COLORADO CLIMATE SUMMARY

WATER—YEAR SERIES

OCTOBER 1979—SEPTEMBER 1980

by

NOLAN J. DOESKEN

THOMAS B. McKEE

CLIMATOLOGY REPORT NO. 80—3

DEPARTMENT OF ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY
FORT COLLINS, COLORADO

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Department of Atmospheric Science
Colorado State University
Ft. Collins, Colorado 80523

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ACKNOWLEDGEMENTS

The authors would like to acknowledge all of the many cooperative weather observers in Colorado who assist the National Weather Service in the collection of climate data. We would also like to thank William Tate and Michael Elias of the National Weather Service for their efforts to maintain the quality of the cooperative observer network during this past year. Our special thanks go to Odilia Panella, Janet Clark, and Rose Denman who worked hard to make this summary presentable.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

The Colorado Climate Center (previously known as the Colorado Climate Office) has been preparing summaries of temperature and precipitation in the state each month since January 1977. These monthly summaries were initiated to help monitor the status of Colorado's water supplies during the severe winter drought of 1976-77. Since that time, the summaries have evolved into brief but comprehensive monthly climate descriptions containing data and information which are being used for a variety of purposes. This publication is a collection of these summaries for the 1980 water year.

The water year is defined as the 12-month period from October 1 through September 30. That period is much more practical than the calendar year for discussing water in Colorado because it is well correlated with the state's water storage -- water usage cycle. In October, snow usually begins to accumulate in the high mountains. As winter progresses, the snowpack normally continues to build up. This snow is the frozen reservoir which not only supports the booming ski industry but, more importantly, eventually supplies much of the water for human consumption, for extensive irrigation, for industry, and to satisfy long-standing stream flow compacts with neighboring states. Irrigated agriculture still accounts for the vast majority of water used in Colorado. Therefore demand for water peaks during the summer and tapers off as temperatures drop, crops are harvested, and autumn arrives. September marks an appropriate end to the water year.

Because of the crucial importance of water to Colorado this publication emphasizes precipitation and water-year accumulated precipitation. Comparisons with long-term averages are made to help determine which parts of the state are wetter or drier than average. This makes it possible to document the availability of water resources and to assess potential drought situations.

Monthly average temperature information is also presented for several locations. This is supplemented by heating degree day information for parts of the state (an introduction to heating degree days is given on page 9). Comparisons are made with long-term averages as well as with the previous year's data. This provides a simple way of comparing energy consumption for space heating with actual climatic conditions.

Specific daily temperature and precipitation data are not presented here. However, important weather events such as severe storms and temperature extremes are included within the general narrative of each monthly summary.

Most temperature and precipitation data used in the monthly summaries were obtained from the National Weather Service cooperative observer network. Data from the major National Weather Service stations such as Denver and Grand Junction are also used extensively. Snowpack data collected by the Soil Conservation Service are added during winter and early spring to provide some information for the data-sparse mountainous areas.

Not all of the data collected in Colorado are presented in these monthly summaries. In general, only the weather stations which have been in existence at or very near to their present locations since at least 1951 are included. Averages for both temperature and precipitation based

on 1951-1970 data have been calculated and are used in most instances. Heating degree day normals are based on 1941-1970 data. This allows representative comparisons with long-term climatic averages using consistent standards.

The written descriptions give a good general accounting of each month's weather, but the majority of information is contained on the maps which accompany each report. For most months, actual precipitation amounts, monthly precipitation compared to average, water-year accumulated precipitation compared to average, and temperatures compared to average, are displayed on maps. Occasionally, additional figures are also included. For each month during the winter, maps are shown which contain heating degree days and the departure from average and heating degree days compared with the previous year. A table of heating degree day information is presented each month except during midsummer. The accuracy of all of these maps and tables is usually quite good. However, these reports were initially prepared as soon after the end of a month as possible. Sometimes preliminary information had to be used which was not always exactly correct. Therefore, some of the precipitation, temperature, and heating degree day values may differ slightly from what was later published by the National Climatic Center.

II. 1980 Water Year

This is a complete month-by-month summarization of the climate in Colorado during the 1980 water year.

For the year as a whole temperatures were about average across the state and precipitation was somewhat heavier than usual. That general description does not do justice to the year, however. On a month to month basis it was a rollercoaster year with many climatic extremes and several new records.

The year began with several weeks of warm and dry weather in October. However, the lovely weather ended abruptly and winter quickly took command as a blizzard swept across eastern Colorado on the last days of October.

November was very cold and snowy across the state, but all other weather events took a back seat to the paralyzing pre-Thanksgiving snowstorm of November 19-21. Up to two feet of snow buried the major Front Range cities, and even more fell in the foothills.

The mountains and Western Slope had a bit of a breather in December, but another huge snowstorm clobbered the eastern half of the state late in the month and continued the wetter than average trend

January and February brought warm temperatures to western Colorado -- a welcome change from the previous winter -- but precipitation and snowfall were excessive. Plenty of snow continued to fall east of the mountains but temperatures were generally seasonal.

The months of March, April and May brought cool temperatures and abundant precipitation to most of the state. A series of awesome blizzards

battered parts of the Eastern Plains in late March and early April. Heavy rains along the Front Range in April and May produced some flooding conditions.

The stormy wet weather of the "winter of 1979-80" ended as abruptly as it began. But it left behind many memories and several records. For much of northeastern and east central Colorado it was the snowiest winter ever recorded. Fort Collins, for example, totalled 114 inches of snow for the season -- nearly 70 inches more than average and 30 inches more than the previous record set in 1916-17. Most mountain towns had all the snow they wanted, as well. Crested Butte totalled 298 inches for the season, 35 percent more than average.

The summer was hot and dry across Colorado. The heatwave and drought which had terrible impacts on many states in central and southern parts of the country fortunately only mildly affected Colorado. Temperatures were warmer than average throughout the June through September period, and precipitation was only about half of average across much of the state. However, the runoff from the melting mountain snowpack and the spring precipitation resulted in plenty of water for irrigation. Enough rain fell on most of the wheat growing areas of the state to ensure a good crop.

A general assessment of the impacts of the 1980 water year indicated that the heavy winter snowfall adversely affected transportation, hurried the decay of streets and highways, and tested many people's patience. But the above average precipitation helped to increase the surface water supplies in the state to the highest levels since before the 1976-77 winter drought. Temperatures were somewhat cooler than average during the winter months which contributed to above average demand for heating

fuels. However, the demand was down considerably from the previous winter when the state experienced record cold. The snowy winter and hot dry summer worked together to produce a good year for tourism in the state. And finally, there were fewer severe summer storms to contend with than during recent summers.

COLORADO CLIMATE -- OCTOBER 1979

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Introduction

Colorado Climate is a monthly report which summarizes temperature and precipitation data collected in Colorado. This publication was initiated in early 1977 to help monitor the severe winter drought of 1976-77. That drought crisis eventually ended, but the need for current climatic information has increased steadily.

Precipitation information is emphasized in Colorado Climate because of the crucial importance of water to this state. In addition, information on temperatures and heating degree days are given. Greater emphasis on heating degree day information will be given this year because of the increasing interest in energy consumption and conservation.

Comments and suggestions concerning this publication are welcome. Please address your comments to the Colorado Climate Center. The mailing address is shown on the front cover.

October Summary

October marked the beginning of the 1980 water year and the onset of winter in the Colorado high country. Warm and dry weather dominated the entire region during much of the month, but two winter storms late in the month were convincing reminders that it is "that time of year again".

The first three weeks of October were unseasonably warm across the state except for two brief cooler periods east of the Continental Divide on the 3rd and 4th and again on the 9th. Little or no precipitation was reported anywhere in the state and temperatures in the 70's and 80's (Fahrenheit) were common except at higher elevations. Several new high temperature records were set including the 92° reading on October 7 at Pueblo. The warmest temperature in the state was 95° reported at Las Animas on October 8.

Rain, snow, and much colder temperatures moved into the state on October 20 and 21. Heavy snows isolated many hunters in the high country and made travel difficult. In the vicinity of Craig, 1.70 inches of

precipitation fell from that storm and many locations in the northwestern part of the state and in the San Juans reported more than one inch of precipitation.

Warm weather quickly returned to Colorado and more record high temperatures were set October 26. For example, Colorado Springs reached 80° and Fort Collins hit 79°. The warm weather was short lived, however, as a new surge of cold and snow settled over the state on the 29th. Many areas from the Front Range eastward across the plains received the first snowfall of the season. The storm developed into a ferocious blizzard across extreme eastern and southeastern Colorado. More than a foot of snow was accompanied by lightning, thunder and 50 mph winds in the vicinity of Springfield and Stonington. The storm stranded travelers, killed and isolated livestock, ruined unharvested crops, and caused severe hardship to the residents of that area.

As the month ended, cold temperatures gripped the state. Sub-zero temperatures were common in the mountains on the morning of the 31st.

Precipitation amounts and precipitation as a percent of average for October are shown in Figures 1 and 2. Amounts were extremely variable. East of Colorado Springs at Rush only 0.06 inches of precipitation fell, 8 percent of average, while Craig totalled 2.69 inches for the month, 236 percent of average. In general, southeastern and extreme eastern portions of the state along with the northwest corner were wetter than average. Most of the remainder of the state was drier than usual.

Temperatures for the month as a whole were above average statewide (Figure 3). Areas east of the mountains were generally one to three degrees above average. West of the Divide, temperatures ranged from near average at Steamboat Springs to about 4 degrees above average at Grand Junction.

A detailed tabulation of monthly heating degree day totals for major cities in Colorado is shown in Table 1. The warm weather resulted in less heating degree days than average across the state (Figure 4). October totals ranged from 209 at Grand Junction, 35% less than average to 766 at Dillon, 5% fewer than average. In general, most of the state accumulated 10% to 20% fewer heating degree days than usual.

A comparison with last October (Figure 5) showed that heating degree day totals were less than last year across most of the state. That means less energy was probably needed to warm homes and businesses.

What are heating degree days?

Many climatic factors affect fuel consumption for heating. Wind, solar radiation and humidity all play a part, but temperature is by far the most important element. Very simply, the colder it gets, the more energy is needed to stay warm. To quantify this simple concept the heating degree day unit was devised. Heating degree days are calculated by subtracting the mean daily temperature (the average of the daily maximum and minimum temperature) from 65 degrees Fahrenheit. Sixty-five is used as a base because at that temperature the typical buildings will not require additional heat to maintain comfortable inside temperatures. The difference (65° minus the mean daily temperature) is the number of heating degrees for that day, and they are accumulated throughout the heating season.

The heating degree day total is approximately proportional to the quantity of fuel consumed for heating. Therefore, the colder it gets and the longer it stays cold, the more heating degree days are accumulated and the more energy is required to heat buildings to a comfortable temperature. If you know how much energy you have used for heating during a certain period and if you know the heating degree day total for that period, you can establish a base from which to estimate future energy consumption or check the success of energy conservation practices such as insulation or lowering the thermostat.

Figure 1. October 1979 precipitation amounts (inches).

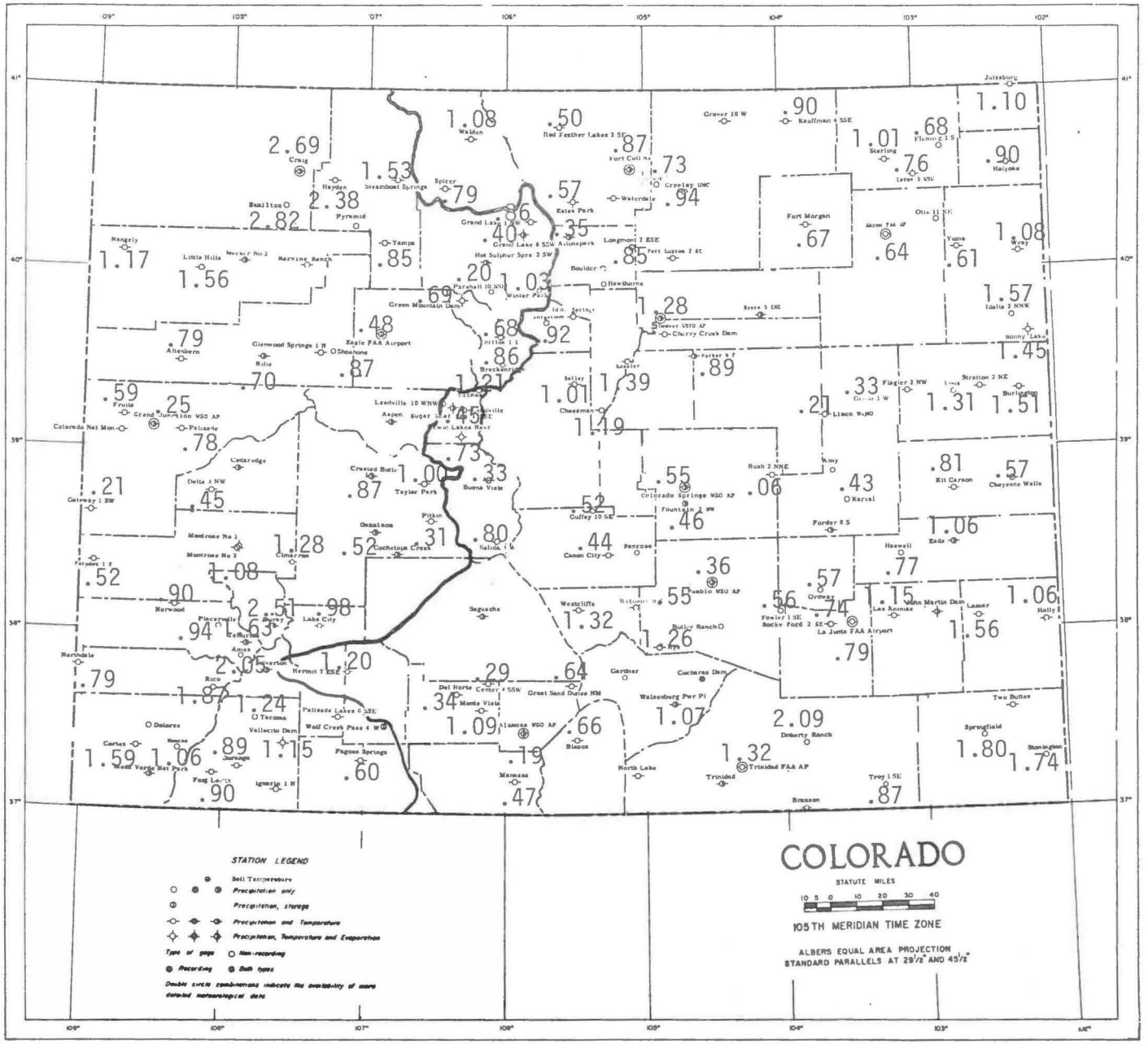


Figure 2. Precipitation for October 1979 as a percent of the 1951-1970 average.

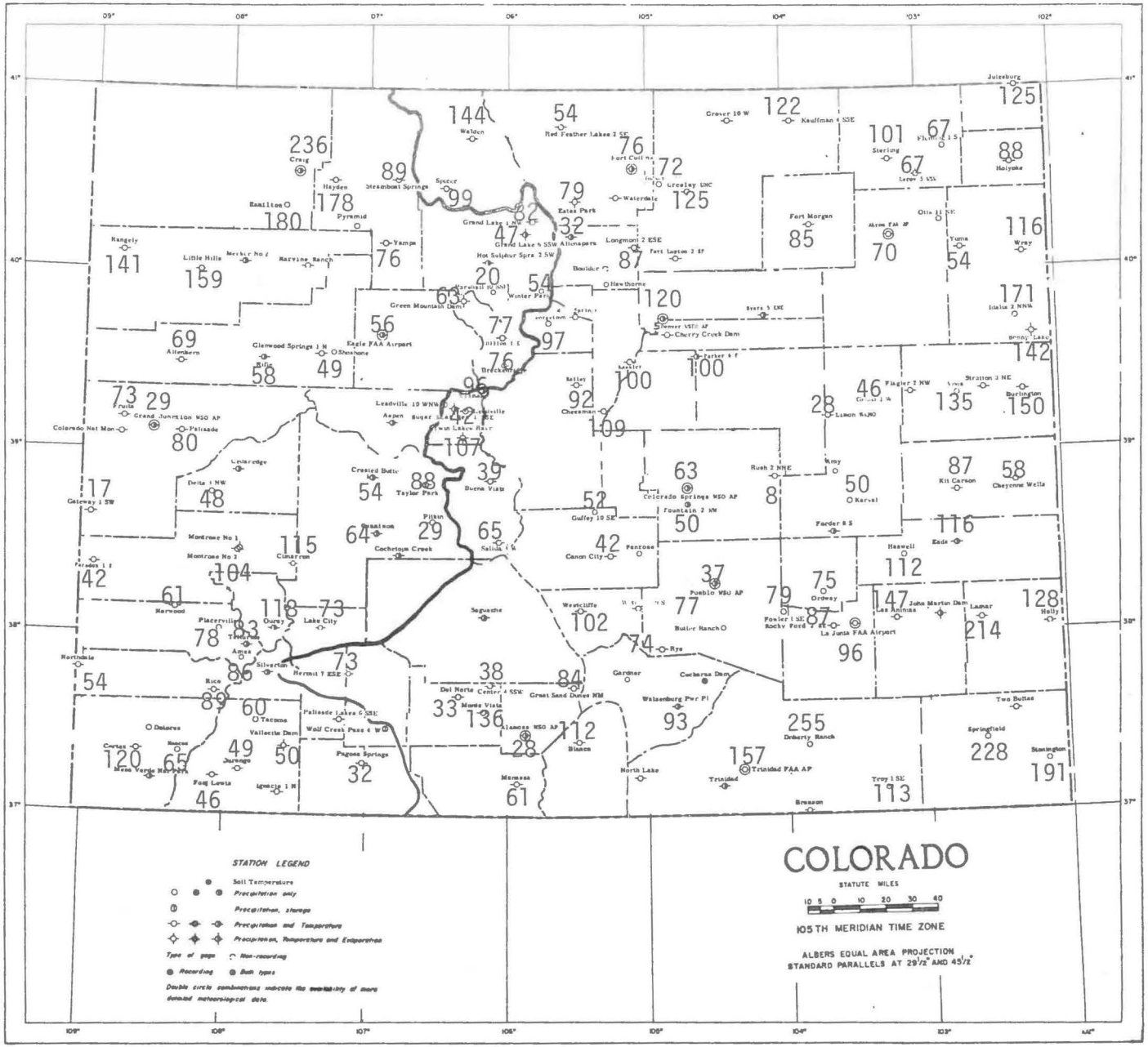


Figure 3. Temperatures for October 1979 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

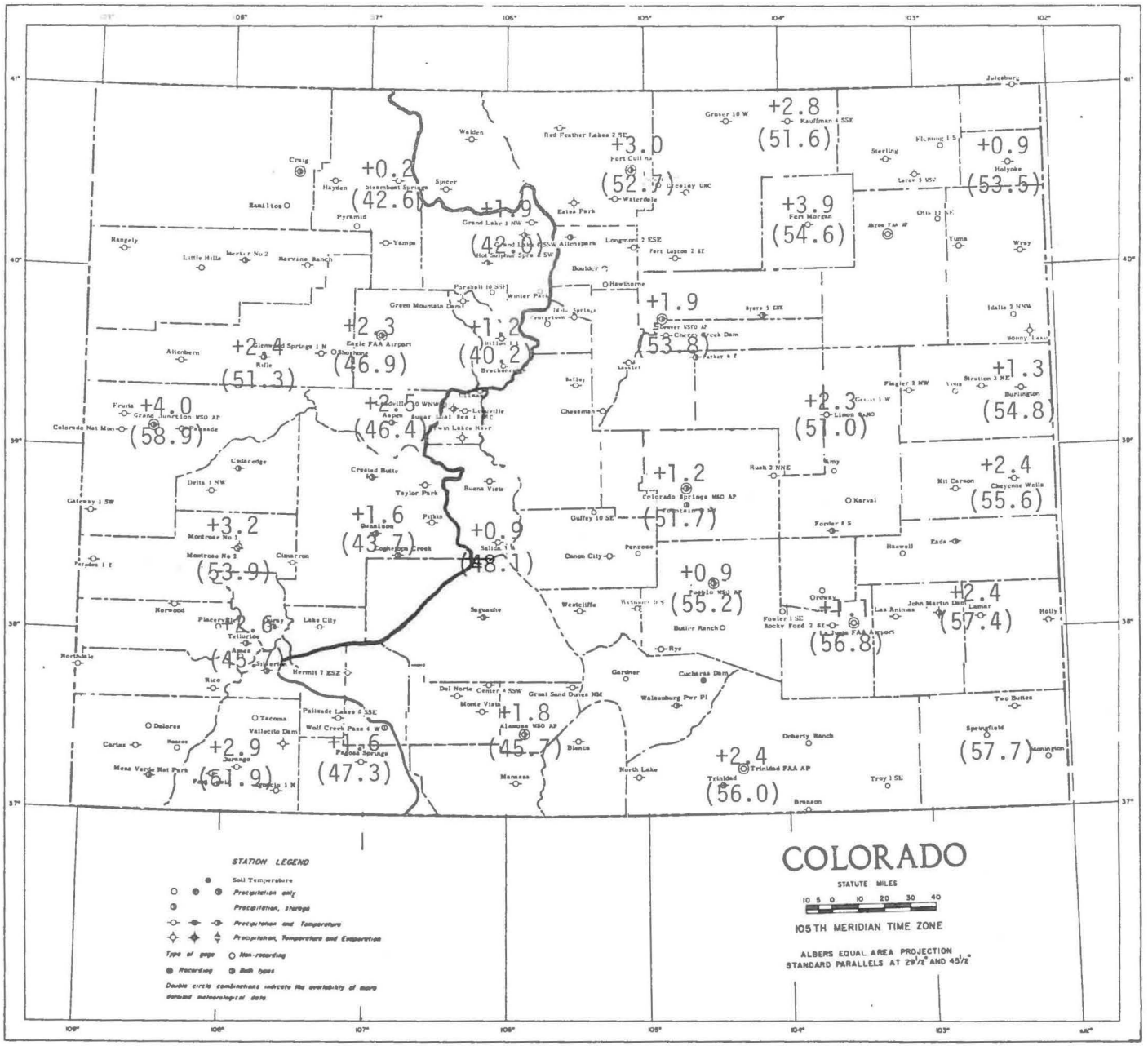


Figure 4. October 1979 Heating Degree Days (in parenthesis) and percents above or below the 1941-1970 averages

