U. S. DEPARTMENT OF COMMERCE
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CLIMATOGRAPHY OF THE UNITED STATES NO. 81-12

DECENNIAL CENSUS OF UNITED STATES CLIMATE—

MONTHLY NORMALS OF TEMPERATURE, PRECIPITATION, AND HEATING DEGREE DAYS

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PREFACE

The climatological standard normals presented in this publication are based on records for the 30-year period 1931-1960 inclusive. For the first time, normals have been computed for substations and divisions using a base period identical to that used for first-order stations.

Previous normals were published in Weather Bureau Technical Paper No. 31, "Monthly Normal Temperatures, Precipitation, and Degree Days," and were based on records for the period 1921-1950. Earlier sets of normals are described in [1].

This is the first series of publications resulting from the project "The Decennial Census of United States Climate, 1960." The project is a continuation of earlier censuses of the climate of the United States that date back to the early 19th Century and are described in [2]. Future publications of this project will be listings of daily normals of temperature, and degree days; summaries of hourly observations; and listings of monthly divisional averages of temperature and precipitation.

Units used in this publication are degrees F. for temperatures, and inches for precipitation. The heating degree day normals are derived from the monthly normal temperatures, and are computed on the standard base of 65°F. Monthly normals of less than 5 degree days are shown as zero.

Standard Normals for Weather Bureau First Order Stations

A normal of a climatological element is an arithmetic mean for a specific period of record which estimates the true mean of the element at the current exposure of the meteorological instrument measuring the element. The true mean is the mean of all possible observations (population) at the current exposure. It is from this population that future observations will come, not from values in the past record. This is what makes it important to obtain an estimate of this mean. The true mean can never be known exactly but must be estimated from a sample of the past record ([3] p. 53 section 4. 3). The normals presented here are estimates of the true mean obtained from the 30-year sample record 1931-1960. They are called standard normals because they conform to the World Meteorological Organization standard for climatological normals.

If no exposure changes have occurred at a station the normal is estimated by simply averaging the 30 values from the 1931-1960 record. Since it is next to impossible to maintain a multiple purpose network of meteorological stations without having exposure changes, it is first necessary to find and evaluate these changes and then make adjustments for them if necessary.

Heterogeneities in record due to exposure changes are found in two ways: by determining them from the station histories and by use of statistical tests. The statistical test when standardized for the purpose is easy to apply and will often find heterogeneities which are not defined by the station histories as well as those which have been so determined. Two statistical tests were employed: one for temperature and the other for precipitation. These are described in [4].

After the periods of heterogeneity have been determined, adjustments are applied to remove the heterogeneities introduced into the mean. This is done by comparing the record at the base station, for which the normal is desired, to the record at a supplementary station with a homogeneous period which covers the heterogeneous period at the base station. The difference method is applied to the monthly average maximum and minimum temperatures and the ratio method to the monthly total precipitation. A weighted average of the various partial means of the adjusted and unadjusted record is then prepared to give the normal. Brief discussions of the methods of adjustment are found in [3] (p. 49, section 4. 24).

Normal heating degree days are derived by the method described in [5].

Normals for Substations and Divisions

Normals for substations were computed somewhat differently than those for first-order stations. Monthly substation normals are the simple arithmetic averages of the monthly values of temperature and precipitation for the period 1931-1960. These were computed for only those substations that were active during the entire period and no attempt was made to adjust for minor changes in location of the observing site, or for changes in the time of observation. Normals were not computed for substations that were moved a significant distance during the 1931-1960 period. Missing values in the data series were estimated by methods described in [6]. Substations whose locations were essentially unchanged during the 1931-1960 period are identified in the tables.

Monthly divisional normals are the means of the monthly divisional averages of temperature and precipitation for the period 1931-1960. In calculating the monthly divisional averages, all of the stations in the division that furnished both temperature and precipitation data during the particular month were used. The averages therefore were obtained from a variable station sample. As a result, the divisional normals often differ from the averages of the normals for stations in the division.

Annual substation and divisional normals are the averages of the 12 monthly temperature normals and the sums of the 12 monthly precipitation normals.

References

1. U. S. Weather Bureau, "History of Climatological Publications," Key to Meteorological Records Documentation No. 4. 1, Washington, D. C., 1958.

2. H. E. Landsberg, "The Decennial United States Census of Climate 1960 and Its Antecedents," Key to Meteorological Records Documentation No. 6. 2, U. S. Weather Bureau, Washington, D. C., 1960.

3. U. S. Weather Bureau, Climatology at Work, Gerald L. Barger, ed., Washington, D. C., 1960.

4. H. C. S. Thom, "Tests of Significance for Temperature and Precipitation Normals," U. S. Weather Bureau Manuscript, 1961.

5. H. C. S. Thom, "The Rational Relationship Between Heating Degree Days and Temperature," Monthly Weather Review, Vol. 82, No. 1, January 1954.

6. U. S. Weather Bureau, Administrative Manual, Vol. III, Chap. C-05, paras. C-0509 and C-0510.

NOTES

1. Station Names

In Table I, "AP" after the city name indicates "airport station" "CO" indicates "city office station." Figures and letters following the station name indicate a rural location, and refer to the distance and direction of the station from the nearest post office.

# indicates a station whose location has been essentially unchanged during the period 1931-1960.

H indicates the ground elevation of the station in feet above sea level, as of December 31, 1960.

G indicates the elevation at hygrothermometer site (where different from "H").

T indicates the height of the thermometer in feet above the ground as of December 31, 1960.

/NO TEST/ indicates that significant difference tests were not made.

2. Table Content

* indicates that the departure of the 1951-60 record from the 1921-50 normal is statistically significant, but through the adjustments for changes in location and exposure the absolute difference between old and new normals may even in these cases be very small.

