



U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
 IN COOPERATION WITH Glendive Chamber of Commerce
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 24

LATITUDE 47° 06'
 LONGITUDE 104° 43'
 ELEV. (GROUND) 2076 ft.

CLIMATOLOGICAL SUMMARY

STATION Glendive, Montana
 Station No. 24-3581-6

MEANS AND EXTREMES FOR PERIOD 1932-1961, incl.

Month	Temperature (°F)								** Mean degree days 30 #	Precipitation Totals (Inches)							Mean number of days					Month	
	Means			Extremes						Mean	Greatest daily	Year	Snow, Sleet				Precip. .10 inch or more	Temperatures					
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year	Mean					Maximum monthly	Year	Greatest daily	Year		90° and above	Max.		Min.		
																			32° and below	32° and below	0° and below		0° and below
(a)	30	30	30	30		30		30 #	28	30		22	30		30		28	30	30	30	30		
Jan	26.6	3.6	15.1	59	1944	-38	1954	1544	0.40	0.34	1949+	6.3	21.1	1933	7.5	1933	1	0	18	31	12	Jan	
Feb	30.9	6.2	18.6	73	1932	-50	1936	1296	0.38	0.48	1961	3.9	14.0	1952	7.0	1952	1	0	14	28	10	Feb	
Mar	43.0	18.6	30.8	83	1946	-27	1960	1070	0.61	0.63	1946	6.9	14.4	1957	12.0	1957	2	0	7	28	4	Mar	
Apr	60.0	32.5	46.3	93	1952+	2	1954+	558	1.08	2.00	1940	1.9	8.0	1947	4.0	1950+	3	*	*	15	0	Apr	
May	72.6	44.3	58.5	104	1934	17	1954	262	1.63	1.80	1942	1	0.5	1953	0.5	1953	4	2	0	2	0	May	
Jun	79.9	52.7	66.3	108	1936	33	1943	89	3.09	2.67	1956	0	0	--	0	--	6	5	0	0	0	Jun	
Jul	90.4	59.1	74.8	113	1936	37	1934	0	1.64	1.50	1946	0	0	--	0	--	4	18	0	0	0	Jul	
Aug	88.5	55.8	72.2	109	1934	36	1950+	14	1.46	4.07	1947	0	0	--	0	--	3	16	0	0	0	Aug	
Sep	76.6	44.4	60.5	104	1950	22	1949	179	0.89	1.53	1941	0.3	4.0	1950	4.0	1950	2	4	*	3	0	Sep	
Oct	63.7	33.9	48.8	95	1946	0	1935	512	0.73	1.15	1940	1.4	12.0	1932	5.0	1949	2	*	*	13	*	Oct	
Nov	43.8	21.4	32.6	73	1945	-15	1940	975	0.41	0.47	1933	3.2	8.0	1946	6.0	1958	1	0	5	27	2	Nov	
Dec	33.5	11.3	22.4	72	1939	-30	1951	1314	0.30	0.35	1935	4.0	10.6	1946	5.0	1934	1	0	13	30	7	Dec	
Year	59.1	32.0	45.6	113	1936	-50	1936	7813	12.62	4.07	Aug 1947	27.9	21.1	Jan 1933	12.0	Mar 1957	30	45	57	177	35	Year	

(a) Average length of record, years.

+ Also on earlier dates, months, or years.

T Trace, an amount too small to measure.

* Less than one half

** Base 65°F

For 30-year period, 1931-1960

CLIMATE OF GLENDIVE, MONTANA

Situated on the banks of the Yellowstone River in the east-central portion of Dawson County, Glendive lies in a relatively narrow portion of the valley which runs roughly in a NNE-SSW direction for several miles. The surrounding country away from the valley bottom is hilly, and is cut by many ravines, coulees, and creeks (some of which during most years are dry for weeks at a time). Within a few miles of Glendive, on both sides of the river, elevations reach about 2,800 feet at the tops of several hills and buttes. The valley floor elevation runs from about 2,069 ft. in the lower parts of Glendive to near 2,100 ft. along the river a few miles upstream and about 2,050 ft. a few miles downstream.