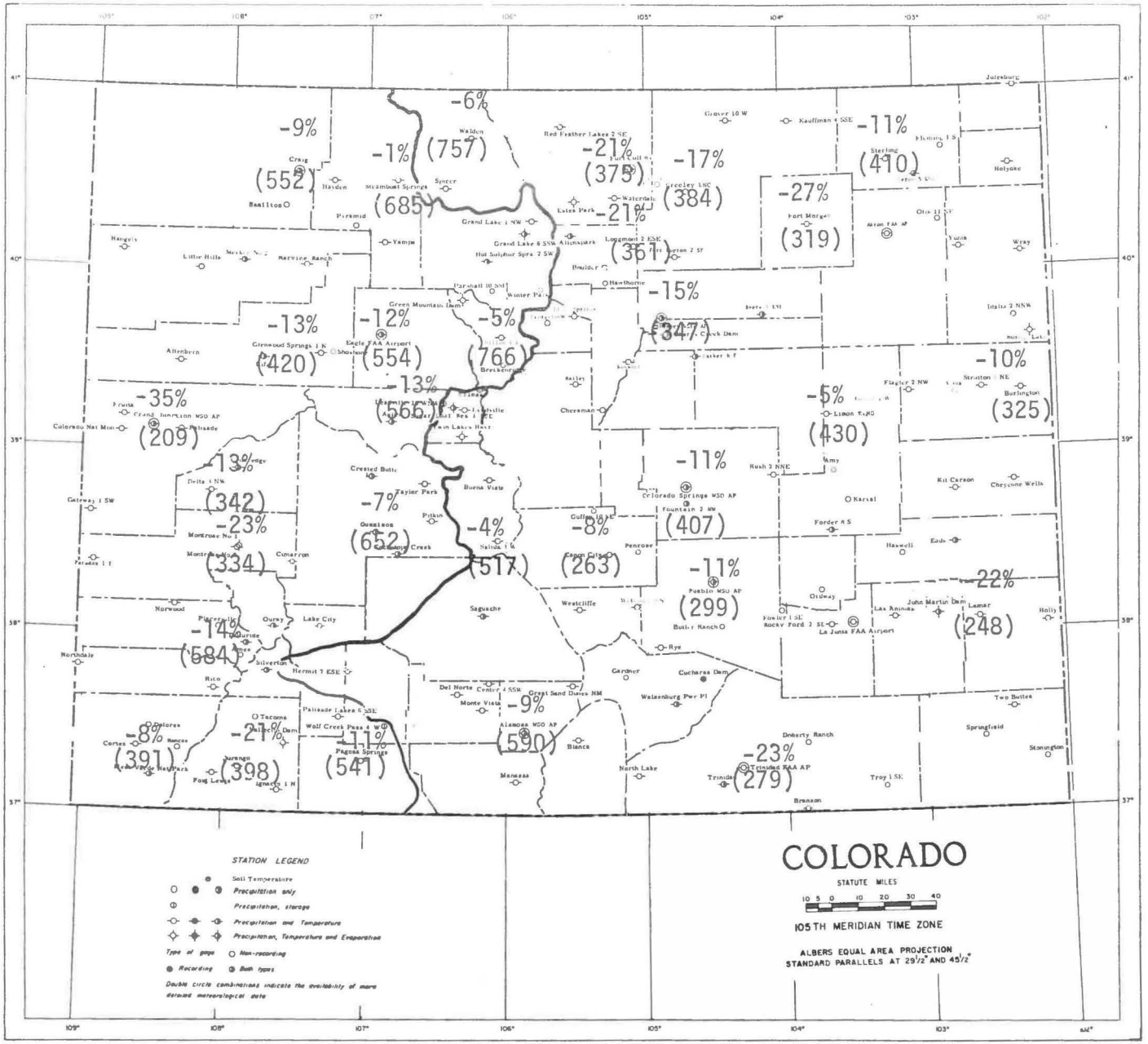


Figure 5. October 1979 Heating Degree Days as a percent above or below October 1978

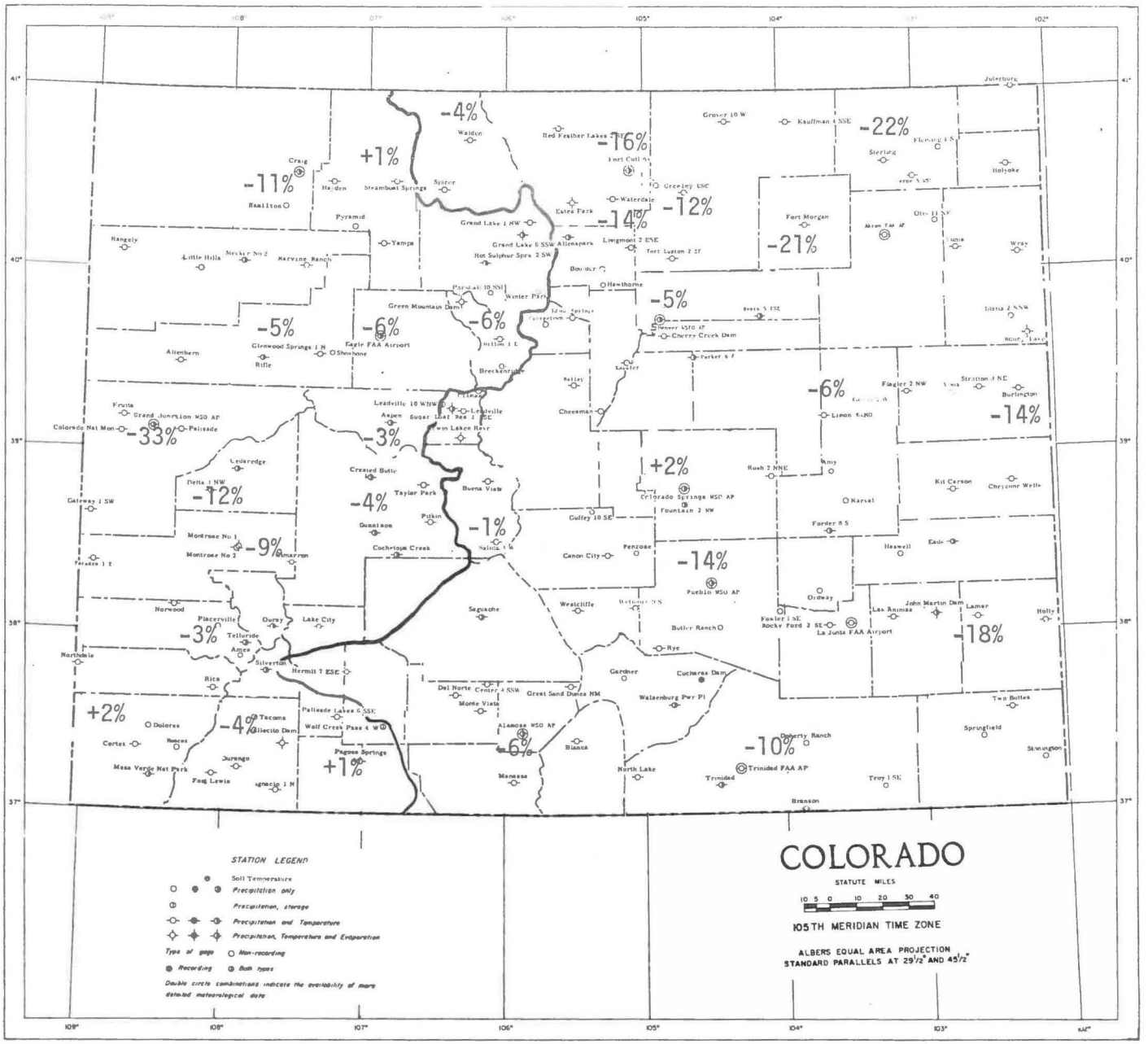


Table 1. Colorado Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590									
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	566									
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60											
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	325									
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	263									
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407									
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6235
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391									
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552									
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738		1456		761	450	198	50	
	1979-80	0	22	44	342									
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347									
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766									
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	398									
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	1197	8634
	1979-80	32	101	211	554									
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	66	375									
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	319									
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209									

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1613	936	733	457	321	78	6929
	1979-80	0	26	70	384									
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652									
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	248									
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	430									
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361									
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137										
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334									
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538			1518	1209	1059	752	495	258	
	1979-80	77	111	243	541									
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299									
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420									
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	517									
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685									
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	410									
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	584									
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	279									
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1235	1229	897	668	382	10635
	1979-80	188	260	407	757									
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	369									

COLORADO CLIMATE -- NOVEMBER 1979

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Winter weather gripped all of Colorado during November. Temperatures were cold throughout the month and snow fell statewide. But the major weather news was the fierce snowstorm of November 19-21 which paralyzed all of the Front Range urban corridor from Colorado Springs northward and isolated many residents both in the foothills and across the plains of northeastern Colorado.

The first two weeks of November were chilly across all of the state with occasional periods of precipitation. Most precipitation was light except in some of the high mountains. In the first 12 days of the month, Berthoud Pass and Independence Pass recorded 25 and 34 inches of snowfall, respectively.

A sunny and much warmer period followed. By the 16th and 17th, temperatures had climbed into the 50's (Fahrenheit) in much of the high country while temperatures in the 60's were common east of the mountains. The high temperature at Las Animas reached 72° on the 17th, the warmest in the state.

The mild and dry weather did not last long. By the afternoon of Sunday the 18th, clouds began to move into the state from the southwest and snow developed in parts of the mountains. Precipitation increased across the San Juans on the 19th and spread northward and eastward as a major storm center began to develop. Heavy wet snow began to fall along the Front Range during the evening of the 19th. The center of the storm moved slowly across southern Colorado on the 20th and snow continued to

fall. Strong winds and colder temperatures moved in and created blizzard conditions from the Front Range northeastward into Wyoming and Nebraska. When the winds and snows finally let up by Thanksgiving Day (November 22), much of the population of Colorado found itself digging out of one of the heaviest November snowfalls on record. Snowfall amounts for the storm are shown in Figure 1. Heaviest snowfalls were concentrated along the Front Range and across the northeastern plains area. Snowfall measurements exceeded 2½ feet at Evergreen and Greenland, and as much as 4 feet of new snow was reported in some foothills locations. All of the state except for the southeastern corner (where rain fell) reported significant snow accumulation. Storms of this magnitude and strength are unusual in Colorado even in the snowy months of March and April.

Minor warming with brisk westerly winds caused some melting of the snow east of the mountains on the 23rd through the 25th. However, west of the Continental Divide, this strong flow of moist Pacific air produced heavy mountain snows and got the snowpack and the skiing season off to a good start in most areas.

The month ended on a clear but extremely cold note as a huge mass of Artic air straddled the Divide the last 3 days of the month. On the morning of the 30th, Steamboat Springs, Walden, and Taylor Park Dam observed low temperatures of -27°, -28°, and -29°, respectively. These readings equalled or exceeded the previous records for the coldest November temperatures at those stations.

Precipitation amounts and precipitation as a percent of average for November are shown in Figures 2 and 3. Areas hardest hit by the snowstorm were much wetter than average. Along the Front Range and across the northeast plains, many locations received more than 300 percent of

the average November precipitation. Waterdale, just west of Loveland, recorded 3.02 inches compared to an average of only 0.55 inches. Near or above average precipitation was noted elsewhere in the state with the exception of two small areas. Both the Gunnison valley and the southern slopes of the San Juan Mountains were drier than usual.

Precipitation since October 1 (Figure 4) has been quite variable. The wet November has made most areas east of the mountains wetter than average. In the western half of the state, totals range from considerably above average near Breckenridge and Craig, to near average in the vicinity of Steamboat Springs, Grand Junction, and Cortez, to below average at Eagle, Gunnison, and Durango. The San Luis Valley has also been drier than average.

Temperatures for November are shown in Figure 5. The entire state experienced an unusually cold month. At Alamosa and Grand Junction, this was the second coldest November on record. Temperatures all across the state were consistently between 5 and 8 degrees colder than average. Lamar was the only warm spot, relatively, with a monthly mean temperature of 37.5°, 2.9 degrees below average.

The cold weather resulted in high heating degree day totals all across Colorado (Table 1). Totals ranged from a low of 806 at Canon City, 34 percent more than average, to 1393 at Dillon, 19 percent more than average.

A comparison with last year (Figure 6) shows that all of Colorado was colder (more heating degree days) than last November. Totals varied from about 10 percent more than November 1978 near the eastern border of the state to around 30 percent more than last year in the mountains and western portions of the state. These higher heating degree day totals mean that more energy was probably used for heating our homes and businesses than what was needed last November.

Figure 1. Snowfall (inches) from the November 18-21, 1979, snowstorm.

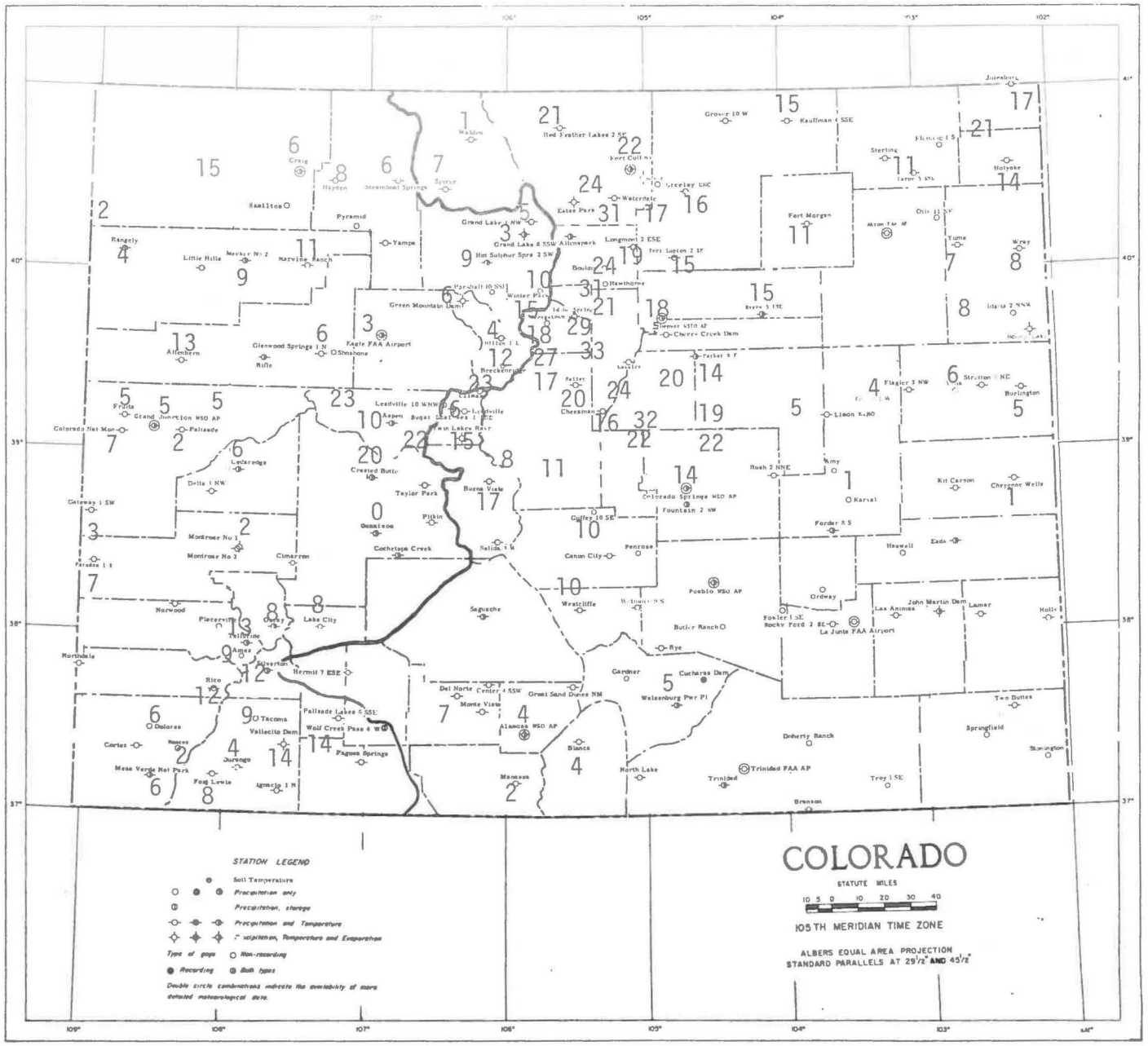


Figure 2. November 1979 precipitation amounts (inches).

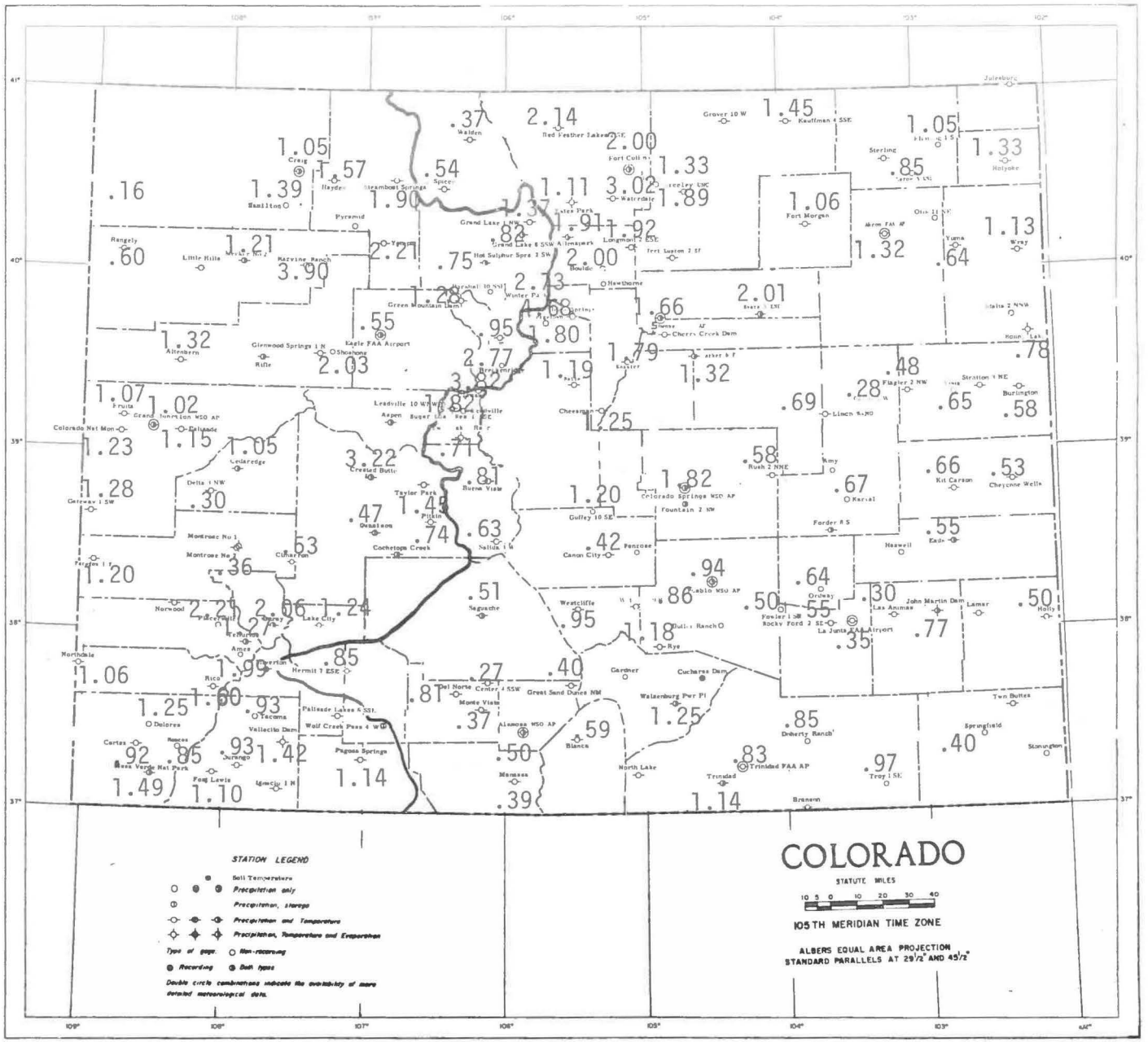


Figure 3. Precipitation for November 1979 as a percent of the 1951-1970 average.