T in the data tables indicates a monthly precipitation amount of only a trace.

February monthly normals are for a 28-day month.

TABLE I - NORMALS FOR FIRST ORDER STATIONS

STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
#CONCORDIA CO	H1375 T 51													
MAX TEMP		37.3	41.8	50.5*	64.1*	73.9	85.3	91.6	90.2	81.2	69.7	52.3	41.7	65.0
MIN TEMP		18.6	22.3	30.0	42.6	53.3	63.8	69.1	67.8	58.1	46.3	31.6	23.3	43.9
AVG TEMP		28.0	32.1	40.3*	53.4*	63.6	74.6	80.4	79.0	69.7	58.0	42.0	32.5	54.5
DEG DAYS		1147	921	766*	354*	140	18	0	0	54	267	690	1008	5365
PRECIP		.70	.91	1.49	2.12	3.89	4.20	2.83*	3.15	2.73	1.68	.98	.71	25.39
DODGE CITY AP	H2594 T 6													
MAX TEMP		42.4	46.6	54.3	66.1*	75.5	86.8*	92.8*	91.7	82.9	71.1	55.1	45.8*	67.6
MIN TEMP		19.7	23.3	29.3	41.1	51.9*	61.9*	67.5	66.6	57.6	45.5	30.4	23.6	43.2
AVG TEMP		31.1	35.0	41.8	53.6*	63.7*	74.4*	80.2*	79.2	70.3	58.3	42.8	34.7*	55.4
DEG DAYS		1051	840	719	354*	124*	9*	0	0	33	251	666	939*	4986
PRECIP		.57	.70	1.16	1.84	3.22	3.03	2.31	2.36*	1.53	1.42	.64	.47	19.25
GOODLAND AP	H3645 T 5													
MAX TEMP		40.9*	44.5	50.3	62.3	72.1	84.3*	91.8	89.7	81.2	68.6	52.1	43.5*	65.1
MIN TEMP		13.9	17.2	22.7	33.9	44.8	55.0	61.3	59.7	49.7	37.5	23.9	17.3	36.4
AVG TEMP		27.4*	30.9	36.5	48.1	58.5	69.7*	76.6	74.7	65.5	53.1	38.0	30.4*	50.8
DEG DAYS		1166*	955	884	507	236	42*	0	6	81	381	810	1073*	6141
PRECIP		.39	.51	1.06	1.59*	2.41	2.66	2.67	2.28	1.24	.76	.49	.44	16.50
TOPEKA AP	H 877 T 5													
MAX TEMP		38.5	43.7	53.0	66.1	75.8	85.9*	91.6	90.1	82.3*	71.2	54.2	43.1	66.3
MIN TEMP		19.0	22.5	30.4	42.6	53.0	63.5	68.1	66.7	56.5	45.1	31.0	23.6	43.5
AVG TEMP		28.8	33.1	41.7	54.4	64.4	74.7*	79.9	78.4	69.4*	58.2	42.6	33.4	54.9
DEG DAYS		1122	893	722	330	124	12*	0	0	57*	270	672	980	5182
PRECIP		1.02	1.05*	2.01	3.29	4.38	4.51	3.60*	4.29	2.98	2.34	1.50	1.39	32.36
WICHITA AP	H1321 T 5													
MAX TEMP		41.6	47.0	55.9	68.2	77.1	87.7*	92.4	92.8	83.7	71.7	55.1	44.9	68.2
MIN TEMP		22.3	25.6	33.0	45.2	54.9*	65.2	69.4	68.8	58.9	48.0	33.7*	26.6	46.0
AVG TEMP		32.0	36.3	44.5	56.7	66.0*	76.5*	80.9	80.8	71.3	59.9	44.4*	35.8	57.1
DEG DAYS		1023	804	645	270	87*	6*	0	0	33	229	618*	905	4620
PRECIP		.81*	.92	1.64	2.30*	3.97	4.21	3.64	2.87	3.22	2.40	1.49	.94	28.41

