
							STATION	SEA LEVEL		
01			17	13	16	86	28.36	29.94	8.48	9
02			16	13	15	87	28.36	29.94	8.08	9
03			16	13	15	88	28.36	29.95	8.72	9
04			15	12	14	88	28.36	29.94	8.78	8
05			14	12	14	89	28.36	29.94	8.72	9
06			14	11	14	89	28.36	29.94	8.92	8
07			13	11	13	89	28.36	29.94	8.62	8
08			14	11	13	90	28.36	29.95	7.97	9
09			15	12	14	88	28.37	29.95	7.68	10
10			17	14	16	86	28.37	29.96	7.19	11
11			19	15	18	84	28.37	29.96	7.59	11
12			21	16	20	80	28.35	29.94	7.04	12
13			22	16	20	77	28.34	29.92	7.97	12
14			23	16	21	74	28.33	29.90	8.37	12
15			24	16	22	73	28.33	29.91	8.31	12
16			24	16	21	74	28.33	29.91	8.33	11
17			22	16	20	77	28.34	29.92	8.54	10
18			21	16	20	79	28.35	29.93	8.51	9
19			21	16	20	83	28.35	29.94	8.30	10
20			20	16	19	83	28.35	29.94	8.63	10
21			19	15	18	84	28.35	29.94	8.43	9
22			19	15	18	85	28.35	29.93	8.44	9
23			18	14	17	86	28.35	29.94	8.60	9
24			18	14	17	86	28.36	29.94	8.59	9







JANUARY 2002

DULUTH, MN

# LOCAL CLIMATOLOGICAL DATA

NOAA, National Climatic Data Center

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