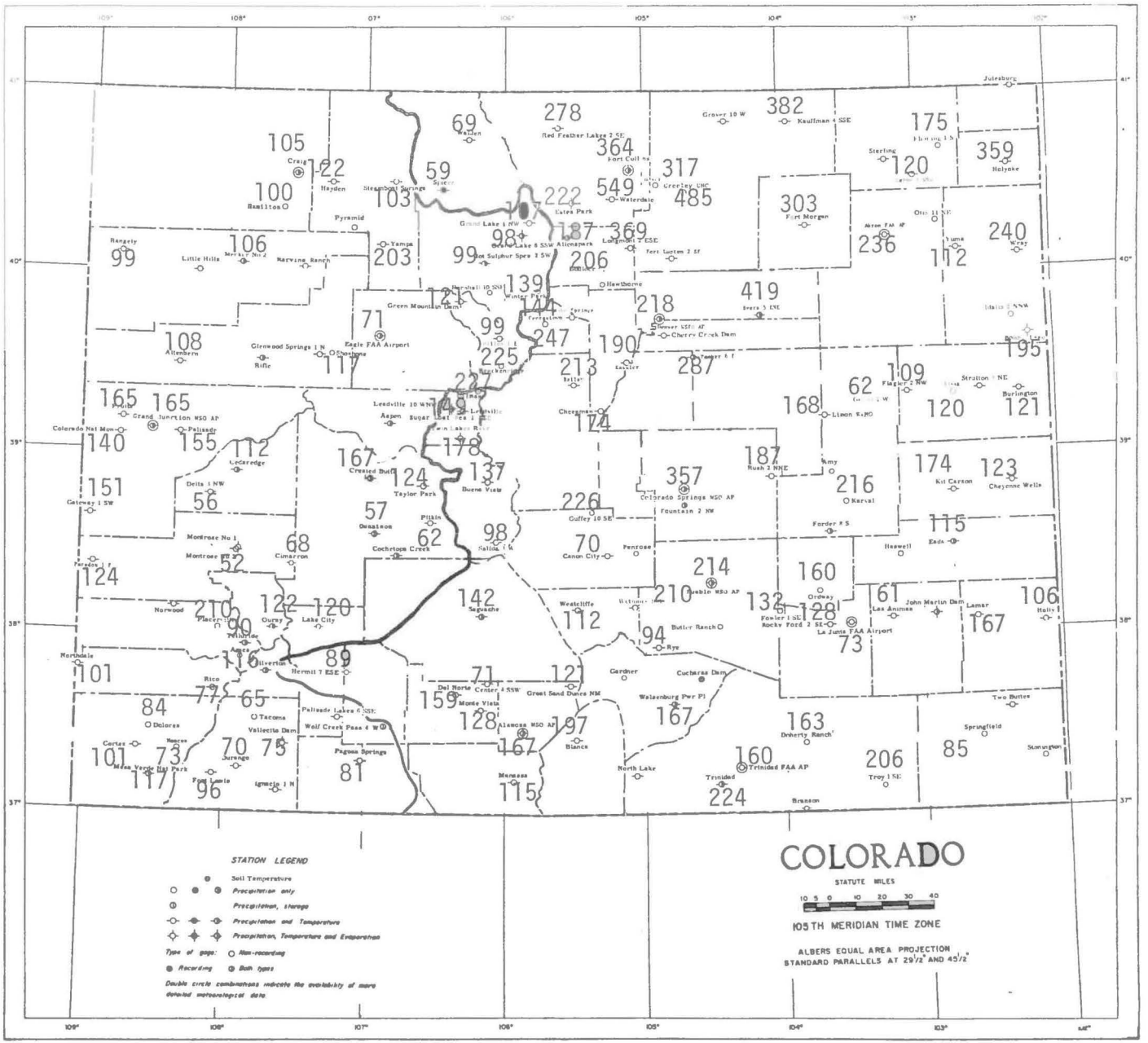


Figure 4. Precipitation for October and November 1979 as a percent of the 1951-1970 average.

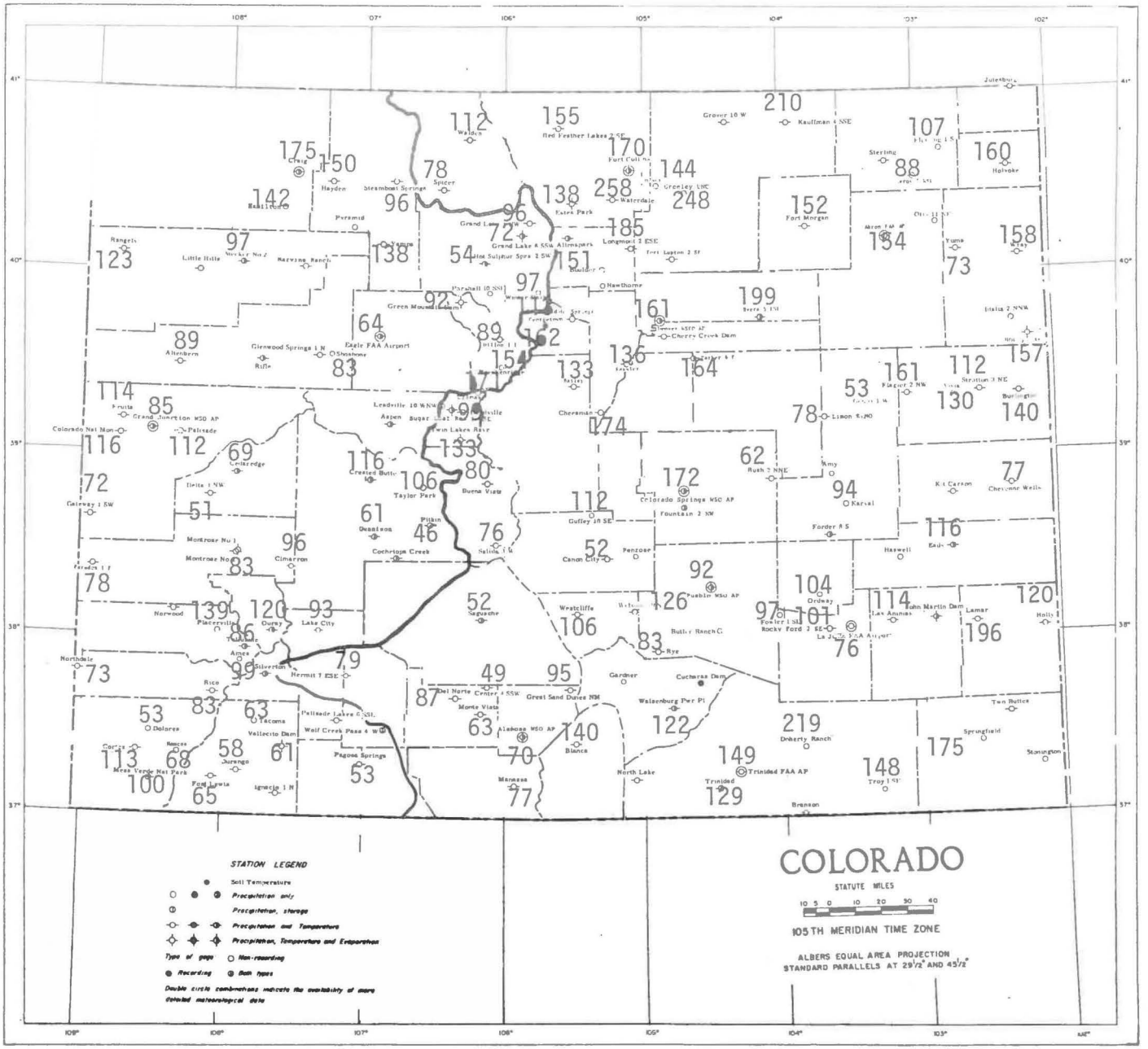


Figure 5. Temperatures for November 1979 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

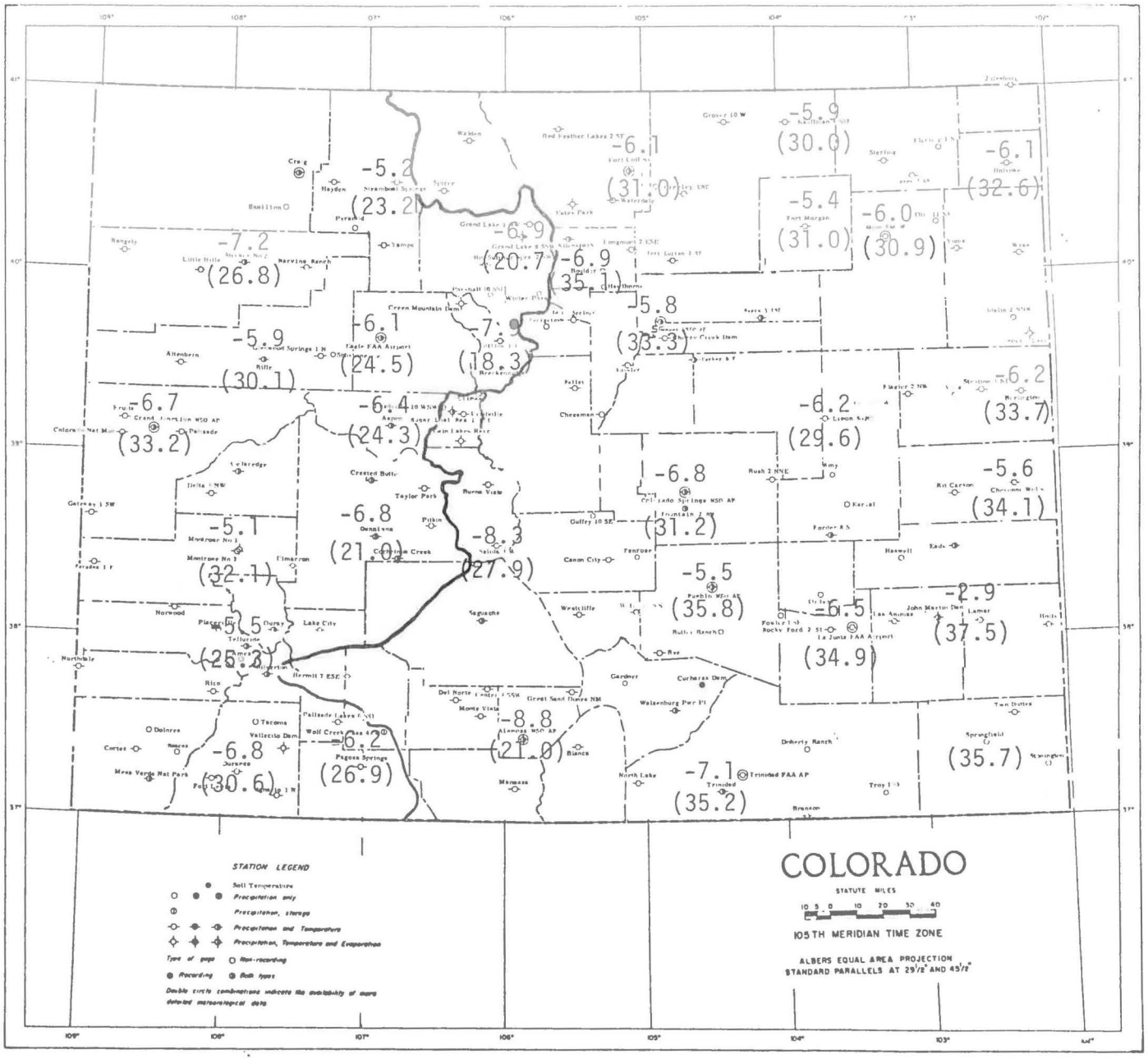


Figure 6. November 1979 Heating Degree Days as a percent above or below November 1978.

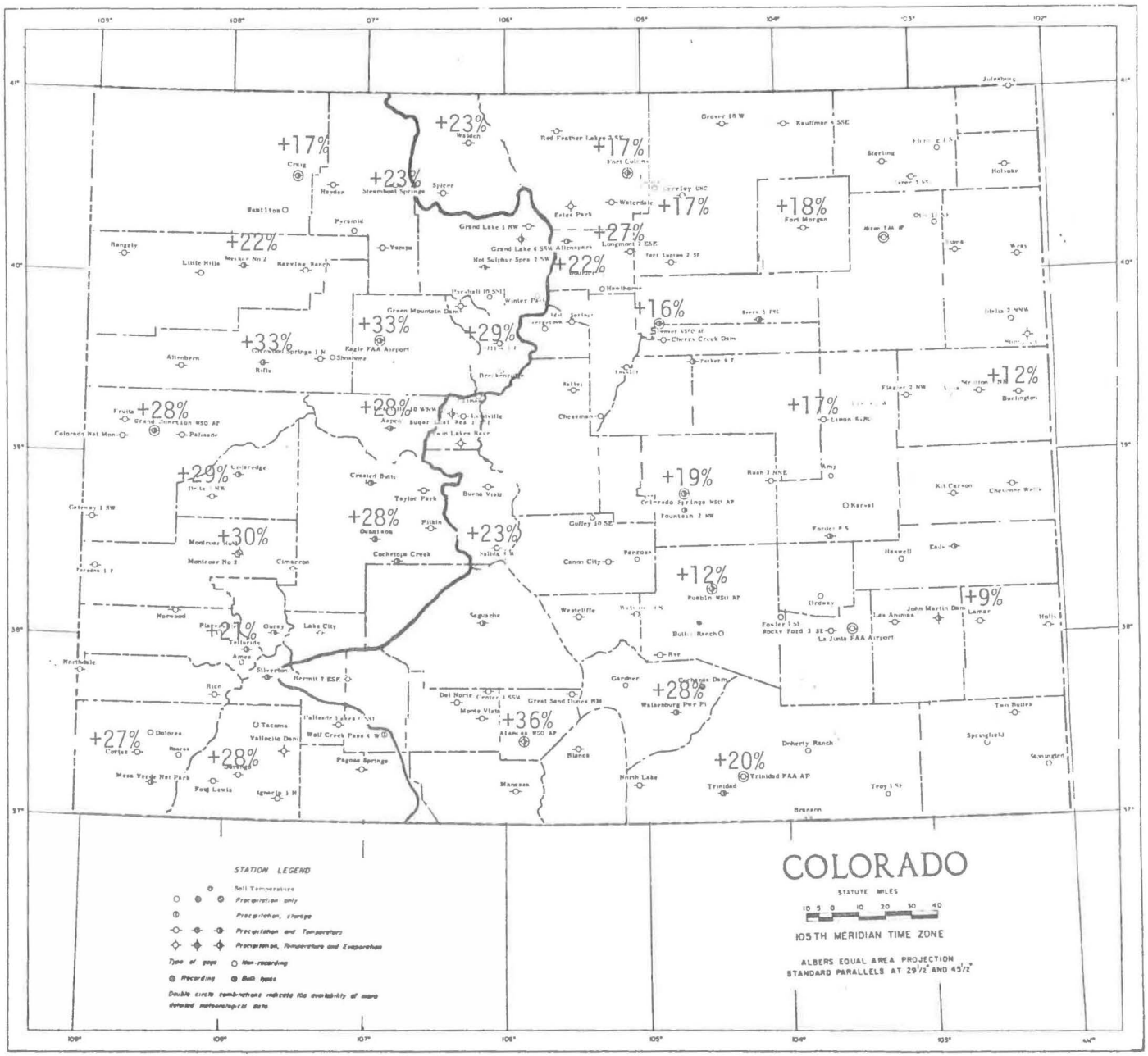


Table 1. Colorado Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590	1312								
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	569	1217								
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60		275	897								
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	930								
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	223	806								
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407	1005								
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391	1001								
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552	1199								
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738	1513	1456		761	450	198	50	
	1979-80	0	22	44	333	952								
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347	941								
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1393								
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1027								
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206								
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013								
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011								
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945								

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011								
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1313								
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	817								
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1056								
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054								
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1142								
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979								
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538			1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136								
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870								
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040								
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107								
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248								
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408									
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1185								
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	861								
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1235	1229	897	668	382	10636
	1979-80	188	260	407	757	1392								
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	921								

COLORADO CLIMATE -- DECEMBER 1979

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Frequent storms pounded the Pacific Coast from Oregon northward to Alaska during most of December. However, an extensive high pressure area over the central Rockies and the Great Plains blocked these storms from coming inland and kept Colorado dry and relatively mild. Finally, near the end of the month, two storm systems broke through and dumped precipitation on southern and eastern parts of the state. The second of these storms brought heavy snows to many of the same areas hard hit by the record snowstorm of November.

After a chilly start, a warming trend quickly established itself across the state. By December 4, temperatures climbed into the 50's and 60's (Fahrenheit) along the Front Range and eastward across the plains. Temperatures in the 70's were common in southeastern Colorado, and on December 4 both Holly and Rocky Ford recorded high temperatures of 76°, the warmest in the state. An influx of Pacific moisture produced a few inches of snowfall in the Central and Northern Mountains on the 6th and 7th. Otherwise the mild and dry weather continued.

A surge of arctic air slipped down across eastern Colorado on the 11th and 12th, dropping temperatures below zero in some areas and setting off a little light snow particulary along the Front Range and in some mountain areas. Warm air soon returned to the eastern half of the state raising daytime temperatures back into the 60's, but a stagnant cold air mass settled over the mountain valleys and the Western Slope producing many nights of sub-zero temperatures. Gradually the western part of the state also warmed in advance of an approaching storm system.

A minor storm developed west of Colorado on December 20 and 21 and then moved eastward across the southern part of the state. An erratic precipitation pattern was produced by this storm with significant snowfall in the southern San Juans, in parts of northwestern Colorado, in some Central and Northern mountain areas, and along portions of the Front Range. Many other areas were completely missed. A warm and dry Christmas day followed this first storm.

Snow and rain developed over the San Juans on the 26th as a second storm, weak but very moist and very slow moving, took shape over Arizona and New Mexico. By the 27th, heavy snow was falling across all of the area from the Front Range eastward across the plains with the exception of the extreme northeastern corner of the state. The snow tapered off on the 28th leaving a blanket of 10 or more inches of new snow from Fort Collins and Fort Morgan southward and southeastward to New Mexico and Kansas. The storm was quite unusual in that it affected mostly the lower elevations while producing very little snowfall in the mountains. Berthoud Pass recorded only 3 inches of snow from the three-day storm while Boulder and Fort Collins were buried under nearly 20 inches.

With a fresh snowcover temperatures plummetted and the month ended with many cold temperatures reported. As usual, Taylor Park Dam recorded the state's coldest temperature for the month, -31° on the morning of the 29th.

Precipitation amounts and precipitation as a percent of average for December are shown in Figures 1 and 2. Colorado was in a very dry weather pattern for most of the month. The two storms late in the month were responsible for practically all of the precipitation which fell. Significant precipitation fell from these storms on the southern and western slopes of the San Juans, but total monthly precipitation still fell short of average in those areas. The northern slopes of the San Juans and most of the Northern and Central Mountains and western valleys were not greatly affected by either storm, and this resulted in some very low precipitation totals. Many areas recorded less than half of the average December precipitation. Only 0.63 inches of precipitation was measured at Steamboat Springs, the lowest December total ever recorded there. The 0.17 inches at Dillon, 14 percent of average, also came close to setting a record.

East of the mountains it was an entirely different story. Precipitation in the eastern foothills was near average, but elsewhere totals were considerably greater. December is usually a very dry month and the monthly average precipitation is less than 0.50 inches nearly everywhere east of the mountains. But this past month totals greater than one inch were widespread. Many locations from the Front Range southeastward to the Kansas border received more than 300 percent of average. Karval and Rush each measured more than 700 percent of their average December precipitation.

Accumulated precipitation since October 1 is shown in Figure 3. All areas east of the mountains with the exception of extreme northeast Colorado have been much wetter than usual. The wettest area continues to be along the Front Range from Denver northward to Wyoming. Waterdale, at the mouth of the Big Thompson Canyon west of Loveland, recorded 70 inches of snow for the season by the end of December, nearly 30 inches more than Steamboat Springs. As a result of the dry December in western Colorado, most regions there are now drier than average for the first 3 months of the 1980 water year. However, it is still early in the season and few mountain areas are less than 60 percent of average. There is plenty of winter left to make up this deficit.

Temperatures for the month of December are shown in Figure 4. Areas east of the Continental Divide as well as southwestern Colorado were generally warmer than usual. Below average temperatures were limited to the northwestern quarter of the state and a small portion of the South Platte River valley in the vicinity of Fort Morgan. The warmest conditions were reported in extreme eastern parts of the state where most stations averaged nearly 5 degrees warmer than usual. Temperatures may have been even warmer in much of the South Platte drainage were it not for the effects of the persistent snowcover which remained from the November snowstorm.

Heating degree day information, which can be a great help in assessing energy demands for space heating, is presented in Table 1. Heating degree day totals generally ranged from 3 to 15 percent below average east of the Divide and in the San Juan area, indicating the warmer than average temperatures. Totals across the remainder of the state ranged from 2 to 7 percent above average (temperatures colder than average).

Heating degree day totals for December 1979 were much less than December 1978 across the entire state (Figure 5). In the Northern and Central Mountains the reduction was only about 9 percent. However, across the rest of the state the difference was generally 20 to 30 percent. In terms of energy needs, this corresponds to a significant decrease in the amount of energy needed for heating purposes compared to last year. This should come as good news to all of us.

Figure 1. December 1979 precipitation amounts (inches).

