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 Montana - Sidney

U.S. DEPARTMENT OF COMMERCE
 ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
 IN COOPERATION WITH AGRICULTURAL EXPERIMENT STATION
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 24

LATITUDE 47° 44'
 LONGITUDE 104° 09'
 ELEV. (GROUND) 1920

CLIMATOLOGICAL SUMMARY

STATION Sidney, Montana

MEANS AND EXTREMES FOR PERIOD 1911-1922, 1949-1966 (28 years)

Month	Temperature (°F)								** Mean degree days	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 above	32° and below	32° and below		0° and below
(a)	28	28	28	28		28		16	28	28		24	24	28		28	28	28	28	28			
JAN.	20.8	-2.3	9.3	58	1962+	-47	1913	1685	.34	.35	1911	5.1	13.5	1965	8.5	1951	1	0	22	31	17	JAN.	
FEB.	27.1	4.6	15.9	67	1958	-44	1917	1335	.35	.64	1954	4.5	11.7	1922	5.5	1922	1	0	17	28	12	FEB.	
MAR.	37.2	13.8	25.5	77	1966	-20	1951+	1206	.50	.80	1963	5.2	11.3	1920	7.0	1914+	1	0	11	30	6	MAR.	
APR.	56.0	29.3	42.7	92	1952	-5	1954	683	1.04	1.75	1912	2.5	6.8	1911	5.5	1950	3	*	1	19	*	APR.	
MAY	68.0	40.7	54.4	96	1964	19	1954	330	1.99	1.94	1911	.2	3.0	1965	3.0	1965	5	*	0	4	0	MAY	
JUNE	76.5	49.6	63.1	100	1956	28	1915	109	2.65	2.14	1914	0	-	-	0	-	6	2	0	*	0	JUNE	
JULY	83.6	53.8	68.7	110	1917	39	1958+	25	2.10	2.45	1916	0	-	-	0	-	5	8	0	0	0	JULY	
AUG.	82.7	51.6	67.2	105	1949	31	1911	49	1.75	2.94	1914	0	-	-	0	-	4	7	0	*	0	AUG.	
SEPT.	70.3	41.2	55.8	98	1960	15	1961	296	1.30	1.53	1911	.2	2.0	1965+	2.0	1965+	3	1	0	4	0	SEPT.	
OCT.	59.0	30.7	44.9	92	1953	-7	1919	586	.86	1.30	1915	1.8	14.5	1919	7.0	1964	2	*	*	17	0	OCT.	
NOV.	40.9	17.9	29.4	72	1949	-19	1955	1058	.34	.65	1915	3.7	20.0	1958	5.0	1958	1	0	7	28	3	NOV.	
DEC.	29.0	7.1	18.1	65	1912	-32	1916	1424	.28	.50	1921	4.1	12.4	1964	6.0	1916	1	0	16	31	10	DEC.	
Year	54.3	28.2	41.3	110	July 1917	-47	Jan. 1913	8786	13.50	2.94	Aug. 1914	27.3	20.0	Nov. 1958	8.5	Jan. 1951	33	18	74	192	48	Year	

(a) Average length of record, years.

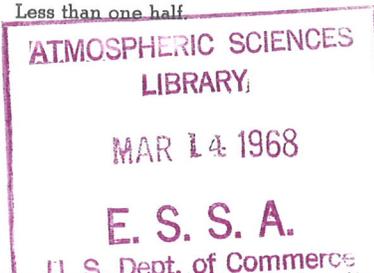
T Trace, an amount too small to measure.

** Base 65°F

+ Also on earlier dates, months, or years.

* Less than one half.

CLIMATE OF SIDNEY, MONTANA



In its location in the lower Yellowstone Valley about 20 miles upstream from the river's confluence with the Missouri near the North Dakota border, Sidney lies at a lower elevation than any other Montana city of comparable size. The area is some distance from mountains of any consequence, but the general character is quite hilly away from the actual valley floor. The Yellowstone River here runs about from the SSW to the NNE, but with a winding water course. While these features have local effects on climate in the area, the variations are not as large within short distances as in the more mountainous parts of the State — such as along the Yellowstone above Billings. The data herein, then, may apply fairly well to quite a large section of the valley in the Sidney area.