TABLE II - NORMALS BY CLIMATOLOGICAL DIVISIONS

STATIONS (By Divisions)	TEMPERATURE (°F) JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	PRECIPITATION (In.) JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL
NORTHWEST DIVISION																										
ATWOOD	29.2	33.1	39.8	51.3	61.5	72.0	78.3	76.8	67.4	55.3	40.4	32.6	53.1	.51	.63	1.37	1.98	3.00	3.00	2.74	2.19	1.45	1.06	.70	.51	19.14
BIRD CITY 1 S	•	•	•	•	•	•	•	•	•	•	•	•	•	.46	.53	1.26	1.76	2.88	2.83	2.52	2.25	1.24	.85	.49	.42	17.49
COLBY 1 SW	28.9	32.5	38.8	50.8	60.7	71.5	78.0	76.4	67.5	55.2	39.9	32.2	52.7	.45	.56	1.34	1.78	2.65	3.22	2.93	2.24	1.11	1.03	.60	.43	18.34
DRESDEN	•	•	•	•	•	•	•	•	•	•	•	•	•	.52	.68	1.43	2.12	3.45	3.75	2.85	2.39	1.85	1.03	.81	.50	21.38
GOODLAND AP	27.4	30.9	36.5	48.1	58.5	69.7	76.6	74.7	65.5	53.1	38.0	30.4	50.8	.39	.51	1.06	1.59	2.41	2.66	2.67	2.28	1.24	.76	.49	.44	16.50
HILL CITY FAA AIRPORT	28.9	32.8	40.0	52.6	62.8	73.9	80.4	79.1	69.6	57.1	41.0	32.5	54.2	.58	.73	1.57	2.10	3.27	3.84	2.73	2.55	1.88	1.30	.74	.51	21.80
#HOXIE	29.7	33.4	40.1	52.6	62.5	73.1	79.3	78.0	68.8	56.8	41.3	33.1	54.1	.47	.64	1.26	1.83	3.09	3.32	2.80	2.36	1.50	1.15	.71	.49	19.62
#NORTON 8 SSE	28.3	31.9	39.3	52.0	62.0	72.6	79.0	77.6	68.5	56.6	40.6	32.0	53.4	.49	.61	1.08	2.05	3.29	3.55	2.91	2.38	1.72	1.15	.72	.43	20.38
OBERLIN	28.2	32.4	39.7	52.0	62.1	72.7	78.8	77.3	68.0	55.6	39.5	31.5	53.2	.40	.49	1.09	1.75	2.91	3.20	2.72	2.35	1.57	.95	.60	.39	18.42
SAINT FRANCIS	30.0	34.0	40.2	51.7	61.4	71.7	78.2	76.5	67.2	55.3	40.7	33.3	53.4	.46	.49	1.14	1.84	3.20	2.93	2.59	2.45	1.54	.97	.58	.44	18.63
DIVISION	29.0	32.8	39.6	51.8	61.8	72.5	78.9	77.4	68.1	56.0	40.5	32.5	53.4	.48	.60	1.26	1.92	3.09	3.31	2.76	2.33	1.57	1.07	.68	.47	19.54
NORTH CENTRAL DIVISION																										
#ALTON 6 E	28.5	32.9	41.0	53.5	63.0	74.2	80.3	79.2	70.0	57.8	41.7	32.4	54.5	.72	.89	1.45	2.29	3.27	4.03	2.89	2.86	2.44	1.37	.98	.64	23.83
BELOIT 1 ESE	•	•	•	•	•	•	•	•	•	•	•	•	•	.60	.77	1.43	2.28	3.90	4.14	3.51	3.17	2.46	1.61	.92	.69	25.48
CLAY CENTER	29.3	33.7	42.4	55.3	64.8	75.3	80.9	79.8	70.8	59.3	43.0	33.1	55.6	.92	1.06	1.78	2.37	4.22	4.65	3.80	3.83	3.05	2.01	1.19	.87	29.75
#CONCORDIA CO	28.0	32.1	40.3	53.4	63.6	74.6	80.4	79.0	69.7	58.0	42.0	32.5	54.5	.70	.91	1.49	2.12	3.89	4.20	2.83	3.15	2.73	1.68	.98	.71	25.39
MINNEAPOLIS 2	29.9	34.2	42.8	55.5	65.0	76.0	81.8	80.8	71.5	59.6	43.5	34.0	56.2	.66	.85	1.43	2.51	4.22	4.03	3.22	3.56	3.21	1.74	1.02	.64	27.09
PHILLIPSBURG	28.3	32.4	40.3	53.3	63.5	74.4	80.6	79.3	69.7	57.5	41.4	32.3	54.4	.51	.75	1.32	2.34	3.22	3.74	2.81	2.80	2.14	1.40	.79	.52	22.34
PLAINVILLE	29.4	33.3	40.7	53.2	63.0	74.0	80.1	78.9	69.8	58.0	42.1	33.2	54.6	.57	.87	1.49	2.23	3.55	4.43	2.86	2.81	2.21	1.30	.92	.63	23.87
SMITH CENTER 1 SW	•	•	•	•	•	•	•	•	•	•	•	•	•	.41	.66	1.31	1.94	3.37	4.02	2.76	2.83	2.14	1.30	.73	.48	21.95
DIVISION	28.2	32.5	40.9	53.7	63.6	74.4	80.4	79.3	69.9	57.9	41.7	32.3	54.6	.63	.83	1.45	2.29	3.73	4.30	3.13	3.14	2.63	1.56	.94	.65	25.28
NORTHEAST DIVISION																										
#ATCHISON	28.7	32.9	41.8	54.7	64.4	74.1	79.1	77.6	69.2	58.5	43.0	33.2	54.8	1.12	1.11	2.24	3.11	4.35	5.49	3.72	4.33	3.63	2.36	1.67	1.40	34.53
BLUE RAPIDS	•	•	•	•	•	•	•	•	•	•	•	•	•	.75	.88	1.62	2.29	3.99	4.67	3.51	3.82	3.51	2.02	1.11	.82	28.99
CENTRALIA	27.3	31.6	40.4	53.4	63.4	73.7	79.0	77.7	69.0	57.7	41.7	31.7	53.9	.97	1.07	1.82	2.63	4.36	4.97	3.45	4.38	3.90	2.18	1.36	.99	32.08
EMMETT	•	•	•	•	•	•	•	•	•	•	•	•	•	1.01	.97	2.11	2.87	4.15	4.54	3.41	4.16	3.34	2.17	1.53	1.23	31.49