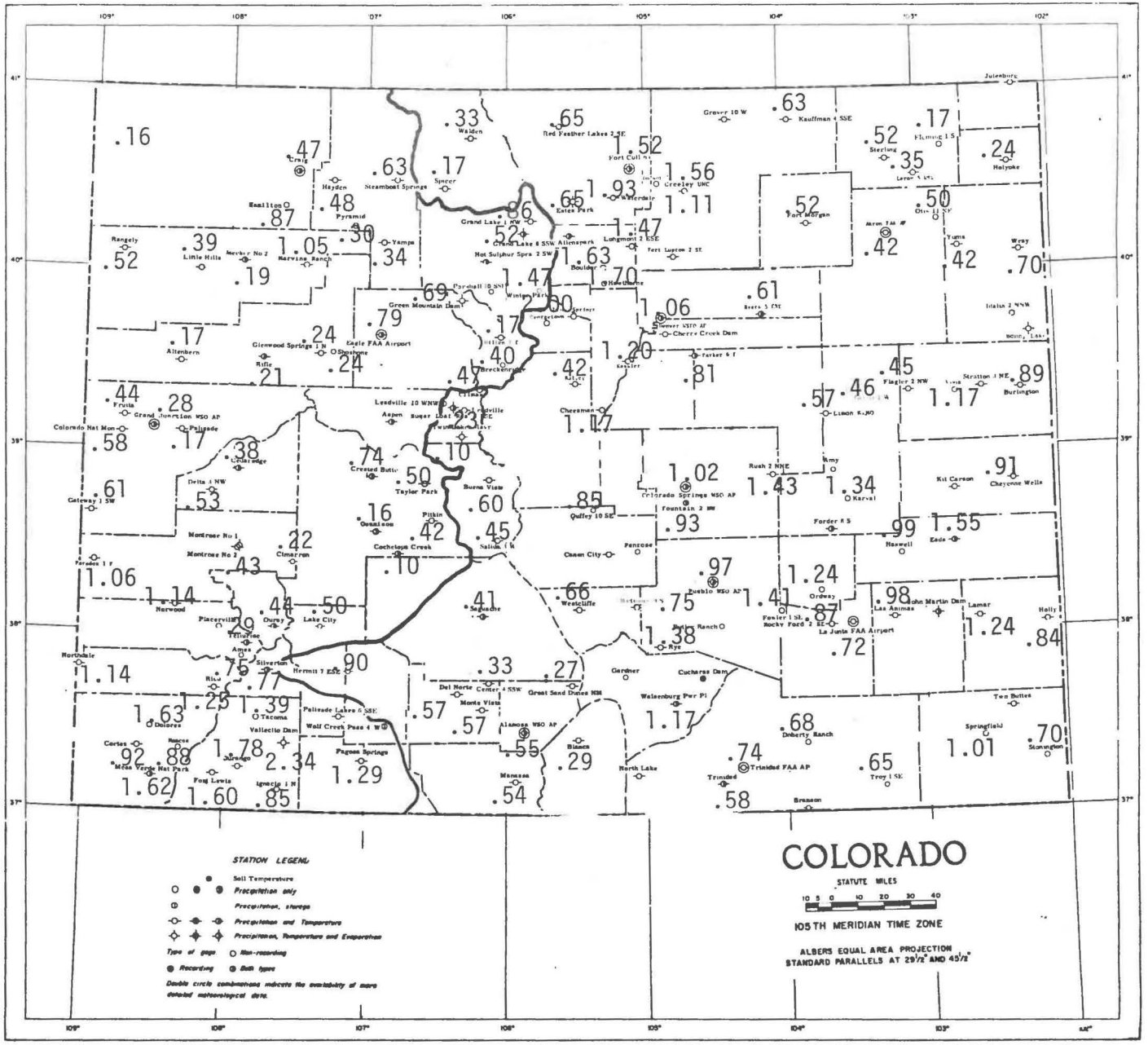


Figure 2. Precipitation for December 1979 as a percent of the 1951-1970 average.

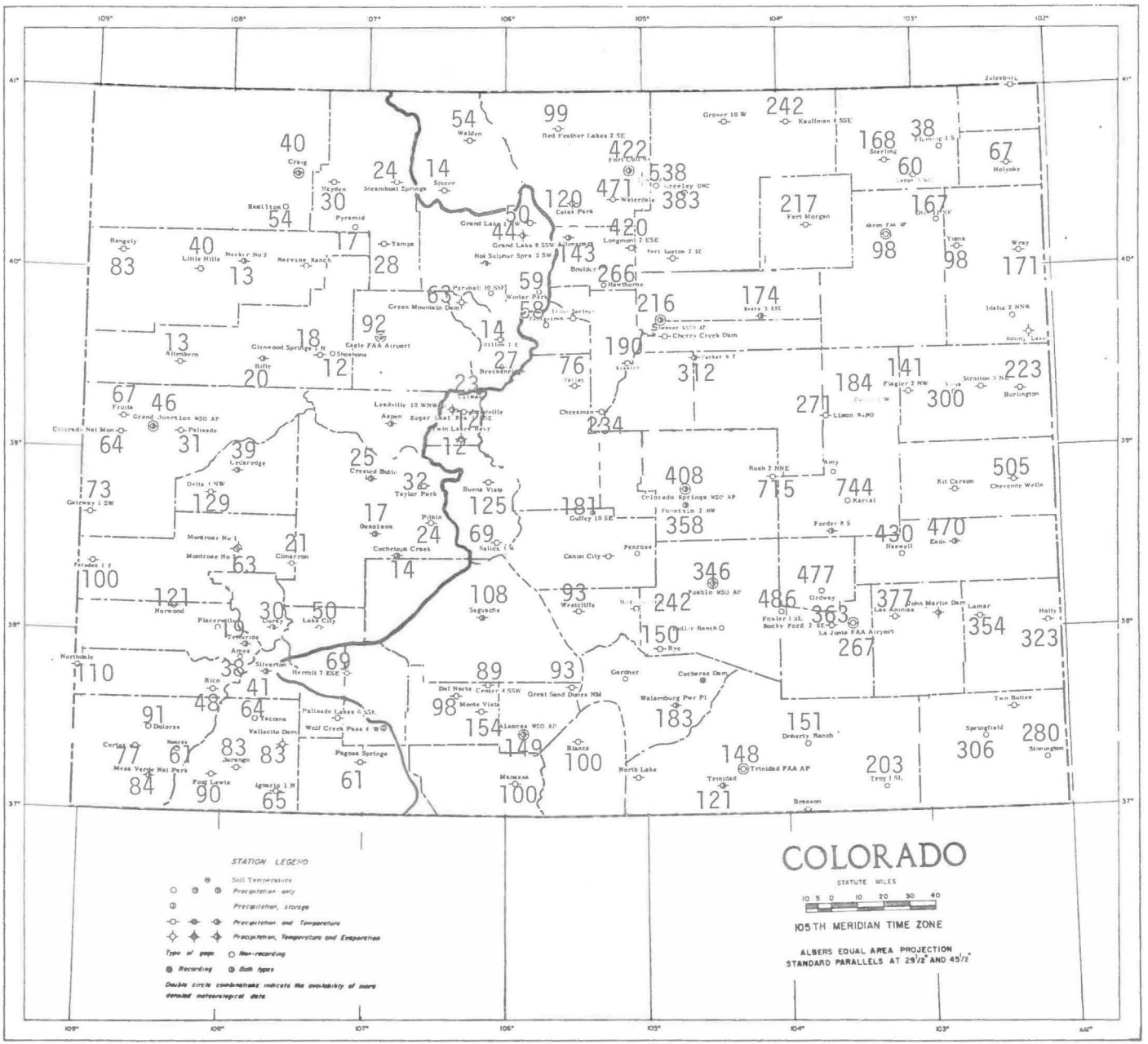


Figure 3. Precipitation for October through December 1979 as a percent of the 1951-1970 average.

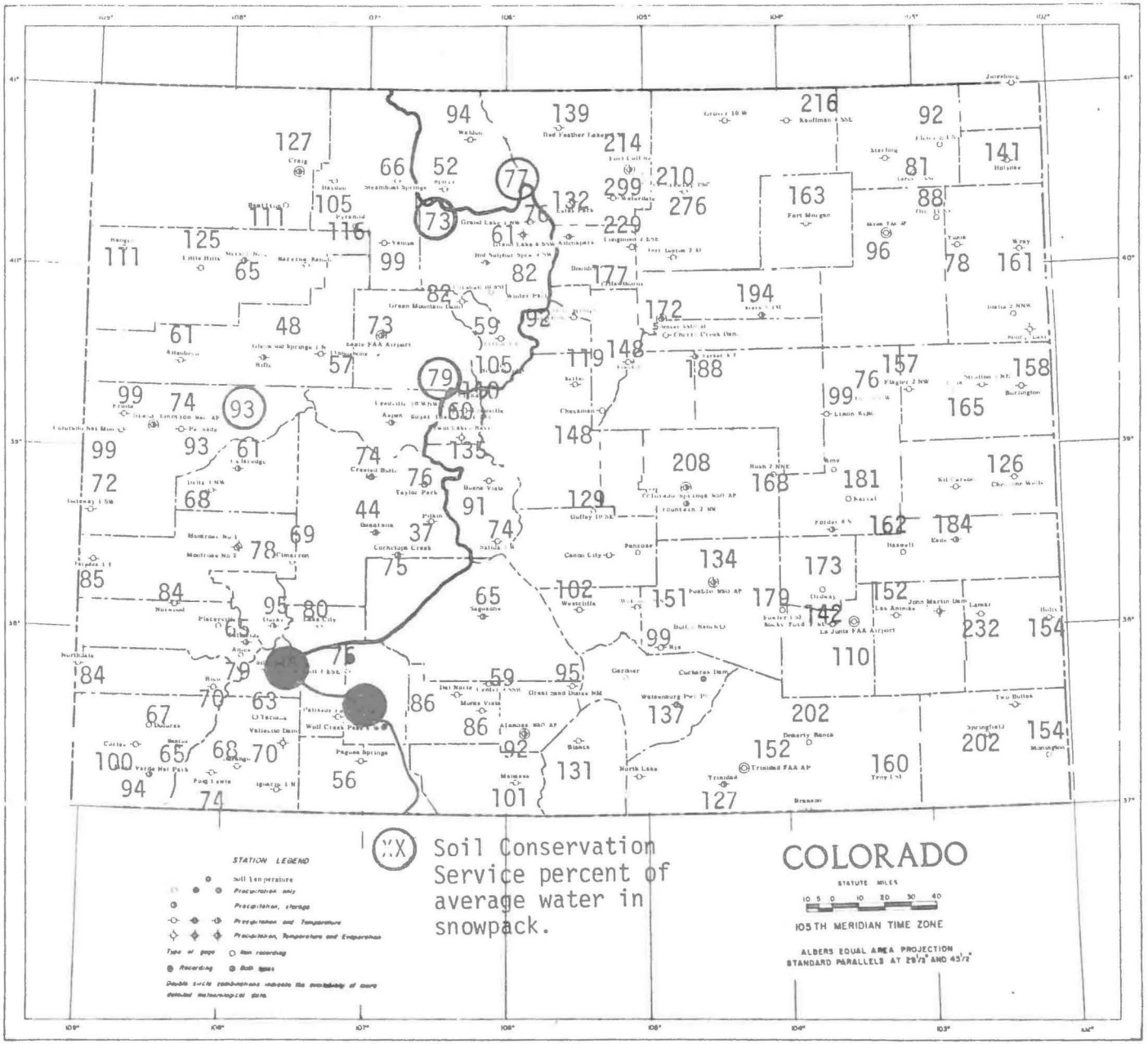


Figure 4. Temperatures for December 1979 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

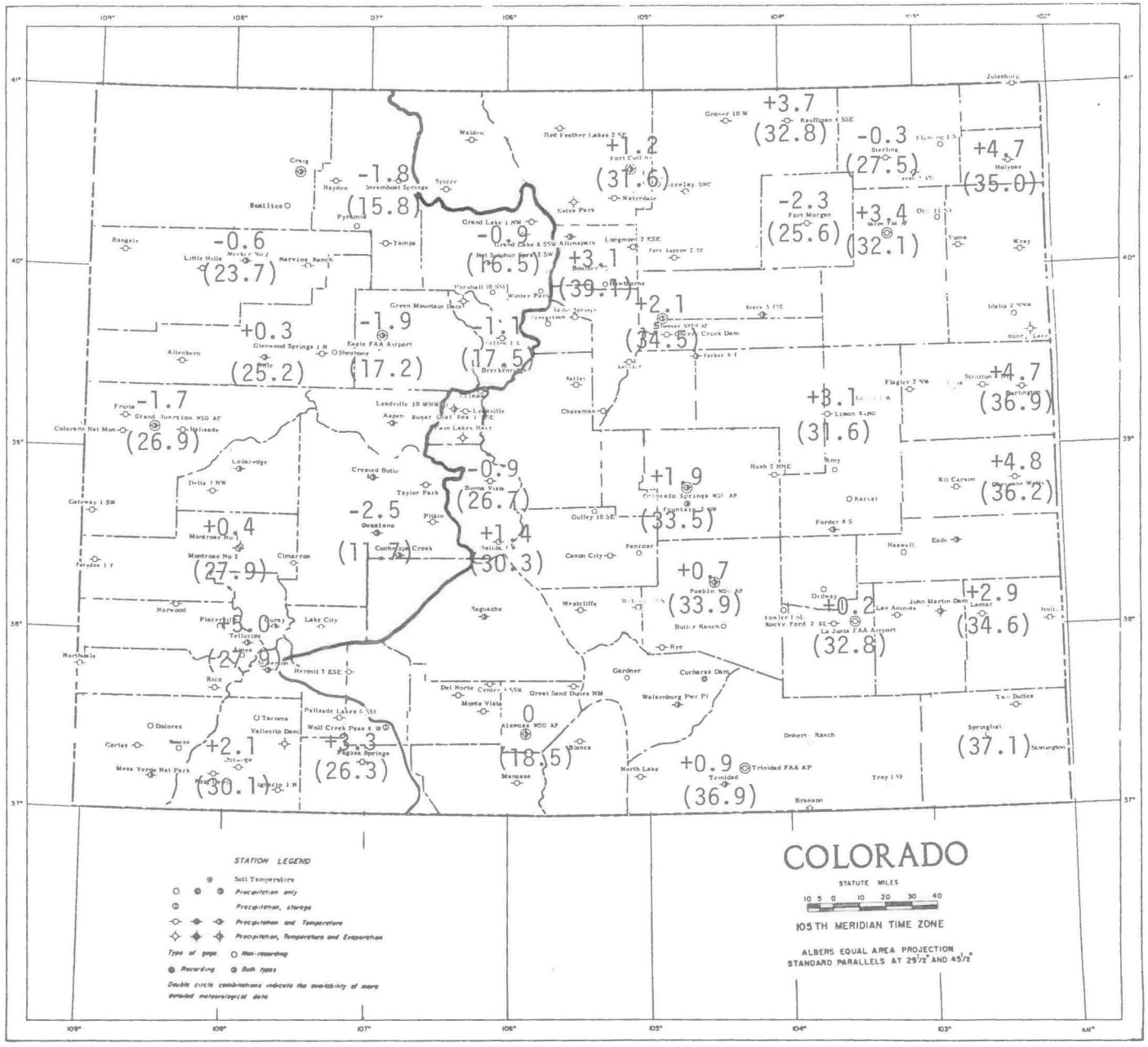
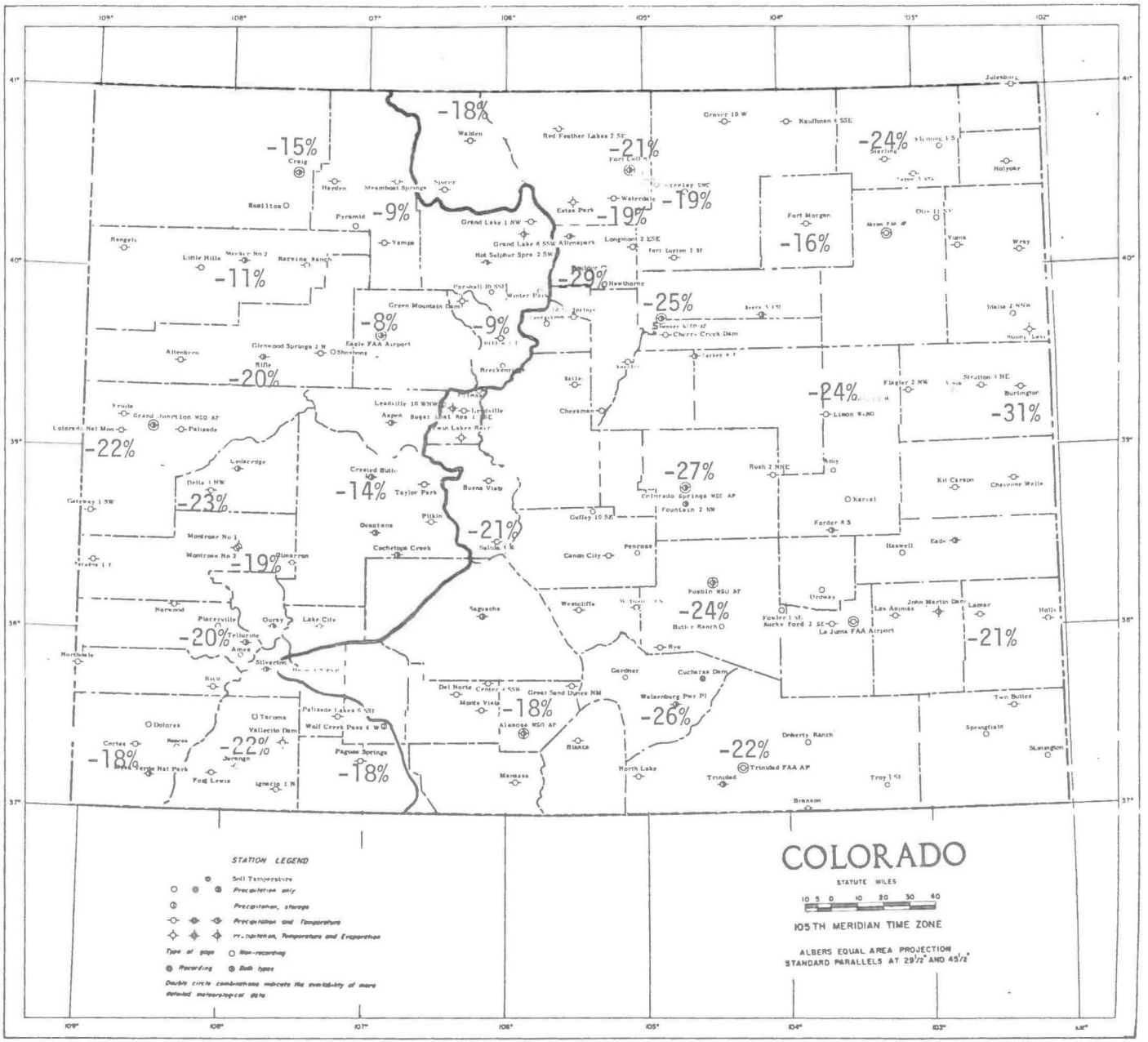


Figure 5. December 1979 Heating Degree Days as a percent above or below December 1978.



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	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	928	864							
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
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Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
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Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
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	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
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	1979-80	0	3	26	252	820	935							
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
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Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066							
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276							
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1141							
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192							
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959							
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1225							
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1067							
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1519							
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1154							
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142							
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	874							
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340							
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	881							

COLORADO CLIMATE -- JANUARY 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

The first month of 1980 brought lots of valuable moisture to Colorado. Winter snowpack improved greatly in the mountains during January, while the Front Range and Eastern Plains areas continued to have an unusually wet and snowy winter.

January weather could best be described as turbulent and unsettled. Strong westerly flow aloft (air moving from west to east) persisted throughout most of the month over Colorado bringing plenty of Pacific moisture into the western half of the state. At the same time, several bursts of frigid Arctic air slipped southward across the Great Plains only to be quickly replaced by milder Pacific air.

The first few days of the new year were seasonably cold across the state. A light dusting of snow covered the southeast on the 2nd, and a period of snow fell in the Northern and Central Mountains on the 2nd and 4th. Downslope winds warmed the Front Range and Eastern Plains on the 5th, but a strong polar front quickly cooled things off again. The coldest air settled into the Arkansas valley where temperatures fell well below zero on the 7th, 8th, and 9th.

A steady flow of mild but moist air began funnelling into western Colorado on the 6th and 7th of January and continued for nearly two weeks. Durango recorded measurable rain or snow on 14 consecutive days from the 7th to the 20th totalling over 5 inches of water-equivalent precipitation. On the 10th, a very strong storm system raced across the northern half of the state first causing a rapid warm up followed immediately by a blizzard squall line which produced rare winter lightning and thunder near Hayden, Steamboat Springs, and Walden. The same storm produced wind gusts estimated above 90 miles per hour at Julesburg. Extremely low barometric pressures accompanied this storm. At Steamboat Springs, temperatures dropped 61 degrees from a high of 44° before the frontal passage to a low of -17°.

Temperatures quickly rebounded statewide. Grand Junction experienced a rare stretch of 5 consecutive days with above freezing readings day and

night as dense clouds covered all of western Colorado. On the 13th and 14th, precipitation changed from snow to rain even at elevations as high as 9,000 feet. Heavy nighttime ground fog again developed across portions of eastern Colorado posing serious hazards to travel.

On January 18, a storm formed west and south of Colorado drawing colder air into the state, especially east of the mountains, and generating heavy snowfalls in many areas. As much as 3 feet of snow fell on the San Juan Mountains, and several inches of new snow were reported at most locations east of the Divide.

Precipitation finally tapered off in the mountains and temperatures again fell below zero in some locations. Taylor Park Dam recorded the state's coldest temperature for the month, -35° on the 23rd. Meanwhile a strong warming trend was occurring east of the mountains which lifted temperatures into the 50's and 60's by the 24th. Pueblo hit 69° on the 24th, the state's highest temperature.

The month ended in a fury as an intense cold wave followed on the heels of a brief but truly furious blizzard which raced southward from Wyoming across eastern Colorado on the afternoon of the 25th. Heavy snow and winds up to 60 mph brought havoc to both urban and rural areas. Temperatures east of the mountains stayed near zero even during the daytime from the 26th through the 30th and a foot or more of dry snow accumulated in some areas. While the mountains and western valleys escaped the cold, they did not escape the precipitation. A large storm system centered in Utah and Nevada dumped very heavy wet snows on parts of western Colorado. From the 27th to the 29th one to 3 feet of new snow piled up on many locations from Walden and Craig southward to Rifle, Telluride, and Durango. Finally, as the month ended, skies began to clear and temperatures east of the mountains began to return to more tolerable levels.

Total precipitation amounts and precipitation as a percent of average for January are shown in Figures 1 and 2. Above average precipitation fell almost everywhere in Colorado. Most areas east of the mountains received less than one inch of water-equivalent precipitation. However, totals were still much above the dry January averages except for a drier area from Denver to Walsenburg in the eastern foothills. Greeley's 1.44 inch total was 533 percent of average.