In general terms the climate of this part of Montana may be classified as almost ideally "continental", with warm summers, cold winters, fairly long growing seasons, wide ranges in annual temperatures, and the wet half of the year occurring during the warmer months. One of the more important features is that 80 per cent of the annual average precipitation falls normally during the so-called 6-month growing season April 1 - September 30, with the important crop growth months June and July being the wettest. Another important item is that winter snowfall is usually rather light — averaging less than 28 inches a year with March the snowiest month. Even though the annual average total precipitation is but 13.50 inches, the fact that nearly 11 inches of that total comes outside the cold season makes it possible for the surrounding countryside to support an extensive and quite dependable dry-land agriculture. Variations in average precipitation with distance in this area are quite small; however, differences between individual storms can be large, particularly in shower or thunderstorm conditions.

The tables above and on the reverse describe quite well many of the features of the Sidney area. One can note, for example, that 100° heat has occurred at least once in June, July, and August, but also that 90° heat occurs on the average only 18 times a summer. The range of average temperature between January (coldest month) and July (warmest) is about 50° — not large for a continental climate where this difference may be 60° or larger. Sidney, in fact, is not as hot in the summer as some of the valley upstream; from Glendive to Miles City, for example. Summers are warm as a whole, but oppressive combinations of heat and humidity don't occur very often — perhaps only once or twice a season for short periods. The warm season has much sunny weather, sometimes giving way to afternoon shower or thundershower clouds, but the sun shines roughly 75 to 80 per cent of the time April 1 - September 30, and about half the time during the winter months.

Winters, while cold, are not as cold as commonly thought. Subzero readings 0° or colder do occur about 48 days a year, but really bitter cold (-20° or colder) is not very common. On only 72 days an average year does the maximum fail to rise above the freezing point of water. Freeze-free seasons are long enough to permit an extensive agriculture to flourish. Between 32° occurrences spring and fall, for example, the average length of season is about 130 days. Severe storms, while not common, can and do occur. The most troublesome type in this part of Montana is the summer hail-storm which can cause crop damage of varying degree. These storms don't strike every year, however, and when they do damage is seldom widespread. Other types causing occasional concern are wind, blizzards, and cold waves. Tornadoes are rare.