HOLTON	•	•	•	•	•	•	•	•	•	•	•	•	•	.97	.89	1.93	2.86	4.29	5.35	3.48	4.31	3.77	2.30	1.62	1.21	32.98
HORTON	27.1	31.4	40.5	53.7	63.5	73.5	78.4	76.8	68.2	56.9	41.5	31.6	53.6	1.02	.98	2.03	2.98	4.64	5.95	3.62	4.17	3.93	2.34	1.55	1.21	34.42
LEAVENWORTH	30.2	34.3	43.0	55.6	65.3	75.1	79.8	78.5	70.1	59.4	44.0	34.3	55.8	1.26	1.20	2.33	2.98	4.79	5.42	3.73	4.09	3.87	2.74	1.89	1.43	35.73
MANHATTAN NO 2	29.6	33.8	42.5	55.3	65.0	75.4	80.7	79.7	70.6	59.1	43.3	33.6	55.7	.86	.96	1.71	2.60	4.37	5.11	4.00	4.18	3.71	2.32	1.24	.94	32.00
WAMEGO	30.0	34.4	43.0	55.9	65.6	75.6	80.8	79.7	71.1	59.7	43.9	34.0	56.1	.87	.93	1.78	2.47	4.27	4.96	3.89	4.07	3.23	2.18	1.41	1.13	31.19
DIVISION	28.6	33.1	41.4	54.5	64.3	74.5	79.4	78.2	69.7	58.5	42.6	32.7	54.8	1.01	1.02	1.99	2.89	4.46	5.40	3.67	4.19	3.66	2.30	1.45	1.18	33.22
WEST CENTRAL DIVISION																										
HEALY	30.0	33.5	40.5	52.4	62.3	73.2	79.2	77.9	69.0	56.7	41.1	33.2	54.1	.42	.51	1.19	1.68	3.10	2.84	2.52	2.65	1.37	1.30	.67	.40	18.65
LEOTI	29.5	33.4	39.7	51.3	61.4	72.2	78.1	76.7	67.9	55.5	40.2	32.6	53.2	.48	.52	1.11	1.76	2.74	3.12	2.53	2.29	1.20	1.06	.65	.41	17.87
NESS CITY	•	•	•	•	•	•	•	•	•	•	•	•	•	.57	.72	1.36	1.96	3.18	3.08	2.65	2.71	1.53	1.22	.75	.51	20.24
OAKLEY	30.2	33.8	40.2	52.0	61.6	72.4	78.4	77.2	68.6	56.8	41.5	33.6	53.9	.59	.61	1.42	1.98	2.90	3.27	2.95	2.40	1.39	1.16	.63	.49	19.79
QUINTER	28.2	31.4	38.3	50.7	61.1	72.3	78.8	77.5	68.0	55.9	40.0	31.9	52.8	.53	.67	1.58	2.04	3.19	3.96	2.72	2.62	1.73	1.29	.73	.49	21.55
SCOTT CITY	30.8	34.6	41.3	53.0	62.7	73.3	79.0	77.6	68.9	56.9	41.5	32.7	54.4	.54	.52	1.15	1.83	2.95	3.17	2.71	2.52	1.31	1.29	.78	.40	19.17
SHARON SPRINGS	•	•	•	•	•	•	•	•	•	•	•	•	•	.45	.50	1.19	1.79	2.58	2.92	2.54	2.38	.87	.95	.55	.45	17.17
TRIBUNE 1 W	29.7	33.5	39.5	50.7	60.6	71.3	77.0	75.5	67.0	54.8	39.8	32.7	52.7	.42	.44	.96	1.47	2.52	2.85	2.39	2.43	1.00	.90	.52	.36	16.26
WAKEENEY	30.1	33.7	40.6	52.8	62.6	73.3	79.5	78.2	69.3	57.5	42.0	33.6	54.4	.55	.69	1.49	2.05	3.60	3.87	2.43	2.68	2.07	1.28	.80	.52	22.03
DIVISION	30.0	33.6	40.1	52.0	61.9	72.8	78.7	77.4	68.6	56.5	41.0	33.1	53.8	.50	.57	1.26	1.84	2.97	3.22	2.62	2.51	1.40	1.16	.67	.45	19.17
CENTRAL DIVISION																										
BISON	30.4	34.2	41.9	54.1	64.0	75.2	80.9	80.0	71.0	58.7	42.7	33.8	55.6	.57	.80	1.34	1.97	3.16	3.57	2.94	2.90	2.07	1.59	.85	.57	22.33
ELLSWORTH	30.1	34.0	42.2	55.1	64.9	76.2	81.8	80.8	70.9	58.9	43.0	33.9	56.0	.74	1.06	1.68	2.38	4.13	3.50	2.97	3.19	2.94	1.70	1.05	.86	26.20
#FLORENCE	•	•	•	•	•	•	•	•	•	•	•	•	•	.87	1.10	1.93	2.65	4.53	4.60	3.61	3.43	3.62	2.66	1.41	1.14	31.55
GREAT BEND	•	•	•	•	•	•	•	•	•	•	•	•	•	.66	.89	1.46	1.99	3.63	3.93	3.02	2.70	2.05	1.57	.88	.68	23.46
#HAYS 1 S	28.9	32.6	40.5	53.1	63.0	74.1	80.0	78.9	69.8	57.4	41.3	32.3	54.3	.47	.67	1.23	2.04	3.87	4.03	2.71	2.94	2.24	1.29	.84	.54	22.87
HERINGTON 3 WSW	29.8	33.9	42.3	54.7	64.1	74.4	79.7	78.9	70.2	58.9	43.2	33.6	55.3	.88	1.09	1.75	2.50	4.56	4.58	3.66	3.30	3.27	2.41	1.41	1.01	30.42
LINCOLN 1 ESE	29.8	34.1	42.6	54.9	64.7	76.2	81.9	81.0	71.6	59.2	43.0	33.5	56.0	.54	.77	1.31	2.26	3.98	3.61	2.85	2.99	2.92	1.64	1.01	.72	24.60
#LINDSBORG	•	•	•	•	•	•	•	•	•	•	•	•	•	.82	1.16	1.79	2.64	4.22	4.09	3.24	3.36	3.07	2.45	1.19	.95	28.98
MARION	•	•	•	•	•	•	•	•	•	•	•	•	•	.92	1.13	1.75	2.44	4.41	4.43	3.66	3.29	3.85	2.31	1.37	1.21	30.77
MC PHERSON 2 S	31.1	35.3	43.6	56.1	65.3	76.2	81.8	81.0	71.8	60.1	44.2	34.8	56.8	.84	1.10	1.74	2.41	4.28	3.89	2.98	2.95	3.01	2.05	1.24	.90	27.39
DIVISION	29.9	34.3	42.0	54.6	64.2	75.3	80.8	79.9	70.7	58.7	42.8	33.6	55.6	.70	.94	1.54	2.35	4.04	3.91	3.12	3.03	2.73	1.90	1.04	.81	26.11