The Yellowstone here flows to the NNE, joining the Missouri River about 70 miles airline downstream, just across the North Dakota border. Glendive weather records represent fairly well the climate of this part of the valley, but do not portray too well conditions observed in wider sections of the valley both up- and downstream. While local topographic features appear to have only minor effects on major climate elements, application of Glendive records to the surrounding hilly sections should make allowances for influences of hills on precipitation, cold-air drainage, snowfall, etc. Northeastern Montana, which includes the Glendive area, is usually considered to have a "Continental" type of climate, with cold winters and warm summers.

While the 12.62-inch annual average precipitation is not large, it is important to note that 9.79 inches of that average (77%) fall during the April-September growing season, and the wettest months are May, June, and July, when moisture supplies are most critical to crop development. Winter precipitation almost always falls as snow, while early spring and late fall precipitation can be either rain or snow. Summer precipitation usually occurs as showers, but steady, more or less gentle rains can occur in May, June, and September. Thundershowers are frequent in Dawson County during midsummer, and occasionally produce hail locally heavy enough to damage crops. On August 5, 1917 (prior

to the period summarized above), 5.07 inches of water fell in 24 hours -- greatest daily total of record for August for any Montana station. Local temperature differences are not large as a rule, but on clear, calm mornings it is usually a few degrees warmer on the slopes away from the river than it is in Glendive.

Summers are characterized by warm weather which often lasts for weeks at a time. Sunny weather prevails 70 to 80 percent of the summer, with interruptions mostly during the afternoons from occasional showers and thundershowers. A few days of hot weather occur almost every year, but hot spells seldom last more than a few days, and the hot weather seldom occurs with high humidity. Temperatures can reach highs of 90° or more during any month May-September, and on about half of the afternoons in July and August temperatures will reach 90° or warmer. The warmest ever observed at Glendive was 117° on July 20, 1893 (before the period summarized above).

Winters, while quite cold, are not as severe as is thought by many. While on the average, temperatures reach freezing or colder every day in December, January, and February, zero and below readings have occurred only 35 days a year during the last 30 years. And on only 57 days a year does the daily maximum remain below freezing. While relatively mild winter weather is not uncommon, some very cold weather can occur each winter. These cold spells ordinarily last only a few days at a time, but about once every 9 or 10 years a January or February temperature average will run below zero for the month. The coldest of record, -50°, occurred on February 16, 1936. In the spring the change from wintry to warmer weather is quite rapid, and the progressive cooling in the fall season is very noticeable during October and November.

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 State Climatologist
 Weather Bureau Airport Station
 Helena, Montana