Very heavy precipitation amounts were noted in the western half of the state. Steamboat Springs' 5.80 inch total set a new record for the month. The 6.94 inches of precipitation at Durango was the second greatest January total ever measured there (the old record was 6.95 inches in 1916). Most areas west of the Continental Divide received more than double the monthly average, while the San Juan region recorded up to 400 percent of average. Below average precipitation was limited to a small area around Grand Junction and near Gunnison.

With the help of January's moisture, practically all of Colorado is now wetter than average for the 1980 water year (Figure 3). Although the mountain snowpack is less than it was last year at this time, it is above average statewide. The wettest area in the state, compared to average, continues to be the Front Range region from Denver northward. The Greeley and Loveland area are running about 300 percent of average.

Temperatures for the month as a whole varied tremendously across the state (Figure 4). Monthly averages ranged from nearly 6 degrees (Fahrenheit) colder than usual on the Eastern Plains to as much as 9 degrees above average in the west. At Gunnison this was the warmest January since 1954 and the second warmest since records began in 1888. The heavy and persistent cloud cover over the mountains and western valleys kept daytime temperatures near or only slightly above average while nighttime lows were much warmer than usual. Monthly temperatures east of the mountains ended up about 5 degrees below average mostly as a result of the cold blast late in the month. A small area from Trinidad to Pueblo was not so cold.

Heating degree day information are presented in Figures 5 and 6 and also in Table 1. Monthly totals (which are directly proportional to the amount of energy needed to heat our homes, schools and businesses) east of the mountains ranged from near average at Walsenburg and Trinidad to 17 percent above average (colder than average) at Limon. In the mountains and western portions of the state, totals ranged from near average at Dillon and Salida to about 16 percent below average (warmer than average) at Delta, Eagle, Grand Junction, and Gunnison.

Despite the cold weather east of the mountains in January, heating degree day totals were much lower than in 1979 everywhere in the state (Figure 6). This means that less fuel was needed for heating our homes,

schools and businesses than last year. East of the Continental Divide, totals this year were 11 to 25 percent less than last January. West of the Divide, degree day totals were down from 17 to 33 percent. Statewide this adds up to considerable energy savings, although we must remember that January 1979 was an extremely cold month.

Figure 1. January 1980 precipitation amounts (inches).

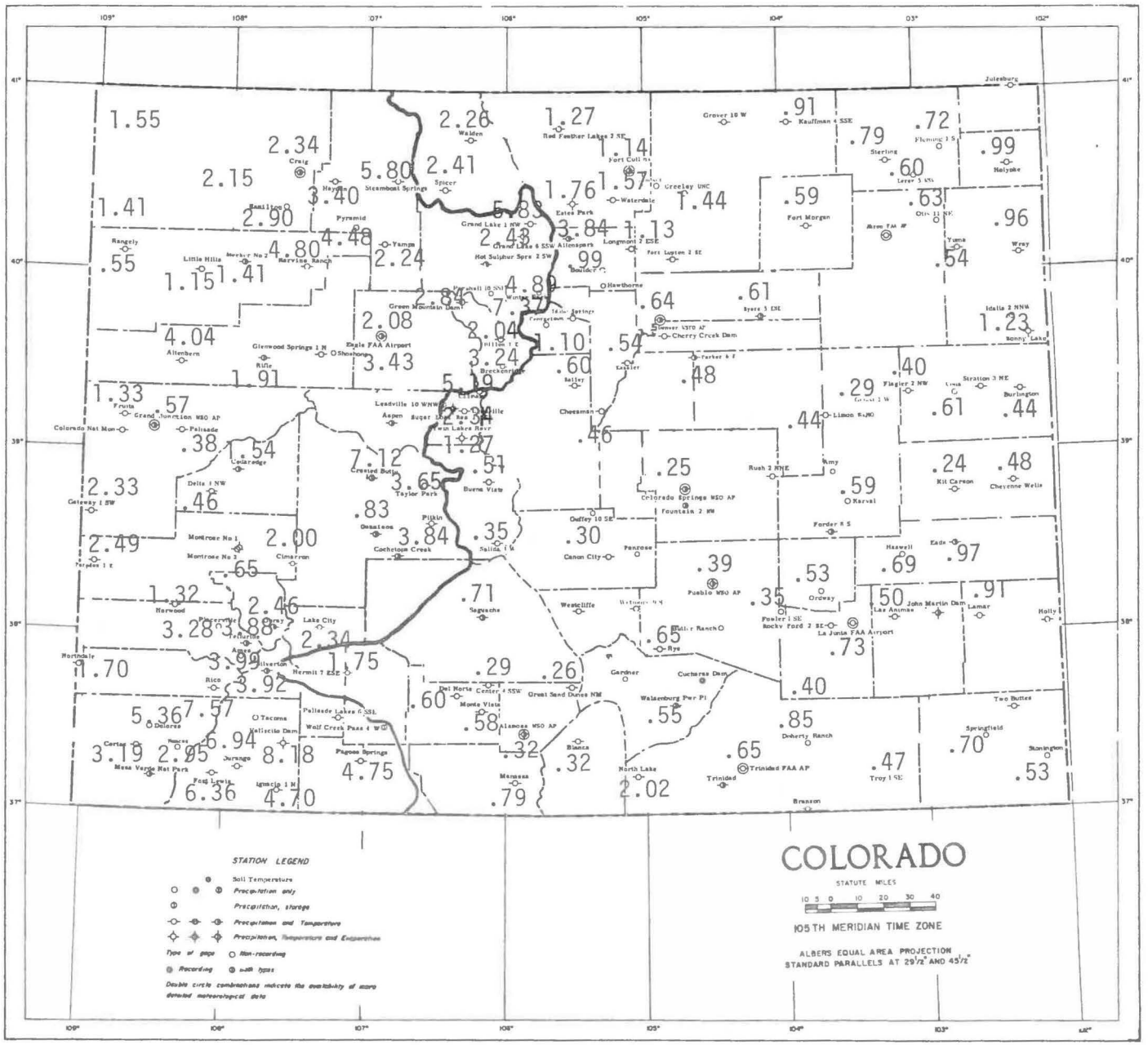


Figure 2. Precipitation for January 1980 as a percent of the 1951-1970 average.

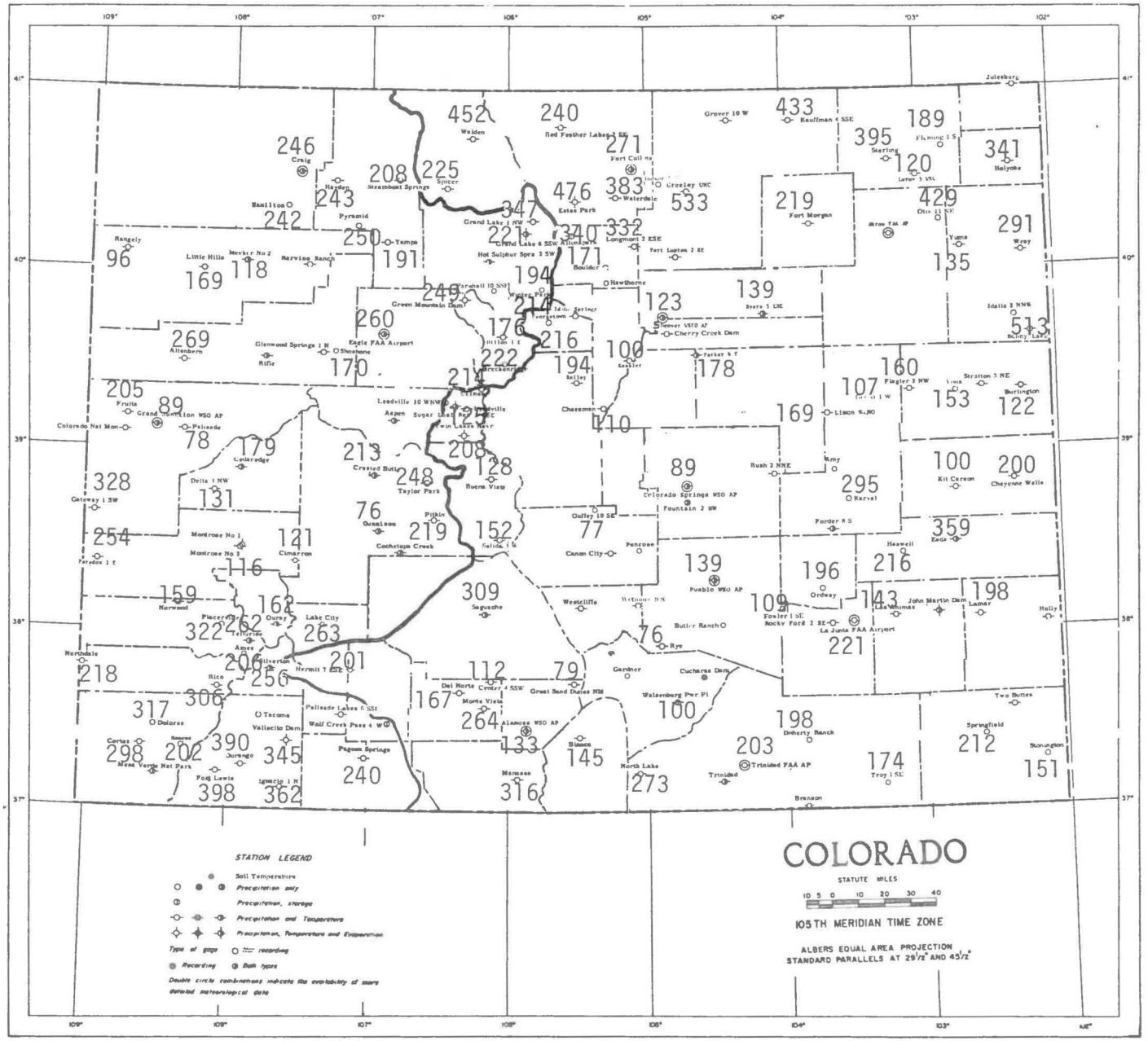


Figure 3. Precipitation for October through January 1980 as a percent of the 1951-1970 average.

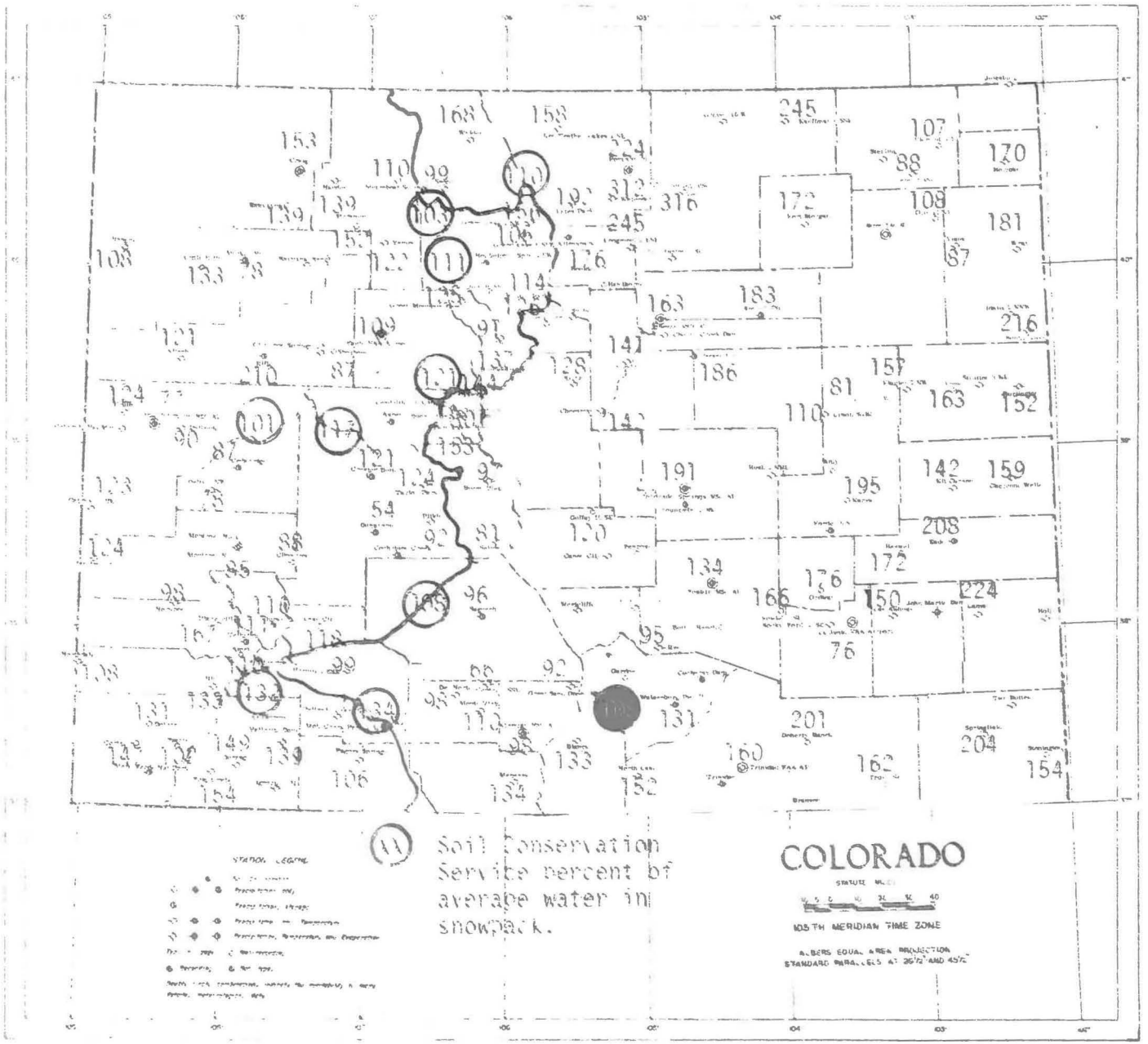


Figure 4. Temperatures for January 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

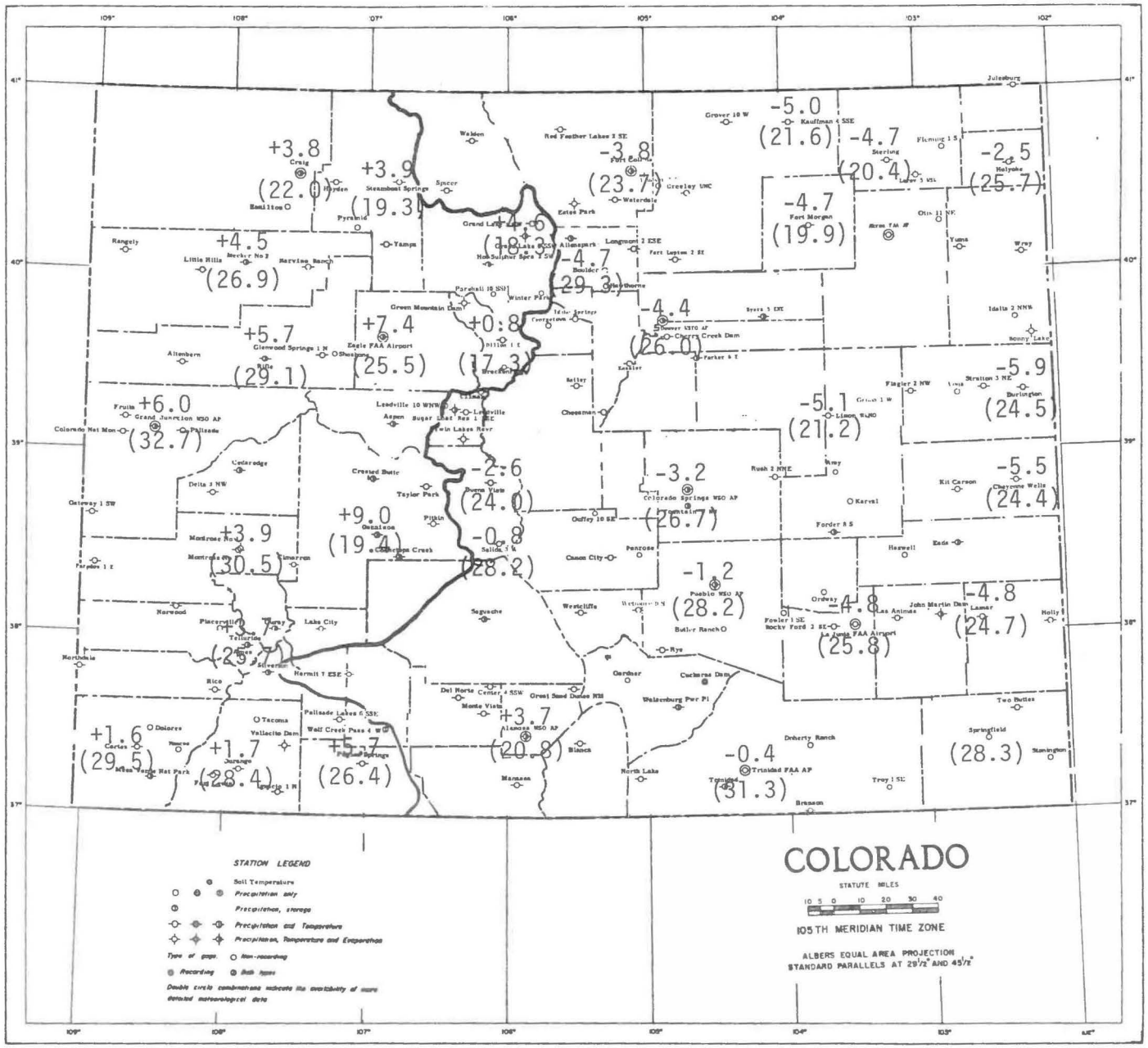


Figure 5. January 1980 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 average

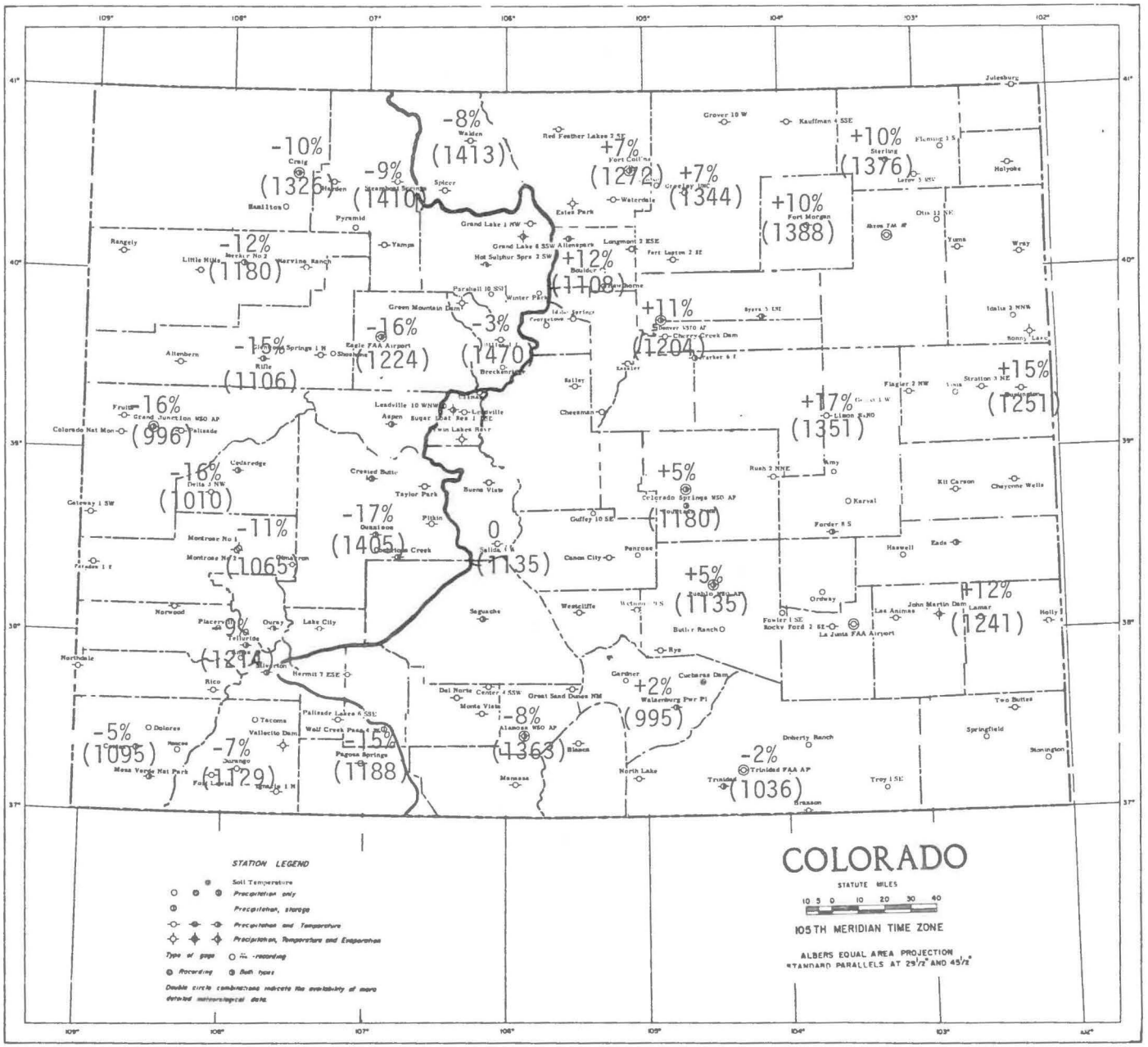


Figure 6. January 1980 Heating Degree Days as a percent above or below January 1979.