TABLE II - NORMALS BY CLIMATOLOGICAL DIVISIONS

KANSAS

STATIONS (By Divisions)	TEMPERATURE (°F) JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	PRECIPITATION (In.) JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL
EAST CENTRAL DIVISION																										
BURLINGTON	32.0	36.6	44.6	56.7	65.8	75.4	80.3	79.7	71.3	60.3	45.2	35.8	57.0	1.19	1.25	2.59	3.78	5.34	4.87	4.23	4.04	4.38	2.99	1.94	1.41	38.01
COTTONWOOD FALLS	31.4	35.5	44.0	55.7	64.9	75.1	80.3	79.6	71.0	59.7	44.2	35.0	56.4	.92	1.03	1.78	2.88	4.22	4.46	4.20	3.57	4.19	2.45	1.49	1.22	32.41
COUNCIL GROVE	29.9	34.1	42.6	55.1	64.8	74.8	79.8	79.0	70.1	58.8	43.3	33.8	55.5	.95	1.09	1.95	2.82	4.93	5.16	4.02	3.94	3.62	2.42	1.43	1.26	33.59
EMPORIA 1 S	•	•	•	•	•	•	•	•	•	•	•	•	•	1.02	1.07	2.15	3.15	4.90	4.84	4.12	3.88	4.12	2.76	1.58	1.32	34.91
ESKRIDGE	29.5	33.7	41.9	54.6	64.4	74.0	79.2	78.1	69.8	58.9	43.2	33.4	55.1	1.00	1.01	2.02	3.17	4.92	4.67	3.96	4.31	3.62	2.44	1.61	1.40	34.13
GARNETT	•	•	•	•	•	•	•	•	•	•	•	•	•	1.43	1.55	2.74	4.03	5.40	5.18	4.56	3.84	4.33	3.04	2.01	1.62	39.73
#JUNCTION CITY NO 2	•	•	•	•	•	•	•	•	•	•	•	•	•	.91	1.09	1.89	2.92	5.41	4.94	3.92	3.72	3.68	2.48	1.41	1.03	33.40
LA CYGNE	•	•	•	•	•	•	•	•	•	•	•	•	•	1.52	1.43	2.59	3.76	5.28	5.46	4.73	3.55	4.20	3.04	2.12	1.52	39.20
LAWRENCE	31.0	35.3	43.9	56.3	65.6	75.4	80.3	78.9	70.8	59.8	44.8	35.1	56.4	1.17	1.12	2.20	3.42	4.57	4.80	3.74	4.41	3.22	2.61	1.94	1.37	34.57
LE ROY	•	•	•	•	•	•	•	•	•	•	•	•	•	1.08	1.27	2.45	3.63	5.15	4.67	4.21	3.66	4.22	2.88	2.00	1.35	36.57
LYNDON	•	•	•	•	•	•	•	•	•	•	•	•	•	.99	1.04	2.03	3.28	4.72	4.95	4.30	4.25	3.56	2.60	1.87	1.31	34.90
#MCFARLAND	•	•	•	•	•	•	•	•	•	•	•	•	•	.94	1.03	1.92	2.80	4.72	4.90	3.44	4.26	3.63	2.09	1.51	1.33	32.57
NEOSHO RAPIDS	•	•	•	•	•	•	•	•	•	•	•	•	•	1.12	1.15	2.17	3.26	4.57	4.53	4.07	4.40	4.05	2.83	1.82	1.31	35.28
OLATHE 3 E	30.1	34.2	42.5	54.9	64.4	74.3	79.2	78.2	70.2	59.4	43.9	34.1	55.5	1.29	1.24	2.35	3.73	5.05	5.05	3.82	3.74	3.66	2.77	1.77	1.47	35.94
OSAGE CITY	31.1	35.1	43.4	55.6	65.0	74.9	79.6	78.7	70.0	59.4	44.3	34.8	56.0	1.24	1.30	2.24	3.56	5.12	4.87	4.05	4.42	4.06	2.61	1.85	1.49	36.81
OTTAWA	31.3	35.6	43.8	55.9	65.3	75.1	80.0	79.0	70.5	59.7	44.8	35.1	56.3	1.37	1.28	2.54	3.45	5.24	4.99	4.31	4.38	3.94	2.93	1.89	1.56	37.88
OVERBROOK 2 WSW	•	•	•	•	•	•	•	•	•	•	•	•	•	1.13	1.17	2.15	3.27	4.62	4.68	3.73	4.01	3.47	2.41	1.95	1.28	33.87
PAOLA	•	•	•	•	•	•	•	•	•	•	•	•	•	1.37	1.36	2.53	3.58	4.86	5.29	4.68	3.86	3.72	2.95	1.87	1.53	37.60
QUENEMO NO 2	•	•	•	•	•	•	•	•	•	•	•	•	•	1.15	1.06	2.25	3.45	4.99	4.58	3.76	4.04	3.79	2.80	2.09	1.34	35.30
READING	•	•	•	•	•	•	•	•	•	•	•	•	•	1.11	1.05	2.01	3.22	4.98	4.49	3.62	4.18	3.68	2.65	1.61	1.34	33.94
ROSSVILLE	•	•	•	•	•	•	•	•	•	•	•	•	•	1.03	1.05	2.02	2.99	4.60	4.58	3.45	4.25	3.45	2.23	1.48	1.29	32.42
TOPEKA AP	28.8	33.1	41.7	54.4	64.4	74.7	79.9	78.4	69.4	58.2	42.6	33.4	54.9	1.02	1.05	2.01	3.29	4.38	4.51	3.60	4.29	2.98	2.34	1.50	1.39	32.36
WORDEN	•	•	•	•	•	•	•	•	•	•	•	•	•	1.14	1.19	2.21	3.38	4.82	5.01	4.03	4.33	3.27	2.43	2.03	1.37	35.21
DIVISION	30.9	35.3	43.3	55.7	65.0	75.0	79.9	78.9	70.5	59.5	44.2	34.6	56.1	1.13	1.19	2.25	3.40	4.96	4.89	4.07	4.01	3.87	2.69	1.70	1.37	35.53