M82.2/73
 U587c1
 20-24
 Montana, Glendive

Glendive, Montana (°F)
Average Temperature

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1932	12.9	12.7	24.8	49.7	60.2	69.6	74.8	73.0	59.8	41.2	30.8	16.2	44.4
1933	17.4	19.6	35.4	44.2	55.8	73.4	78.0	72.6	62.4	46.2	36.4	16.2	45.9
1934	24.2	29.6	33.7	49.8	67.8	68.0	77.4	72.6	55.8	52.5	37.1	20.6	49.1
1935	11.8	29.0	32.4	43.7	52.9	65.0	78.4	70.7	61.2	48.3	26.4	21.9	44.0
1936	4.6	-10.4	32.0	43.5	65.0	73.4	83.8	75.7	64.4	48.6	34.6	20.2	44.6
1937	-3.4	13.0	31.6	45.6	62.0	67.6	76.8	75.4	64.0	50.2	31.2	18.4	44.4
1938	21.7	11.2	36.2	46.6	56.1	69.7	74.2	71.6	66.4	53.5	30.5	25.2	46.9
1939	24.6	18.4	30.7	48.8	63.0	61.5	77.1	71.0	62.4	46.8	37.6	30.7	46.8
1940	4.0	18.4	32.4	40.8	58.8	65.8	75.1	72.2	65.8	52.0	23.4	25.4	44.5
1941	18.1	22.4	31.4	44.8	60.6	66.1	75.4	72.2	55.4	45.3	34.6	26.1	46.0
1942	21.7	18.8	33.5	48.4	52.4	61.6	71.6	69.5	57.6	48.8	32.0	24.6	45.0
1943	5.8	22.4	27.5	53.1	54.4	63.1	72.0	72.8	60.3	51.8	34.8	28.4	45.7
1944	27.2	17.8	22.8	47.4	62.2	63.7	72.1	70.0	62.2	52.7	30.1	24.0	46.0
1945	21.6	24.9	36.9	43.6	54.0	61.4	74.6	73.2	57.8	50.6	16.3	25.4	45.3
1946	24.6	23.6	43.4	55.3	54.8	67.0	76.4	70.8	59.9	44.2	29.9	21.5	47.6
1947	22.8	16.0	25.3	45.0	55.8	63.0	76.4	75.0	62.0	54.3	30.0	25.6	45.9
1948	22.8	16.0	28.8	48.2	61.8	65.5	71.6	71.6	65.2	47.4	33.1	13.7	45.5
1949	0.6	1.8	26.0	49.1	60.3	66.1	71.4	73.4	56.3	43.7	42.0	13.6	42.1
1950	-7.6	16.5	22.9	38.3	51.9	62.0	69.5	65.1	58.6	48.5	26.5	21.0	39.4
1951	13.6	21.6	20.3	42.3	58.7	61.6	71.9	68.4	55.0	45.9	29.6	11.8	41.7
1952	8.2	22.3	20.9	53.8	60.3	68.5	71.8	71.0	63.8	47.6	32.9	23.6	45.4
1953	24.7	27.8	33.9	40.4	53.9	67.0	73.8	72.6	61.8	53.9	39.7	29.9	48.3
1954	8.6	38.3	28.7	44.6	56.3	63.6	76.5	71.1	59.3	48.5	42.9	29.9	47.4
1955	20.3	17.1	28.2	50.7	58.8	64.2	74.9	74.3	58.0	49.6	19.9	16.1	43.5
1956	11.9	18.8	35.0	42.4	59.1	73.3	70.8	69.6	59.5	50.8	36.6	27.5	46.3
1957	6.5	19.9	32.9	44.2	59.5	64.7	76.6	72.4	60.5	48.5	36.3	33.4	46.3
1958	28.9	21.3	30.4	48.0	65.3	63.6	69.2	74.2	61.8	49.0	33.6	20.7	47.2
1959	12.6	8.8	37.7	45.4	55.2	70.1	74.4	73.1	60.0	45.0	28.6	30.5	45.1
1960	17.0	20.3	27.5	47.5	58.0	65.8	78.6	72.2	63.2	50.3	33.0	22.7	46.4
1961	25.1	29.5	40.8	43.3	59.5	73.9	75.4	77.3	54.6	49.6	17.1	17.1	48.3

STATION HISTORY

Weather records for Glendive have been made by a number of persons in different locations around the city, but mostly not very far from the city center. There is little information on sites and instrument exposures prior to 1910, but definite location data are on file for all sites since 1911. Observers and periods served by each are listed:

Location	Name	Period of Record
1. In town	No name on record	5/01/89 - 12/31/92
2. In town	J. H. Ray	1/01/93 - 5/31/05
3. In town	W. B. Walker	3/01/06 - 8/16/10
4. Nowlan Avenue & Burry Street	E. C. Leonard	2/07/11 - 10/22/14
5. 410 Meade Avenue	J. W. Heath	10/22/14 - 9/08/19
6. On high school grounds	R. L. Hunt	9/09/19 - 12/31/19
7. Nowlan & Burry until 5/26/23	H. Dickman	1/01/20 - 5/31/22
8. observer moved to unknown address	J. C. Leonard	6/01/22 - 7/31/24
9. 801 N. Kendrick Avenue	J. W. Heath	8/01/24 - 10/31/32
10. Same as No. 9 location	Jim Heath	11/01/32 - 9/30/42
11. 500 ft. SW of Post Office	O. A. Lammer	10/01/42 - 8/31/47
12. Same as No. 11	M. Heidegard	9/01/47 - 5/31/48
13. Montana-Dakota Utilities Co. Plant	Harvey M. Negus	6/01/48 - 12/31/57
14. Same as No. 13	Frank E. Hasty	1/01/58 to date