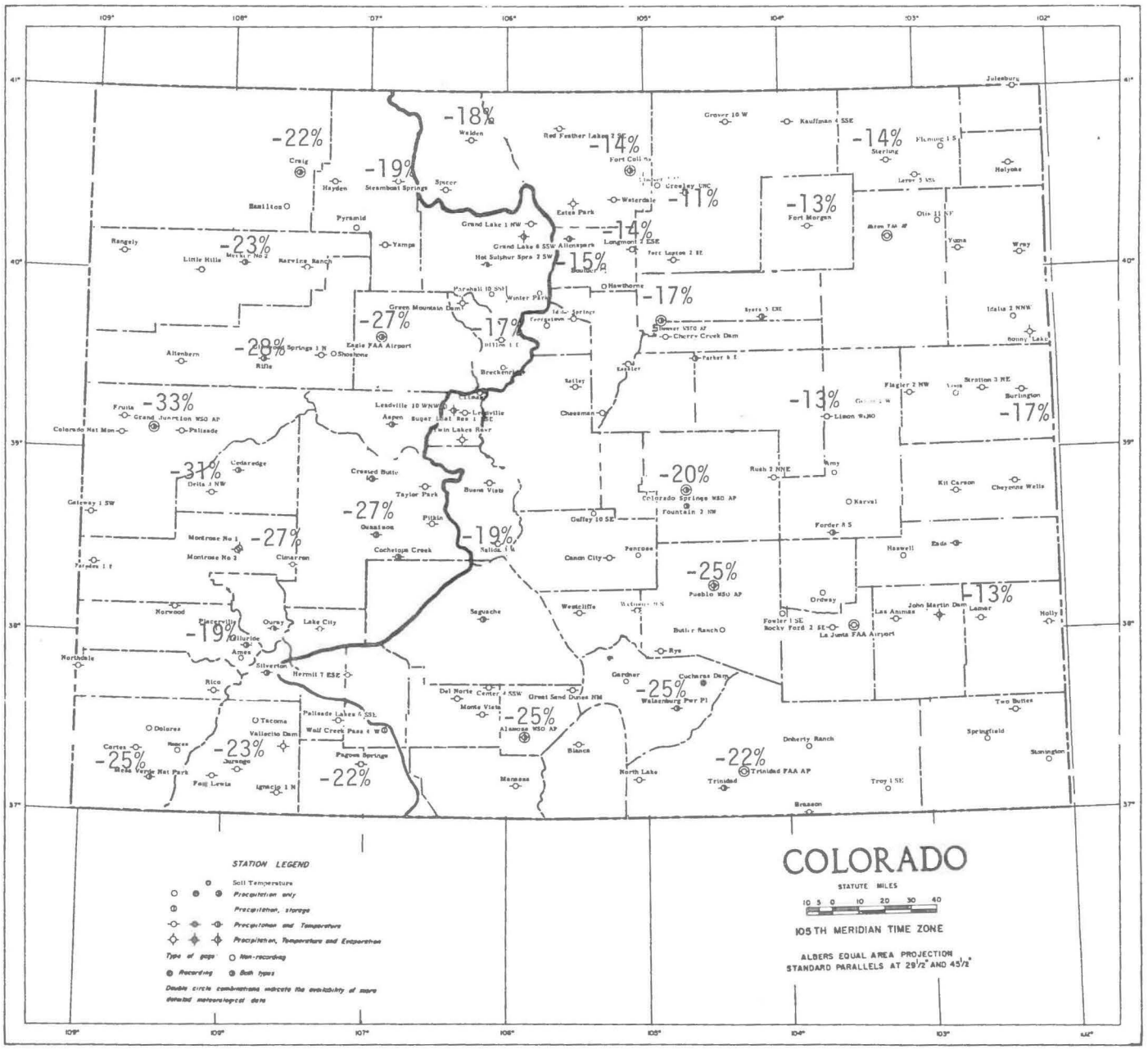


Table 1. Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590	1312	1438	1363						
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	569	1211								
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60		275	890	802	1108						
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	928	864	1251						
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	223	804	762	1067						
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407	1005	969	1180						
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391	1014	1118	1095						
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552	1199	1364	1326						
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738	1513	1456		761	450	198	50	
	1979-80	0	22	44	333	956	1164	1010						
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347	941	939	1204						
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1394	1467	1470						
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1022	1078	1129						
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1224						
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1272						
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388						
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	996						
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344						
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1306	1648	1405						
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241						
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1351						
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1307						
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1180						
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065						
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1188						
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135						
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106						
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1135						
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1410						
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1376						
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214						
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	871	1036						
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413						
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	995						

COLORADO CLIMATE--FEBRUARY 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

February was mild and wet along and west of the Continental Divide. The succession of storms which brought record rainfall and widespread flooding to California and the desert Southwest weakened considerably by the time they reached Colorado but still carried abundant moisture into the state. Meanwhile, eastern Colorado experienced a "typical" February. Several outbreaks of frigid arctic air brought snow, fog, and freezing drizzle to areas east of the mountains. However, precipitation was generally light and there were plenty of warmer, sunnier days between storms.

February got off to a rather pleasant start as an extensive high pressure area over most of the West brought mild and dry weather to Colorado for the first six day of the month. A sudden change occurred on the 6th and 7th as a storm system formed over New Mexico. Colder temperatures statewide, and widespread clouds and precipitation accompanied the storm. The heaviest snowfalls occurred east of the mountains. Denver recorded 6.5 inches of snow on the 7th and 8th and Fort Collins totalled 8.8 inches. The skies cleared and most areas of the state experienced their coldest temperatures of the month on the morning of the 9th. Walden, for example, recorded -30° Fahrenheit. Grand Junction's +17° reading was also their coldest temperature during the month. The state's coldest temperature was reported at Rio Grande Reservoir in the San Juan Mountains, -46° on the 12th and 14th.

Cold weather persisted for a few days, but clouds, moisture and warmer temperatures began to invade Colorado from the west. Precipitation began in the San Juan Mountains on the 12th and spread across the rest of western Colorado by the 14th. Except for a brief lull on the 16th and 17th, precipitation fell almost constantly in the mountains and western valleys until the 24th. Because of the warm temperatures, elevations below 7,000 feet received mostly rain. At higher elevations, snowfalls were extremely heavy. In 11 days Crested Butte recorded 67 inches of snow with a water equivalent of 5.10 inches. During that same period Wolf Creek Pass received an almost unbelievable 137 inches of snow. Areas east of the Continental Divide were not affected by this western storm.

East of the mountains, a huge arctic air mass slipped southward across the plains on the 14th and 15th. A cold, damp "upslope" easterly wind produced fog, light snow, and freezing drizzle on the 15th and 16th which artistically decorated trees and powerlines with a frosty coating of rime ice. The ice also produced hazardous driving conditions from the Front Range cities eastward across the plains. The cold air began to retreat on the 17th, and by the 18th temperatures soared up into the 50's, 60's, and 70's. Records were tied or broken at Alamosa, Colorado Springs, and Pueblo with temperatures of 55°, 63°, and 73°, respectively.

Several days of cooler temperatures were followed by a real dose of springlike weather on the 26th, 27th, and 28th. Temperatures in the 60's and 70's were quite common east of the mountains. Denver hit the 70° mark on the 27th of February. Pueblo recorded the state's highest temperature, 81° also on the 27th. The warm weather reached up into the mountains as well. Berthoud Pass set a new February high temperature record with a 46° reading on the afternoon of the 28th.

Winter blasted its way back into the state on the last day of the month. At Sterling, the temperature plummetted from a high of 64° on the 28th to a low of -6° on the 29th. A dusting of new snow accompanied the cold wave across the Eastern Plains and parts of the Northern and Central Mountains.

Temperatures for the month as a whole (Figure 1) varied significantly across the state. In the western half of the state, temperatures averaged 3 to 6 degrees warmer than usual. Southeastern Colorado was also somewhat warmer than usual. Below average readings were limited to northeastern Colorado where unusually persistent snowcover helped to hold down the temperatures. This was the second consecutive very warm month in parts of western Colorado making this the warmest two-month mid-winter period since 1954. This is in sharp contrast to the extreme cold of last winter. At Alamosa, for example, the January-February temperature average was 25.1°, 17 degrees warmer than last year.

Precipitation amounts and precipitation as a percent of the February averages are shown in Figures 2 and 3. Precipitation was much above average along and west of the Continental Divide. The southern slopes of the San Juans were especially hard hit with some areas reporting more than four times their average February precipitation. East of the Divide, practically

all areas received less than 1.00 inches of water equivalent precipitation. The San Luis Valley and much of the eastern Plains were generally near or slightly wetter than average. A few local areas including Holyoke, Fort Collins, Greeley, and Blanca received more than 200 percent of average. A narrow band in the foothills from Estes Park southward to Bailey, Westcliffe and on to Trinidad ended up with only 50 percent or less of the average February precipitation. Extreme southeastern Colorado was also very dry.

Practically the entire state continues to be wetter than average for the 1980 water year (Figure 4). After a dry early winter, the San Juans have now become the wettest mountain area of the state. All of the Colorado mountains are maintaining a good snowpack and reservoir storage is already above average. This indicates that water supplies should be in good shape this growing season. Moisture has also been above average across much of the dryland agricultural areas of the state. This should help the winter wheat crop get off to a good spring start.

Heating degree day information are contained in Figures 5 and 6 and in Table 1. Heating degree day totals, which are directly proportional to the amount of energy required to heat our homes, schools and businesses, ranged from a low of 695 at Canon City to a high of 1365 at Gunnison. Compared to average, Feburary totals were generally 5% to 13% greater than usual in northeastern Colorado, near average in the southeastern and southwestern corners of the state, and 4% to 16% fewer than usual across the rest of the area reflecting the above average temperatures which much of the state experienced.

Heating degree day totals were less than in February 1979 over large portions of Colorado (Figure 6). This means that less energy was needed for space heating in many areas, especially the southwestern one-third of the state. For example, Grand Junction recorded 36% fewer heating degree days than in February 1979. The only region where totals were significantly greater than last year was along the Front Range from Denver to Fort Collins. Greeley's total was 15% higher than last year

Figure 1. Temperatures for February 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

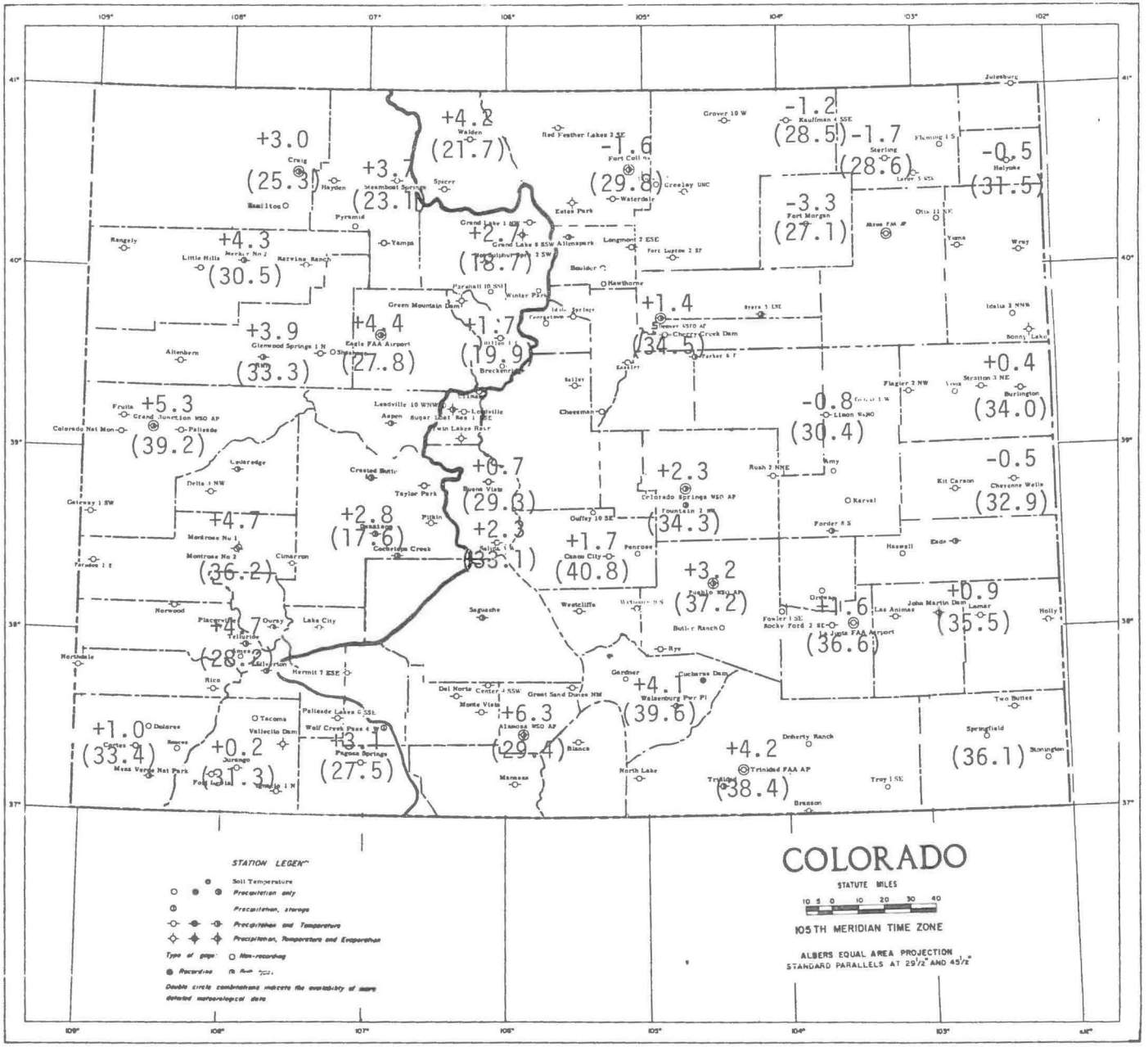


Figure. 2. February 1980 precipitation amounts (inches).

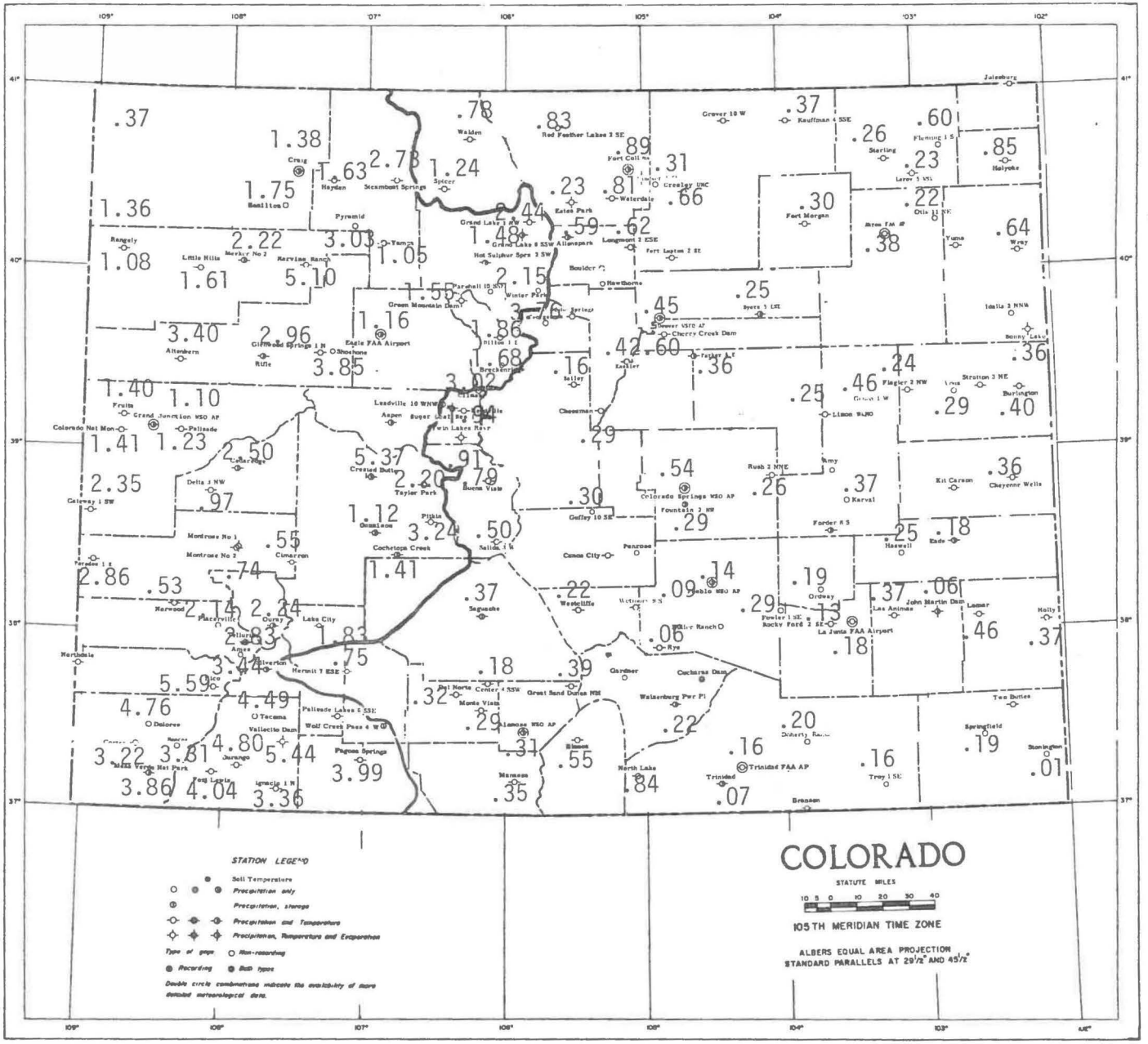


Figure 3. Precipitation for February 1980 as a percent of the 1951-1970 average.

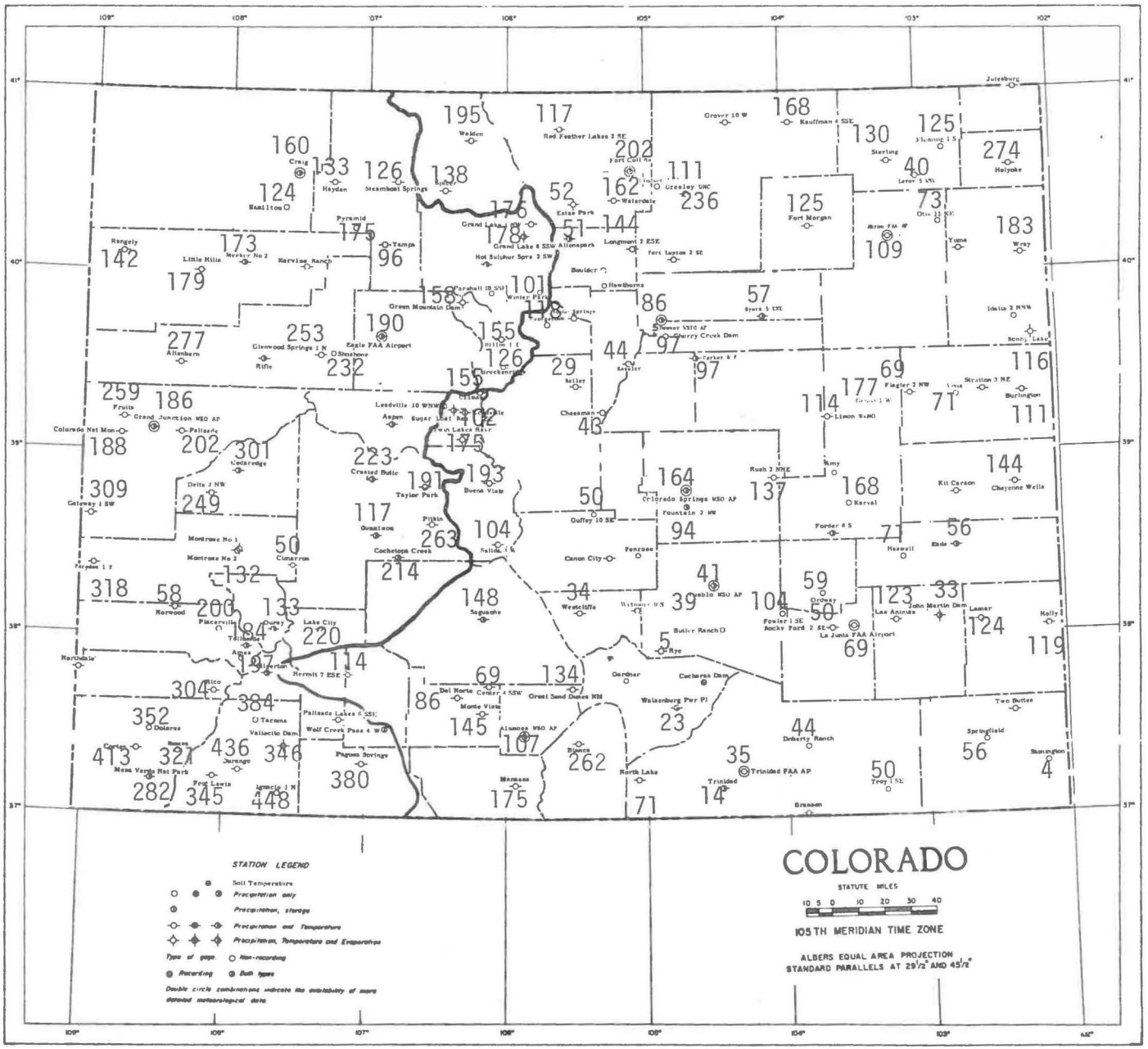


Figure 4. Precipitation for October 1979 through February 1980 as a percent of the 1951-1970 average.