SOUTHWEST DIVISION																										
ASHLAND DDC 8	34.2	38.3	45.6	56.9	66.2	76.7	81.8	80.9	72.4	60.4	45.2	36.9	58.0	.63	.91	1.33	1.88	3.78	3.25	2.33	2.56	2.04	1.35	.74	.58	21.38
BUCKLIN	•	•	•	•	•	•	•	•	•	•	•	•	•	.59	.86	1.25	1.89	3.54	2.87	2.65	2.32	2.13	1.53	.74	.55	20.88
CIMARRON	31.4	35.6	42.7	54.3	63.8	74.6	80.2	78.9	70.2	58.1	42.4	34.5	55.6	.50	.66	1.04	1.89	3.70	3.10	2.64	2.45	1.55	1.49	.64	.46	20.12
#DEERFIELD 1 NNW	•	•	•	•	•	•	•	•	•	•	•	•	•	.62	.65	1.13	1.63	2.85	2.53	2.00	2.07	1.26	1.29	.72	.41	17.16
DODGE CITY AP	31.1	35.0	41.8	53.6	63.7	74.4	80.2	79.2	70.3	58.3	42.8	34.7	55.4	.57	.70	1.16	1.84	3.22	3.03	2.31	2.36	1.53	1.42	.64	.47	19.25
ELKHART	•	•	•	•	•	•	•	•	•	•	•	•	•	.49	.57	.92	1.63	2.79	2.31	2.68	2.25	1.45	1.21	.60	.60	17.50
HUGOTON	•	•	•	•	•	•	•	•	•	•	•	•	•	.48	.63	1.01	1.31	3.01	2.63	2.53	2.35	1.44	1.23	.74	.53	17.89
JETMORE	31.9	36.0	43.2	55.0	64.7	75.3	80.9	79.8	71.0	58.9	43.2	35.1	56.3	.53	.68	1.14	1.86	3.26	3.12	2.54	2.65	1.60	1.64	.67	.49	20.18
JOHNSON 11 ESE	32.2	36.1	42.8	53.9	63.5	74.4	79.7	78.2	70.0	57.6	42.3	35.2	55.5	.39	.42	.86	1.52	2.63	2.21	2.19	2.11	.88	1.03	.51	.33	15.08
LAKIN	32.0	36.1	42.7	54.3	63.9	74.7	80.0	78.4	69.7	57.7	42.4	34.8	55.6	.46	.48	.91	1.53	2.85	2.69	2.09	2.22	1.21	1.09	.59	.36	16.48
LIBERAL	34.7	38.7	45.4	56.2	65.8	76.7	81.6	80.3	71.9	60.3	45.2	37.5	57.9	.54	.58	1.14	1.35	3.48	2.68	2.54	2.39	1.28	1.48	.68	.47	18.61
PLAINS	•	•	•	•	•	•	•	•	•	•	•	•	•	.56	.64	1.10	1.65	3.30	2.57	2.39	2.16	1.55	1.47	.80	.54	18.73
RICHFIELD 4 N	•	•	•	•	•	•	•	•	•	•	•	•	•	.49	.57	.79	1.37	2.34	1.97	2.23	2.17	1.32	1.17	.61	.46	15.49
SUBLETTE	32.7	36.7	43.4	54.6	64.0	75.0	80.2	78.8	70.5	58.5	43.3	35.4	56.1	.45	.53	.85	1.48	3.09	2.56	2.22	2.38	1.46	1.29	.63	.40	17.34
SYRACUSE 2 W	•	•	•	•	•	•	•	•	•	•	•	•	•	.49	.43	.86	1.46	2.70	2.41	2.39	2.18	1.23	.96	.55	.33	15.99
#ULYSSES	31.3	36.5	43.5	54.7	64.3	75.0	80.1	78.7	70.7	58.2	42.8	35.2	55.9	.37	.44	.79	1.47	3.41	2.64	2.32	2.49	1.30	1.09	.57	.36	17.25
DIVISION	32.6	36.8	43.5	54.8	64.4	75.0	80.3	78.9	70.6	58.6	43.1	35.6	56.2	.48	.57	.99	1.57	3.07	2.64	2.38	2.35	1.40	1.26	.62	.45	17.78
SOUTH CENTRAL DIVISION																										
ANTHONY	33.9	38.1	45.9	57.3	66.5	77.4	82.0	81.6	72.7	61.0	45.6	36.8	58.2	.81	1.16	1.61	2.65	4.34	3.90	2.90	2.54	2.64	2.03	1.35	1.02	26.95
COLDWATER	33.6	37.9	45.5	57.0	66.5	76.9	82.3	81.5	72.6	60.9	45.5	36.7	58.1	.61	1.00	1.27	2.00	3.78	3.72	2.67	2.98	2.17	1.69	.79	.66	23.34
GREENSBURG	32.3	36.2	43.7	55.3	64.8	75.5	81.0	80.1	71.3	59.6	44.0	35.5	56.6	.60	.96	1.25	2.31	3.72	3.29	2.29	2.44	2.03	1.58	.82	.64	21.93
#HUDSON	•	•	•	•	•	•	•	•	•	•	•	•	•	.66	.94	1.32	2.25	4.10	3.83	3.13	2.54	2.14	1.66	.77	.75	24.09
LARNED	31.4	35.4	43.3	55.3	64.8	75.6	81.0	80.2	71.3	59.5	43.7	34.8	56.4	.57	.84	1.27	1.92	3.40	3.55	3.13	2.98	2.01	1.51	.80	.51	22.49
MEDICINE LODGE	34.5	38.9	46.6	58.2	67.2	77.6	82.5	81.7	73.1	61.5	46.3	37.5	58.8	.69	.96	1.53	2.41	4.37	3.26	2.70	2.73	2.41	2.16	1.01	.84	25.07
MOUNT HOPE	•	•	•	•	•	•	•	•	•	•	•	•	•	.78	1.02	1.70	2.76	4.57	4.43	3.49	3.08	3.44	2.34	1.32	1.02	29.95
NEWTON 2 SW	31.5	35.7	43.7	55.6	64.9	75.5	80.7	80.1	71.5	59.9	44.2	35.1	56.5	.91	1.09	1.80	2.54	4.41	4.48	3.60	3.33	3.70	2.21	1.38	1.05	30.50