SIDNEY, MONTANA
Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1911	5.5	12.2	35.0	43.0	55.4	67.6	65.9	63.7	55.6	44.0	18.2	19.9	40.5
1912	3.2	15.5	12.0	44.9	53.8	61.6	67.2	64.1	50.4	44.6	37.3	30.2	40.4
1913	11.7	17.0	22.4	48.3	54.3	67.0	66.4	69.4	56.5	39.8	35.6	21.5	42.4
1914	19.6	8.2	28.3	43.0	54.1	62.1	72.4	64.9	57.7	47.2	35.2	8.4	41.8
1915	10.8	19.4	21.8	54.2	52.8	57.2	62.0	66.4	52.6	47.0	30.9	20.1	41.2
1916	-7.8	11.3	25.6	41.7	48.4	59.0	71.8	64.9	54.9	40.8	29.4	4.7	38.4
1917	8.4	2.6	21.5	38.2	51.7	61.0	74.0	68.0	56.8	45.8	-	-	-
1918	-	-	-	-	-	-	-	-	-	-	-	-	-
1919	-	-	-	-	-	-	-	-	-	-	-	-	-
1920	11.0	19.7	28.0	34.8	56.3	64.6	72.6	70.8	57.9	47.8	30.2	21.4	42.9
1921	23.4	26.8	29.6	42.8	55.8	71.1	71.5	70.6	58.2	50.9	22.3	17.6	43.4
1922	10.0	1.0	27.4	43.2	56.8	63.1	69.8	73.4	64.4	-	-	-	-
1949	-	-	-	50.9	58.2	63.3	68.0	70.8	55.6	43.8	41.1	12.0	-
1950	-8.7	14.9	22.2	36.7	51.1	61.7	65.4	62.7	55.3	46.0	24.6	16.0	37.3
1951	7.3	13.3	13.6	38.5	54.7	59.7	69.8	64.9	53.2	42.1	6.7	6.7	37.5
1952	6.3	19.7	17.6	50.5	57.8	66.0	66.3	68.1	60.2	44.9	31.1	20.9	42.4
1953	18.8	25.1	29.5	37.1	50.6	63.2	69.2	68.0	56.5	50.1	37.5	26.3	44.3
1954	2.2	34.6	22.2	36.7	51.0	58.7	66.2	64.6	43.5	39.0	27.1	42.4	39.5
1955	15.1	11.5	22.8	47.8	55.6	61.4	69.8	69.3	55.8	46.1	16.4	9.4	40.1
1956	8.1	14.2	28.6	36.3	54.6	67.9	66.1	65.8	54.6	45.2	31.6	20.9	41.2
1957	2.3	15.9	29.3	39.9	55.2	61.3	72.1	66.8	55.3	42.9	31.5	26.8	41.6
1958	24.1	17.0	25.7	45.2	59.3	58.5	63.5	68.9	57.3	46.0	29.2	17.0	42.7
1959	11.2	6.0	35.0	42.5	51.1	65.0	70.8	67.5	54.1	38.8	23.8	28.3	40.7
1960	7.0	15.1	22.4	42.7	54.8	61.0	70.8	66.2	58.1	46.3	29.0	20.1	41.5
1961	20.7	22.2	36.8	39.2	55.2	67.9	67.9	70.9	50.0	45.1	29.9	12.3	43.2
1962	13.4	13.3	23.0	45.9	52.9	64.2	64.9	66.9	54.7	48.1	36.5	23.7	42.3
1963	5.1	22.0	24.5	42.6	57.6	63.3	70.6	67.8	51.8	52.3	33.0	15.6	43.7
1964	20.6	27.5	36.2	45.9	53.2	62.5	71.5	65.3	53.4	47.5	3.1	3.1	42.0
1965	6.2	13.2	13.3	42.2	52.8	63.8	69.2	65.5	45.5	49.5	28.3	23.6	39.4
1966	.2	11.0	34.0	37.9	55.2	62.4	70.5	63.5	60.0	45.6	24.1	20.4	40.4

STATION HISTORY

The record summarized herein consists of two segments; the first covering years 1910-1922 (except parts of 1918-1919), the second, years 1949-1966, inclusive. Differences in location, as far as climate factors are concerned, were small, and the records are considered to be a fair sample of Sidney climate. Observers during record periods were:

Fred W. Arndt
P. F. Blake
Peter Anderson, Sr.
F. W. Amsden
No records
Eastern Montana Branch
Experiment Station

3/01/10 - 10/31/12
11/01/12 - 2/28/18
10/15/19 - 10/31/21
11/01/21 - 9/30/22
10/01/22 - 3/31/49

4/01/49 to date

For the earlier segment of record the instruments appear to have been located within the city, but historical notes are not complete enough to support a firm conclusion. They were, however, near enough to be representative. Since 1949 the site has been about one mile northeast of the Post Office.