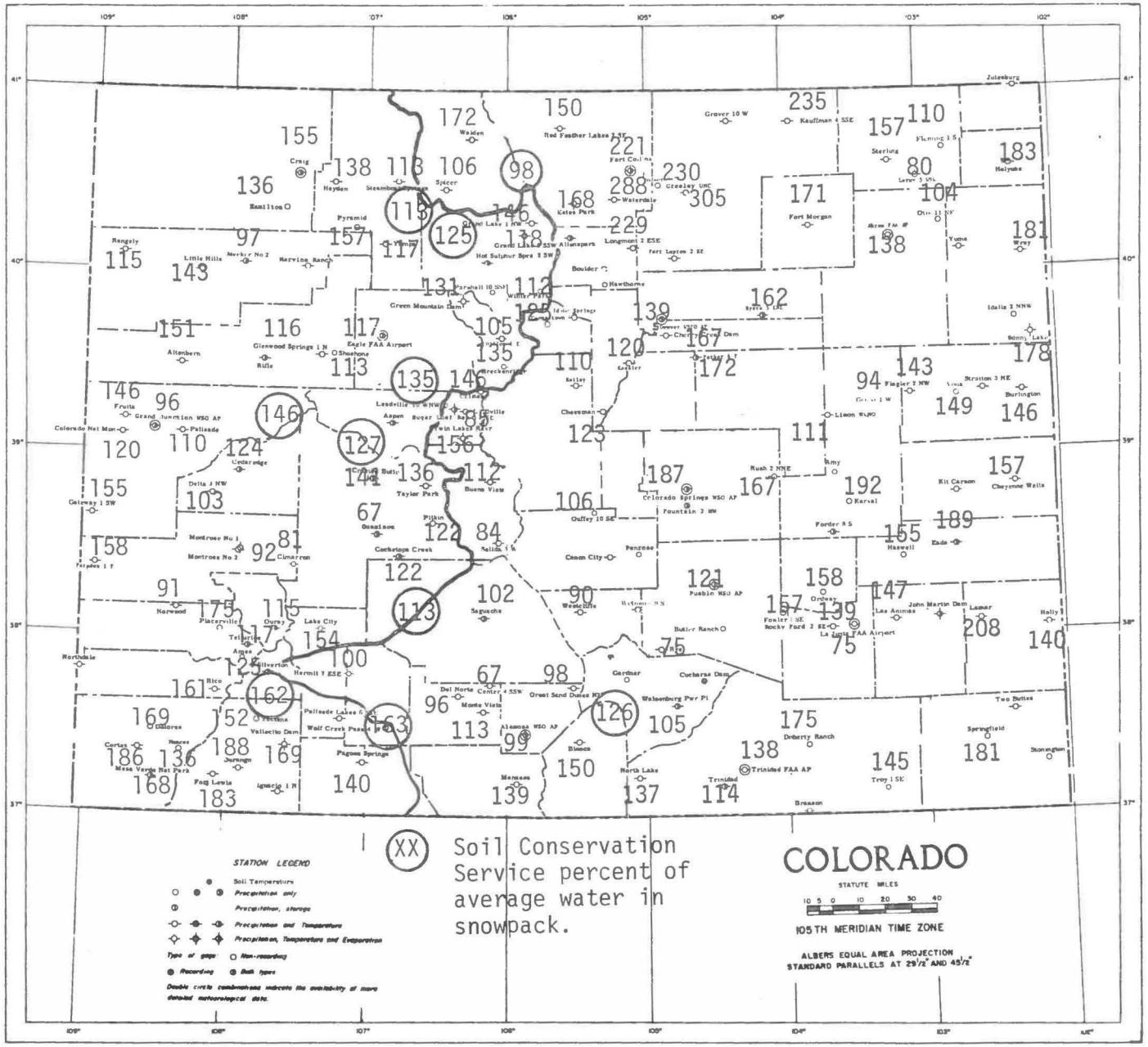


Figure 5. February 1980 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 average.

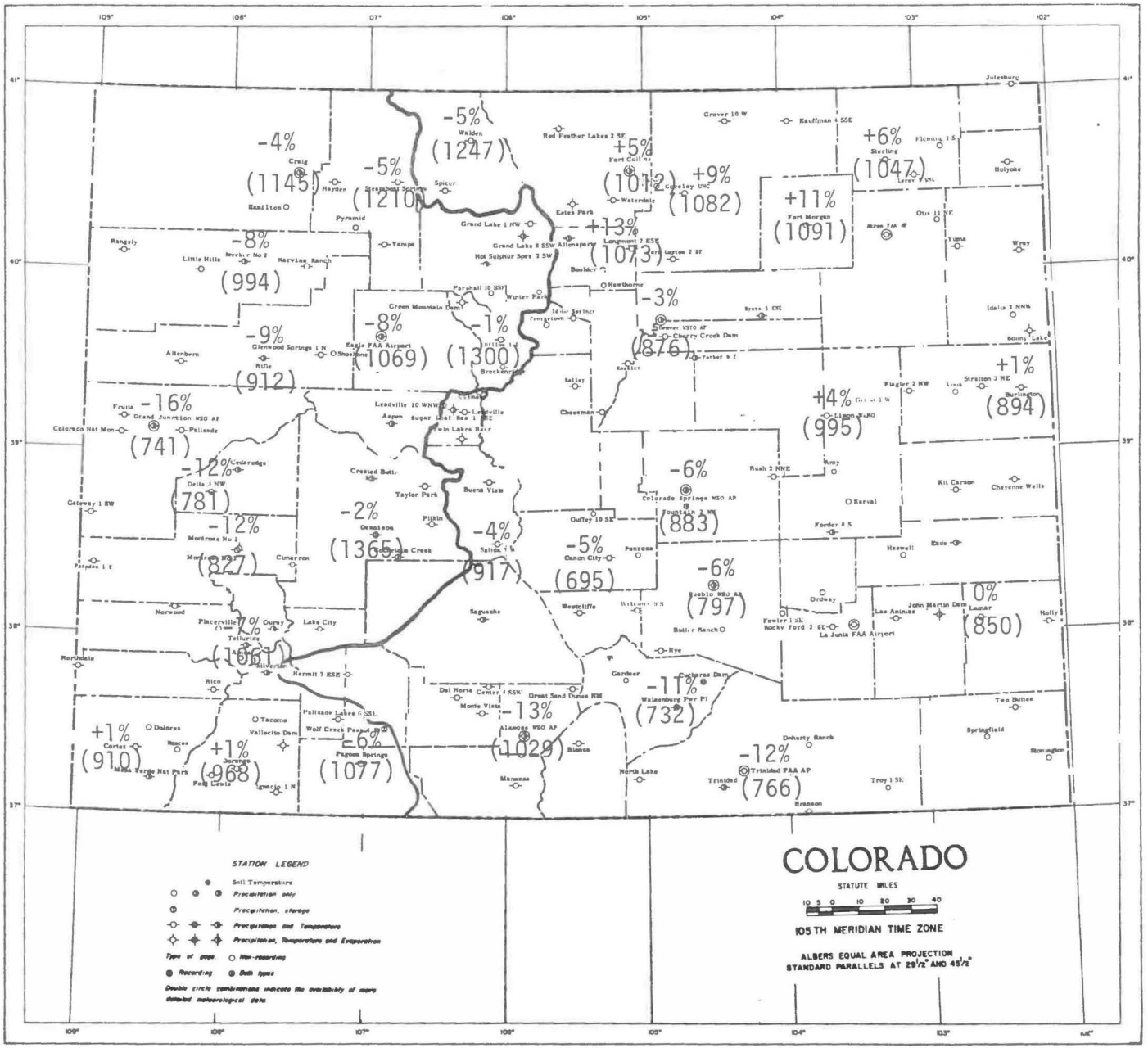


Figure 6. February 1980 Heating Degree Days as a percent above or below February 1979.

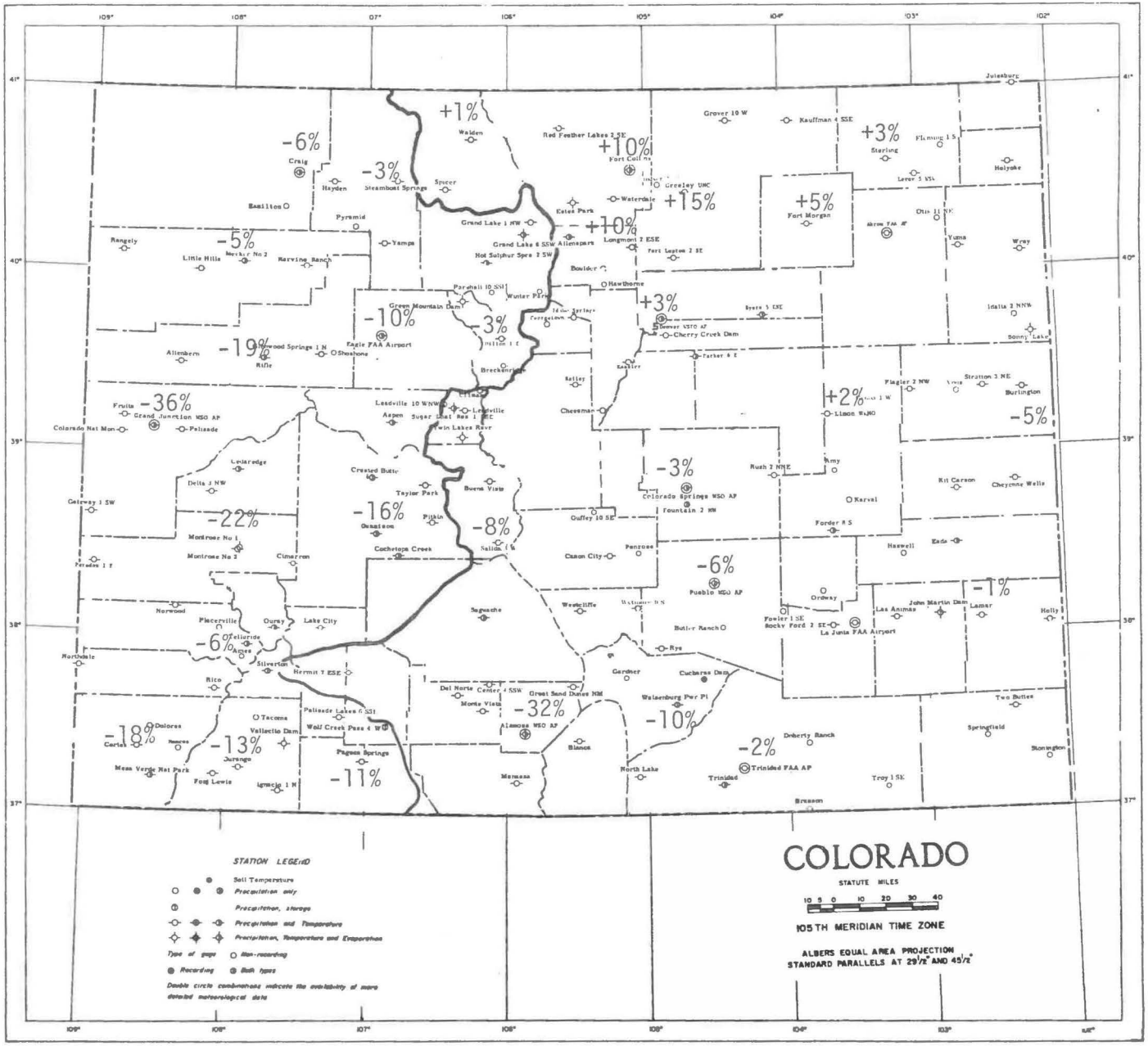


Table 1. Colorado Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590	1312	1438	1363	1029					
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	569	1211								
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60		275	890	802	1100						
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	928	864	1257	894					
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	223	804	762	1051	695					
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407	1005	969	1180	883					
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391	1014	1118	1095	910					
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552	1199	1364	1326	1145					
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738	1513	1456		761	450	198	50	
	1979-80	0	22	44	333	956	1164	1005	781					
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347	941	939	1204	876					
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1394	1467	1470	1300					
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1022	1078	1134	968					
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1221	1069					
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1273	1012					
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	414	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388	1091					
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	999	741					

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344	1082					
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1306	1648	1404	1365					
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241	850					
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1353	995					
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1312	1073					
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1182	994					
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065	827					
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1186	1077					
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135	797					
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106	912					
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1145	917					
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1411	1210					
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6680
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1375	1047					
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214	1061					
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	871	1041	766					
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413	1247					
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	1020	732					

COLORADO CLIMATE -- MARCH 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Above average precipitation fell across most of Colorado in March making this the third consecutive wetter than average month statewide. Snowpack is above average everywhere in the mountains, and excellent water supplies are predicted for the upcoming months for all major rivers in the state. However, along with high streamflows will come opportunities for flooding, especially if heavy spring rains should occur.

Cold weather greeted the residents of the eastern half of the state on March 1. Limon reported a low temperature of -13°F that morning, and sub zero readings were common east of the mountains. Warmer weather and an increase in clouds marked the beginning of a stormy period across the state which lasted from the 3rd through the 12th. Some light snow fell east of the mountains from the 4th through the 7th, particularly in northeastern Colorado, as an Arctic air mass tried to invade the plains. However, the heaviest precipitation was noted along and west of the Continental Divide. While daily precipitation amounts were not excessive, the snow kept piling up. At Rico, in the San Juan Mountains, 3.58 inches of precipitation (43 inches of snow) fell from March 3-12 and increased the snowdepth to 84 inches, a new record for that station.

Strong winds buffeted the Front Range and Eastern Plains on the 12th as a deep low pressure system moved out of the Texas panhandle. Dry and warmer weather followed this storm. Temperatures climbed into the 60's and 70's across most of eastern Colorado on the 14th and 15th, and an epidemic of spring fever struck many Colorado residents. Lamar enjoyed the warmest temperature in the state, 80° on the 15th.

A fast moving storm system crossed the state on the 16th lowering temperatures drastically and dropping a little snow over most of the state. With clearing skies and a fresh cover of snow the mountains and western valleys recorded their coldest temperatures of the month on the morning of the 17th. Taylor Park Dam's -38° was the coldest temperature in the state in March.

A few sunny and mild days from the 18th through the 21st encouraged more spring fever, but winter weather made its presence felt once again. Cloudy, cold, and snowy weather dominated the last week of March. A notorious Great Plains spring blizzard ravaged parts of eastern and northeastern Colorado on the 27th and 28th dumping more than a foot of snow in some areas and piling up huge drifts which blocked highways for several days. Near Sedgwick, in extreme northeastern Colorado, 22 inches of snow fell from this storm. Only three days later another major storm developed and dumped more snow across the Eastern Plains. Fortunately, extremely cold temperatures did not accompany these storms so cattle losses were not severe in most areas.

Precipitation amounts and percentages of the March averages are shown in Figures 1 and 2. Areas of eastern Colorado hard hit by the blizzards recorded from 200 to nearly 370 percent of their March average precipitation. Other areas of the state recording more than double the average March precipitation included the Greeley-Fort Collins area, Pueblo, parts of the San Luis Valley, the western slopes of the San Juans, the Colorado River Valley from Rifle to Fruita, and parts of northwestern Colorado in the vicinity of Craig. The only portions of the state receiving near average or slightly below average precipitation were the upper Arkansas River Valley, the Gunnison area, valley locations from Dillon and Yampa to near Granby, and a narrow belt along the Front Range from Cheesman and Bailey northward to Red Feather Lakes. Estes Park was the state's dry spot in March with only .35 inches of precipitation, 43 percent of average.

Precipitation as a percent of average for the first six months of the 1980 water year is shown in Figure 3. Above average precipitation totals are noted almost everywhere in the state, and several areas in both the eastern and western halves continue to be more than 50 percent ahead of the October through March averages. Moisture supplies are excellent in most of the state's dryland agricultural areas at the beginning of the new growing season.

Temperatures for the month of March are displayed in Figure 4. Across the Eastern Plains, temperatures were generally colder than average ranging from slightly below average at Fort Morgan and La Junta

to as much as 2.7 degrees colder than usual at Burlington. Meanwhile, the Front Range cities experienced temperatures near or slightly above average. Canon City, Colorado's traditional winter hot spot, enjoyed an average temperature of 42.6°F which was about one degree warmer than usual for March.

Temperatures slightly above average were noted in the northwestern quarter of the state, but cooler than average readings occurred elsewhere in the mountains and southwestern valleys. Durango and Cortez both ended up more than three degrees colder than average for the month.

Heating degree day totals (Figure 5) were generally within 5% of the 1941-1970 averages across most of Colorado. The only major exceptions were east-central and southwestern portions of the state where totals were about 10% above average. (More detailed information for the state is contained in Table 1). Above average heating degree day totals are an indication of colder than average temperatures. Since heating degree day totals are directly related to the amount of energy required to heat homes, schools, businesses, and other buildings, above average totals mean that more energy was needed than is usually required to maintain comfortable indoor temperatures.

Heating degree day totals for March 1980 were considerably higher than in March 1979 from the Front Range across the Eastern Plains (Figure 6). This means higher heating bills than last year for residents of those areas. Across the rest of the state totals were about the same as last year. West of the Continental Divide totals varied from 1% less than March 1979 at Cortez and Delta to 8% more than last year at Steamboat Springs.

Figure 1. March 1980 precipitation amounts (inches).

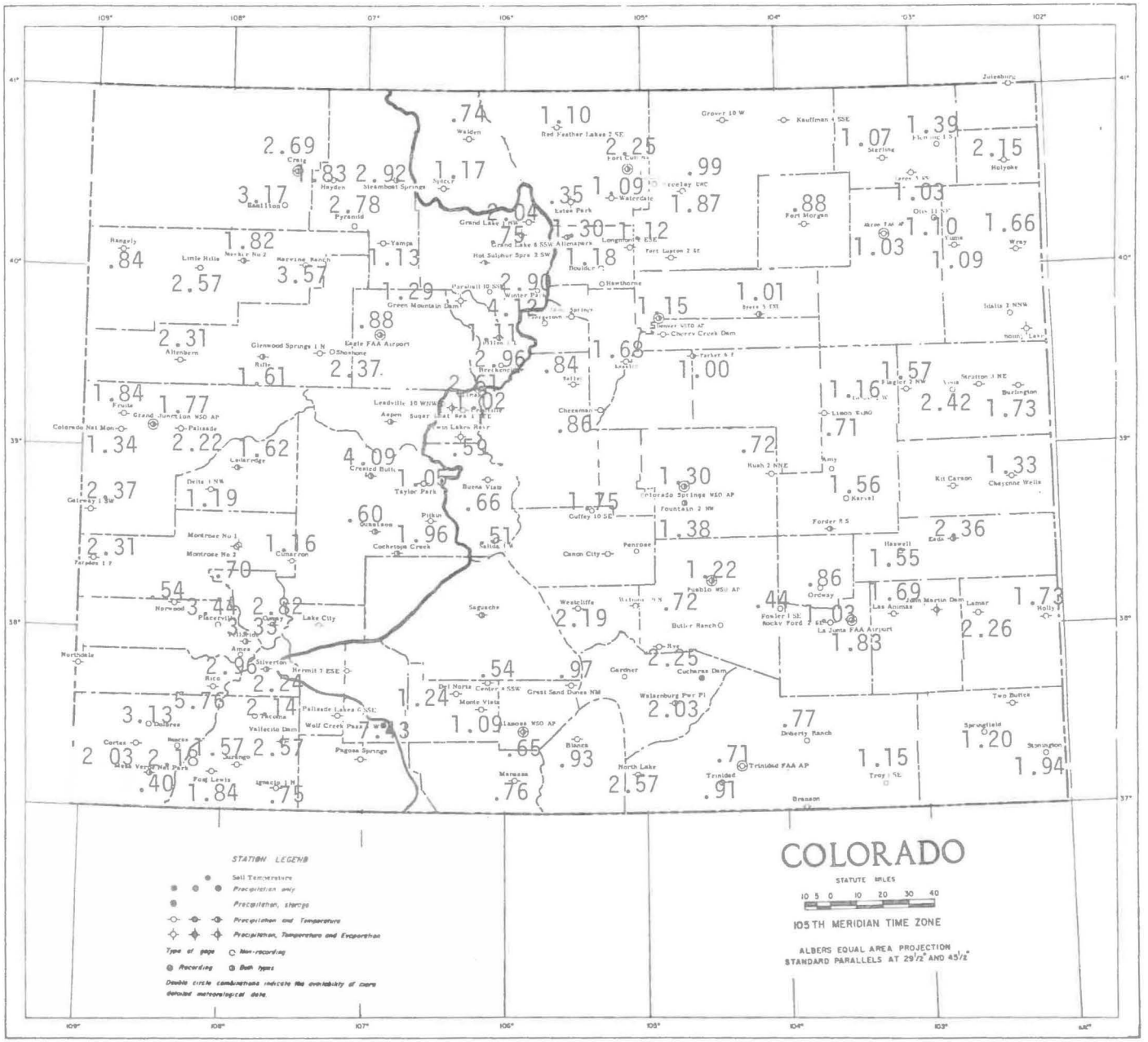
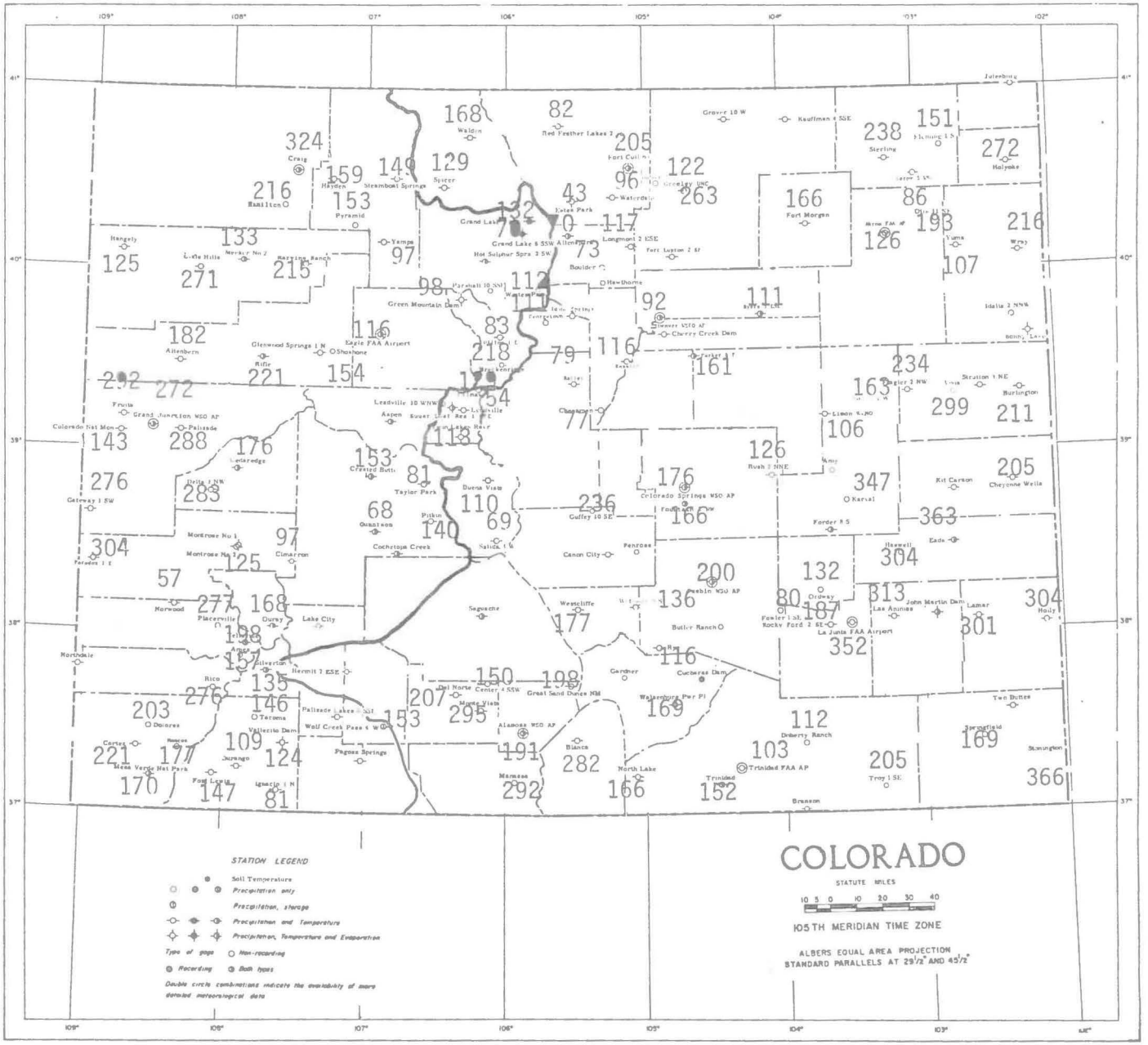


Figure 2. Precipitation for March 1980 as a percent of the 1951-1970 average.