PRATT	33.3	37.4	45.0	56.8	66.1	76.7	81.9	80.8	72.0	60.6	45.3	36.5	57.7	.70	1.07	1.41	2.10	3.89	3.93	2.47	2.51	2.36	1.89	.92	.79	24.04
SEDGWICK	•	•	•	•	•	•	•	•	•	•	•	•	•	.89	1.06	1.82	2.68	4.26	4.24	3.56	2.92	3.45	2.13	1.33	.99	29.33
#TROUSDALE 1 NE	•	•	•	•	•	•	•	•	•	•	•	•	•	.57	.88	1.23	2.08	3.94	3.36	2.42	2.71	2.08	1.55	.76	.63	22.21
WELLINGTON	34.3	38.7	46.4	58.0	66.9	77.4	82.3	82.1	73.4	61.9	46.4	37.6	58.8	.99	1.31	1.79	3.01	4.78	4.77	3.55	3.02	3.43	2.49	1.59	1.34	32.07
WICHITA AP	32.0	36.3	44.5	56.7	66.0	76.5	80.9	80.8	71.3	59.9	44.4	35.8	57.1	.81	.92	1.64	2.30	3.97	4.21	3.64	2.87	3.22	2.40	1.49	.94	28.41
DIVISION	33.0	37.2	44.7	56.6	65.9	76.5	81.6	80.9	72.2	60.6	45.1	36.2	57.5	.74	1.06	1.48	2.35	4.14	3.93	2.96	2.81	2.56	1.95	1.06	.85	25.89
SOUTHEAST DIVISION																										
ARKANSAS CITY	•	•	•	•	•	•	•	•	•	•	•	•	•	1.05	1.36	1.82	3.54	4.44	4.23	3.77	3.20	3.87	2.27	1.78	1.33	32.66
CHANUTE FAA AIRPORT	33.0	37.5	45.2	57.1	66.2	75.9	80.9	80.3	71.9	60.9	45.7	36.8	57.6	1.32	1.44	2.34	3.73	5.63	5.34	4.28	3.38	4.33	2.66	2.10	1.33	37.88
COLUMBUS 6 NNW	35.2	39.2	46.5	57.9	66.4	75.8	80.0	79.7	71.9	61.5	46.9	38.6	58.3	1.68	1.71	2.35	3.80	5.33	5.58	4.07	3.20	4.36	3.36	2.33	1.71	39.48
EL DORADO	32.9	37.1	45.1	57.2	66.1	76.3	81.2	80.9	72.1	60.8	45.2	36.3	57.6	.93	1.18	2.00	3.10	4.87	4.60	3.79	3.31	3.64	2.38	1.54	1.21	32.55
EUREKA	32.9	37.1	45.0	57.1	65.6	75.2	80.1	79.7	71.2	60.3	45.2	36.5	57.2	1.01	1.27	2.44	3.21	5.08	4.69	3.67	2.91	3.85	2.47	1.82	1.33	33.75
FORT SCOTT	34.4	38.5	46.3	58.2	67.1	76.8	81.6	81.0	72.9	61.8	46.8	37.8	58.6	1.55	1.73	2.49	3.94	5.33	5.19	3.73	3.57	4.24	3.34	2.27	1.63	39.01
FREDONIA 1 E	34.1	38.5	46.0	57.7	66.4	75.9	80.8	80.6	72.2	61.5	46.4	37.4	58.1	1.25	1.35	2.13	3.43	4.81	5.29	3.49	3.06	4.56	2.54	2.00	1.32	35.23
HOWARD 5 NE	•	•	•	•	•	•	•	•	•	•	•	•	•	1.06	1.38	2.33	3.74	4.79	4.98	3.54	3.36	4.13	2.42	2.02	1.32	35.07
INDEPENDENCE	35.3	39.6	47.1	58.6	66.9	76.4	80.9	80.9	72.7	61.9	47.2	38.7	58.9	1.43	1.40	2.23	3.69	5.12	5.31	3.90	2.70	4.26	3.23	2.11	1.40	36.78
IOLA 1 W	33.3	37.6	45.7	57.6	66.5	76.2	80.8	80.2	72.1	61.1	46.0	37.0	57.8	1.32	1.37	2.36	3.82	5.40	4.84	4.16	3.34	4.29	2.61	2.08	1.34	36.93
OSWEGO 1 N	•	•	•	•	•	•	•	•	•	•	•	•	•	1.75	1.72	2.42	4.02	5.66	5.50	4.44	3.12	4.32	3.63	2.38	1.62	40.58
PARSONS	35.6	39.9	47.4	59.0	67.6	77.0	81.7	81.3	73.3	62.7	47.7	39.0	59.4	1.61	1.57	2.38	3.86	5.96	6.11	3.85	3.10	4.52	3.36	2.27	1.48	40.07
PITTSBURG	•	•	•	•	•	•	•	•	•	•	•	•	•	1.87	1.78	2.53	4.10	5.41	5.93	3.71	2.99	4.42	3.45	2.53	1.63	40.35
SEDAN	35.4	39.8	47.4	58.7	67.2	76.6	81.7	81.4	72.9	61.5	47.1	38.5	59.0	1.23	1.47	2.32	3.73	5.31	5.25	4.18	3.27	4.27	3.44	2.22	1.37	38.06
TORONTO	•	•	•	•	•	•	•	•	•	•	•	•	•	1.10	1.24	2.32	3.64	5.88	4.79	3.99	3.20	3.86	2.40	2.01	1.44	35.87
WALNUT 3 S	•	•	•	•	•	•	•	•	•	•	•	•	•	1.42	1.52	2.31	3.98	5.26	5.18	4.08	3.23	4.32	2.99	2.16	1.31	37.76
WINFIELD	34.7	38.9	46.8	58.5	67.1	77.1	81.8	81.6	73.5	62.2	46.9	37.9	58.9	.97	1.31	1.95	3.52	4.21	4.42	4.07	2.72	3.59	2.28	1.66	1.31	32.01
DIVISION	34.2	38.6	46.1	57.9	66.7	76.3	81.0	80.7	72.4	61.5	46.5	37.7	58.3	1.32	1.45	2.31	3.69	5.25	5.16	3.97	3.18	4.19	2.89	2.00	1.39	36.80