SIDNEY, MONTANA
Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1911	.94	.60	.16	1.04	3.13	1.18	1.12	2.10	3.18	.74	.80	.41	15.40
1912	.58	.15	.80	3.69	3.64	.64	3.15	2.85	1.44	1.93	.07	.04	18.98
1913	.34	T	.38	.09	1.93	1.47	1.34	2.27	.90	1.89	T	T	9.61
1914	.20	.08	.35	.02	1.49	6.13	2.34	3.48	1.21	.88	.02	.11	16.31
1915	.14	.08	T	.03	2.55	1.44	4.17	.45	2.10	1.94	.65	.50	14.05
1916	.59	.33	.64	1.08	1.47	4.13	3.38	2.38	3.49	.86	.32	.69	19.36
1917	.25	.26	.32	.78	.47	2.11	2.25	.76	.67	-	-	-	7.87
1918	-	.29	-	-	-	-	-	-	-	-	-	-	7.29
1919	-	-	-	-	-	-	-	-	-	-	-	-	1.75
1920	.63	.08	1.86	1.75	1.09	1.98	2.40	1.01	.73	1.71	.06	.08	13.38
1921	.02	.28	1.01	1.49	.88	2.83	2.57	.07	2.35	T	.33	.64	12.47
1922	.16	.94	.30	1.00	3.99	3.81	1.25	1.22	1.72	-	-	-	14.39
1949	-	-	-	.13	1.33	1.04	1.99	.14	1.13	1.05	.09	.18	6.08
1950	.31	.21	.28	1.38	1.59	5.96	1.51	2.95	3.15	.72	.15	.25	18.46
1951	.35	.24	.10	.26	1.90	.69	.73	2.55	1.23	.76	.12	.28	9.21
1952	.09	.45	.20	.02	.23	2.17	2.91	1.94	.23	.04	.08	.10	8.46
1953	.41	.40	.66	2.39	5.49	6.07	3.77	1.89	.47	1.90	.23	.30	20.58
1954	.51	.76	.98	.74	1.09	2.14	1.78	2.54	2.32	.50	.21	.09	13.66
1955	.32	.49	.20	2.39	2.51	3.35	2.02	.65	.04	.52	.36	.29	13.14
1956	.11	.12	.30	.25	1.90	1.97	3.59	1.12	.62	.29	.41	.36	11.04
1957	.28	.22	.50	2.28	1.69	2.56	2.05	1.54	1.01	1.04	.31	.13	13.61
1958	.15	.72	.13	.48	.04	3.11	2.27	1.00	.32	.85	1.47	.38	10.92
1959	.50	.35	.52	.33	1.20	3.16	.55	.53	2.69	.91	1.13	.14	11.42
1960	.33	.38	.67	1.45	1.65	1.51	1.13	4.20	.02	.10	.37	.34	11.15
1961	.06	.98	.20	1.35	.93	1.35	1.91	.24	2.54	.01	.03	.17	9.77
1962	.37	.41	.76	.34	3.71	1.83	1.91	1.90	.58	2.05	.27	.24	18.80
1963	.38	.61	1.59	2.03	1.92	3.14	1.01	2.91	.29	T	.11	.22	14.21
1964	.25	.05	.52	1.14	1.89	4.74	1.93	2.94	.42	.71	.60	.85	16.04
1965	.78	.10	.32	1.32	5.47	2.06	1.90	1.80	.29	T	.28	.42	16.64
1966	.23	.31	.05	.83	1.42	1.58	1.00	1.48	.38	.67	.32	.20	8.47

MEAN NUMBER OF DAYS WITH PRECIPITATION EQUALING OR EXCEEDING 0.10 OR 0.50 INCH (1951-1960)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
0	1	1	1	3	1	4	1	1	1	3	2	0	34
1	0	1	1	1	1	1	1	1	1	1	0	0	5

+ = less than half

SELECTED PRECIPITATION PROBABILITIES (PERIOD OF RECORD)
(Examples: 1 May in 10 will have .4700 or less, 7 Mays in 10 will have 2.55 or less
9 in 10 in May will have 3.71 or less, 1 in 10 3.71 or more)

	1 in 10	2 in 10	3 in 10	4 in 10	5 in 10	6 in 10	7 in 10	8 in 10	9 in 10
May	.47	.93	1.20	1.58	1.90	2.25	2.55	2.85	3.15
June	1.04	1.44	1.82	2.20	2.55	2.90	3.20	3.50	3.80
July	.73	1.12	1.34	1.58	1.82	2.06	2.30	2.54	2.78
Aug	.24	.65	1.01	1.34	1.67	2.00	2.33	2.66	2.99
Sept	.13	.32	.47	.62	.77	.92	1.07	1.22	1.37

The September probabilities indicate that that month has a greater potential for being dry than any of the five sampled.