Glendive, Montana (inches)
Total Precipitation

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1932	0.49	0.42	0.82	2.44	1.93	4.25	1.19	2.00	0.10	2.38	0.46	0.32	16.80
1933	0.81	0.16	0.74	1.08	2.92	3.48	1.67	0.97	0.67	0.70	0.77	0.75	14.70
1934	0.13	0.05	1.04	0.09	0.15	1.98	0.59	0.11	0.32	0.08	0.07	0.22	4.83
1935	0.59	0.06	0.89	1.60	2.45	2.17	3.51	1.42	0.03	0.16	0.62	0.66	14.18
1936	0.63	0.62	0.58	0.46	0.45	1.65	2.15	1.03	0.39	0.18	0.39	0.66	9.19
1937	0.35	0.17	0.83	0.42	0.18	3.18	2.44	0.36	0.77	1.25	0.19	0.38	10.52
1938	0.30	0.65	0.93	0.12	2.36	1.93	1.91	1.63	0.90	0.78	0.53	0.46	10.54
1939	0.59	0.41	0.34	0.65	2.02	3.41	0.74	1.13	0.79	0.07	T	0.44	10.59
1940	0.28	0.57	0.76	3.36	1.10	3.39	1.91	0.29	0.82	1.34	0.34	0.22	14.98
1941	0.12	0.17	0.50	1.22	1.71	2.31	0.87	1.77	3.08	1.33	0.36	0.25	13.69
1942	0.11	0.64	0.64	2.20	4.62	5.39	1.38	2.16	1.15	0.23	0.32	0.37	19.21
1943	1.24	0.11	0.66	1.41	1.07	3.66	2.30	3.17	0.05	0.82	0.20	0.12	14.81
1944	0.54	0.19	1.01	0.80	2.21	5.90	0.50	1.82	1.82	0	0.88	T	15.67
1945	0.33	0.03	0.66	1.87	1.38	3.63	0.51	2.17	1.05	0.21	0.72	0.33	12.89
1946	0.15	0.15	0.70	0.28	2.31	1.95	4.37	0.30	1.97	2.61	0.34	0.58	15.71
1947	0.29	0.16	0.64	1.49	0.65	5.12	3.38	5.98	0.04	0.22	0.34	0.08	18.19
1948	0.27	0.42	0.36	0.86	1.70	5.95	3.84	0.57	0.04	0.07	0.44	0.32	18.19
1949	0.61	0.42	0.52	T	1.11	1.28	1.26	0.60	0.16	2.14	0.02	0.16	8.28
1950	0.30	0.62	1.01	2.07	0.91	1.20	1.35	3.27	3.90	0.45	0.07	0.07	9.90
1951	0.37	0.42	0.12	0.39	1.04	1.20	1.24	2.65	0.86	0.63	0.38	0.60	9.90
1952	0.25	1.23	0.66	0.06	0.42	1.55	2.03	0.97	0.55	0.02	0.58	0.05	8.37
1953	0.17	0.36	0.66	2.28	4.71	3.33	1.28	1.40	0.28	1.85	0.12	0.23	16.67
1954	0.55	0.55	0.81	0.71	0.95	3.01	0.26	3.27	2.16	0.51	0.12	0.07	12.97
1955	0.31	0.54	0.13	1.03	1.84	2.80	2.58	0.09	0.55	0.31	0.42	0.42	10.63
1956	0.22	0.16	0.28	0.21	2.43	2.97	1.56	1.79	0.90	0.10	0.62	0.22	11.46
1957	0.61	0.36	0.90	2.01	2.23	3.96	1.99	1.03	1.59	0.77	0.44	0.02	15.91
1958	0.13	0.27	0.22	0.83	0.15	3.29	2.78	0.29	0.09	0.52	1.22	0.31	10.17
1959	0.61	0.60	0.17	0.48	1.04	2.27	0.73	0.58	1.45	0.52	0.61	0.16	9.22
1960	0.21	0.23	0.47	0.54	1.38	2.51	0.75	1.59	0.06	0.23	0.34	0.27	8.58
1961	0.09	0.85	0.40	2.32	0.83	3.48	1.12	0.42	2.67	0.05	0.19	0.06	12.48

STATION HISTORY - Cont'd

The elevation has changed very little from site to site, and has been carried as 2076 ft. through-out the period of record. The maximum distance between sites is less than 3/4 mile. The changes, although there have been several, have not been large enough to have much effect on the larger climate elements measured at this type of station, and all records are considered representative of the Glendive vicinity. There were no records for two periods, 5/31/05-3/1/06 and 8/16/10-2/7/11. All records carried in the tables were made with standard rain gage and thermometers exposed in a cotton-region shelter. A second station has operated since 5/1/52 at radio station KGGN, but since neither shelter nor rain gage have been standard, the records are not comparable with those made at location No. 13.