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1963 REVISIONS AND ADDITIONS TO CLIMATOGRAPHY OF THE UNITED STATES NO. 81-12
KANSAS
TABLE I — NORMALS FOR FIRST ORDER STATIONS

STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
CONCORDIA AP													
* H1470 T 4													
MAX TEMP	37.3	41.9	50.7	64.2	74.0	85.6	92.1	90.8	81.6	69.9	52.4	41.7	65.2
MIN TEMP	17.6	21.3	28.9	41.4	52.1	62.8	68.4	67.2	57.5	45.5	30.6	22.2	43.0
AVG TEMP	27.5	31.6	39.8	52.8	63.1	74.2	80.3	79.0	69.6	57.7	41.5	32.0	54.1
DEG DAYS	1163	935	781	372	149	18	0	0	57	276	705	1023	5479
PRECIP	.70	.91	1.49	2.12	3.89	4.20	2.83	3.15	2.73	1.68	.98	.71	25.39

TABLE II — NORMALS BY CLIMATOLOGICAL DIVISIONS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
TEMPERATURE (°F.)													
NORTHWEST DIVISION		32.7		51.6	61.7	72.4	78.8	77.3		55.9	40.4	32.4	53.3
NORTH CENTRAL DIVISION		32.4	40.8			74.5		79.2		58.0	41.8		
NORTHEAST DIVISION	28.4	32.7	41.5	54.4		74.4	79.6	78.3	69.6	58.4			54.7
WEST CENTRAL DIVISION	29.9	33.5	40.2		62.0		78.8	77.5				33.2	
CENTRAL DIVISION	30.2	34.2	42.3	54.8	64.5	75.5	81.1	80.2	71.0	59.0	43.1	33.9	55.8
EAST CENTRAL DIVISION	30.8	35.1			65.1		80.0	79.0	70.6				
SOUTHWEST DIVISION		36.7				75.1		79.0		58.5	43.2	35.5	
SOUTH CENTRAL DIVISION	32.9	37.0	44.8	56.5	65.8					60.5	45.0	36.1	
SOUTHEAST DIVISION		38.4	46.2		66.6	76.2		80.6		61.4	46.4	37.6	58.2
PRECIPITATION (In.)													
NORTHWEST DIVISION		.59	1.25		3.03	3.30	2.72	2.31	1.54	1.06	.67	.46	19.33
NORTH CENTRAL DIVISION	.67	.88	1.53	2.31	3.82	4.37	3.12	3.19	2.69	1.62	.99	.68	25.87
NORTHEAST DIVISION	.99		1.94	2.79	4.48	5.21	3.65	4.30	3.68	2.29	1.48	1.14	32.97
WEST CENTRAL DIVISION					2.99	3.29	2.61	2.49	1.45	1.17	.68	.44	19.29
CENTRAL DIVISION	.68	.93	1.50	2.29	4.07	3.89	3.04	3.07	2.70	1.83		.77	25.81
EAST CENTRAL DIVISION		1.16	2.19	3.37	4.90	4.86	3.99	4.02	3.81	2.66	1.72		35.18
SOUTHWEST DIVISION	.49	.58	1.01	1.61	3.11	2.66		2.38	1.44	1.27	.63		18.01
SOUTH CENTRAL DIVISION	.77		1.53	2.43	4.20	3.96	3.00	2.84	2.66	2.00	1.12	.89	26.46
SOUTHEAST DIVISION	1.28	1.42	2.27	3.62	5.24	5.09	3.89	3.14	4.12	2.85	2.03		36.34

NORTHWEST DIVISION
BIRD CITY 10 S
(CORRECTION TO NAME ONLY)

SOUTHWEST DIVISION
DEERFIELD 10 NNW
(CORRECTION TO NAME ONLY)

* NEW STATION

REVISIONS TO FIRST ORDER STATIONS IN TABLE I AFFECT THE SAME STATIONS IN TABLE II.

USCOMM-WB-Asheville, N. C. -3/31/64- 1900

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