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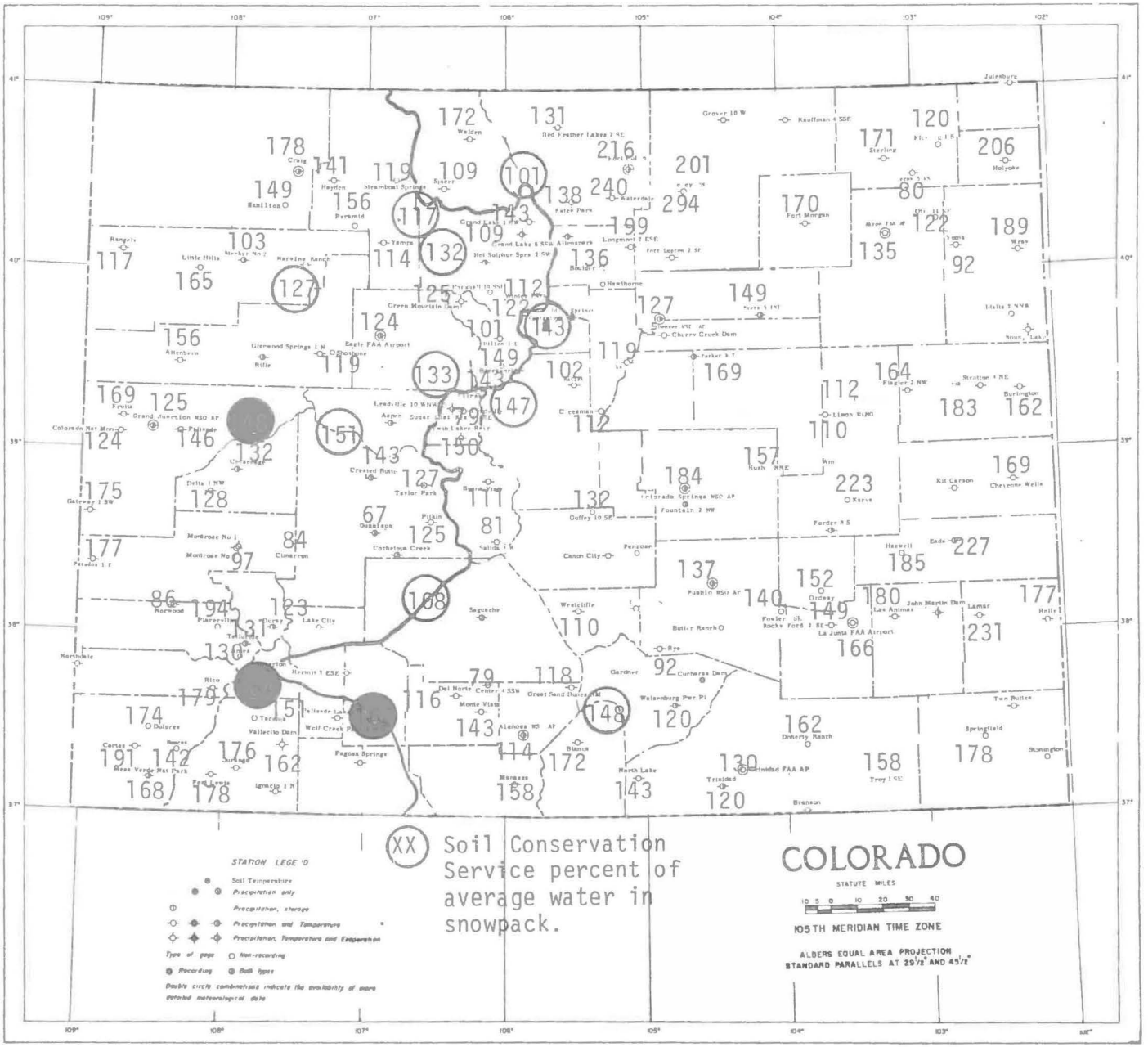
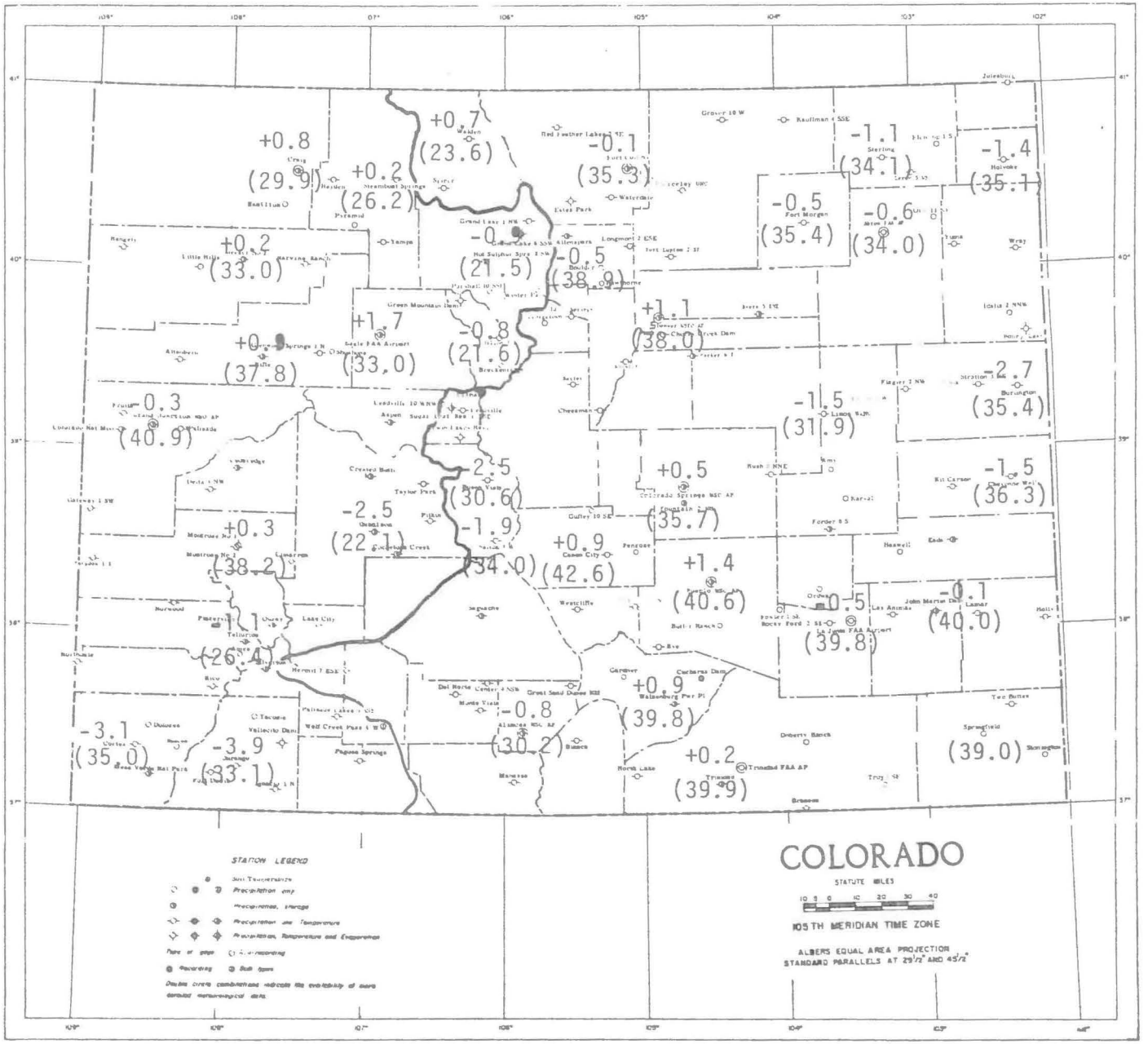


Figure 4. Temperatures for March 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.



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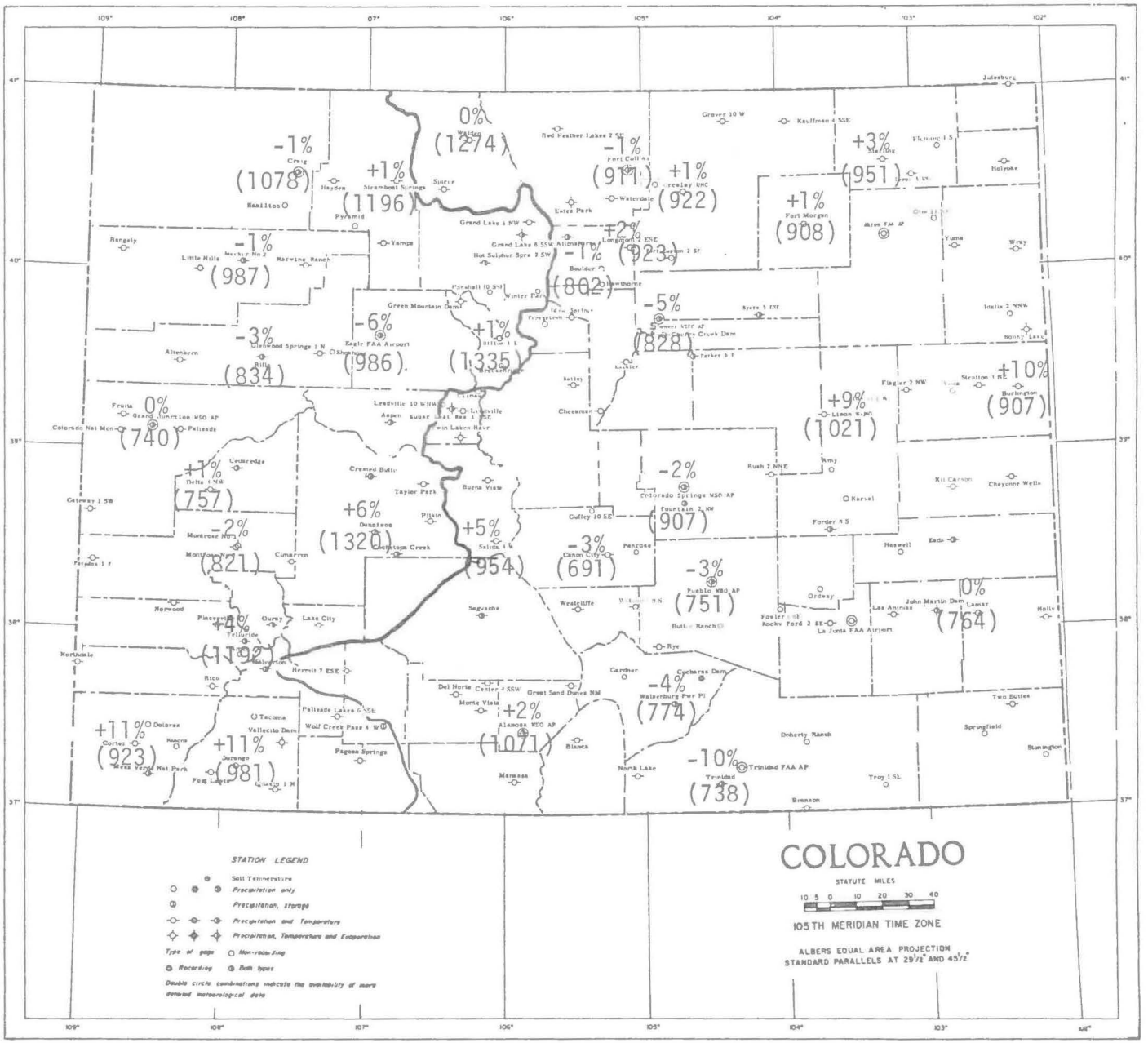

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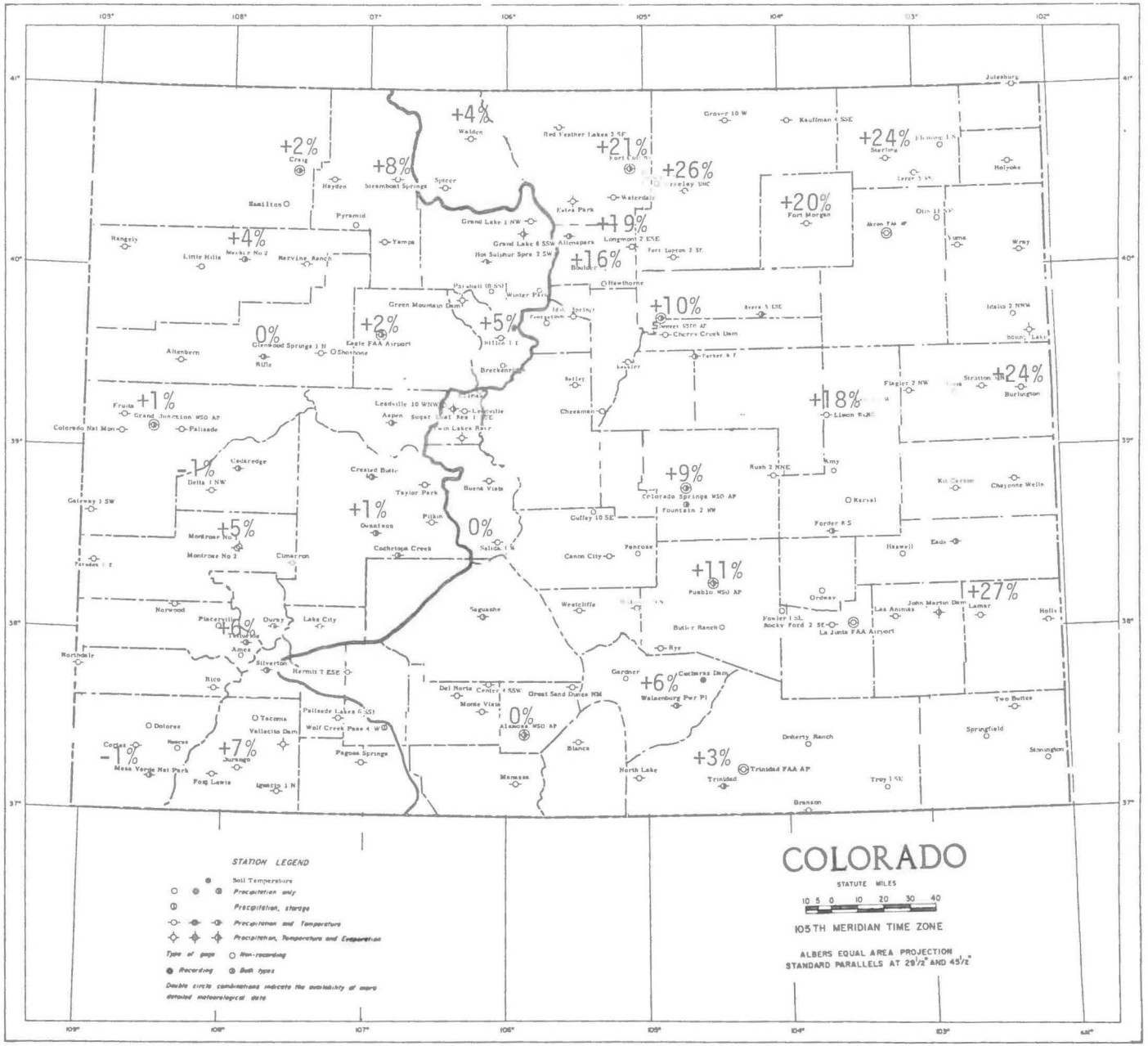

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	1979-80	16	63	54	402	1022	1078	1134	968	981				
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1221	1071	986				
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1273	1011	911				
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388	1084	908				
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	999	741	740				

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344	1082	922				
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10833
	1979-80	137	203	343	652	1306	1648	1404	1382	1320				
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241	850	764				
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1353	997	1021				
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1312	1080	923				
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1182	994	987				
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065	826	821				
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1186	1077					
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135	797	751				
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106	912	834				
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1145	917	954				
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1411	1209	1196				
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1375	1020	951				
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214	1061	1192				
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	871	1041	792	738				
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413	1247	1274				
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	1020	732	774				

COLORADO CLIMATE--APRIL 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Snowstorms, heavy rains, and a summerlike heatwave were all parts of the springtime variety of weather conditions that affected Colorado in April.

Winter still held a firm grip on the state as the month began. Blizzard conditions, which had pounded parts of the Eastern Plains on March 27-28 and again on the 31st, still plagued the area on April 1 and 2. Six to 12 inches of additional snowfall were common across all of the plains areas of the state. Snowdepths reached nearly two feet in portions of east-central and extreme northeast Colorado. The mountains and western valleys of the state also received snowfall from this lingering storm and some very cold temperatures were observed. Rio Grande Reservoir, high in the San Juan Mountains, recorded a low of -28° Fahrenheit on the 1st and -24° on the 3rd.

Temperatures gradually climbed to more seasonable levels by the 5th, and the plains snowcover rapidly melted. But cold weather with some widely scattered very light precipitation returned to the state on the 6th and 7th.

A new storm system moved into Colorado on the 10th and 11th which kept temperatures unseasonably cold and dropped some precipitation across most of the western two-thirds of the state. Precipitation amounts were generally on the light side except for some of the foothills areas along the Front Range. Evergreen measured 1.85 inches of precipitation from this storm, and several locations including Palmer Lake and Bailey received more than 10 inches of new snow. Again some extremely cold temperatures were noted in the mountains such as Taylor Park Dam's -26° reading on April 13.

A welcome change to dry, sunny and warmer weather began on the 13th and 14th, and by the 20th and 21st a summerlike heatwave was underway. Temperatures soared into the 70's and 80's nearly everywhere in the state below 7,000 feet elevation. The first 90° readings of the year were recorded across parts of eastern Colorado including Julesburg's 93° on

the 21st, the highest temperature in the state in April. But the warm weather ended abruptly as a large storm system moved in from the west on the 22nd. While most of the state picked up some precipitation from the 22nd through the 25th, the Front Range, the San Luis Valley and the Arkansas Valley were most affected. Precipitation amounts in excess of one inch were common, some parts of southeastern Colorado were soaked with more than three inches. Lamar and Walsenburg totalled 2.96 and 3.43 inches of precipitation, respectively, from the storm. Rain changed to snow on the 24th dumping several inches of wet snow on Denver and Colorado Springs and blanketing some eastern foothills with two feet or more of snow.

After a brief respite, cool temperatures and widespread precipitation again moved into the state on the 29th and 30th. More heavy rains along the Front Range on the 30th began to raise river levels east of the mountains to near floodstage in some areas.

Precipitation amounts and percentages of average for April are shown in Figures 1 and 2. Above average precipitation was common east of the Continental Divide except for an area in northeast Colorado which missed most of the April 22-25 storm. Extensive areas in the southeast had more than double the April average, with many locations in the Arkansas Valley totalling more than 4 inches. Karval's total of 5.85 inches was more than 5 inches above average.

West of the Continental Divide precipitation was much lighter. The only areas with near or above average precipitation were the San Juans, an area near Delta, and some locations along the Continental Divide such as Breckenridge. Only about half the average monthly precipitation fell in northwestern Colorado, but the extreme southwestern corner was the state's driest area in April. Cortez received only .28 inches, 27 percent of average.

Despite the dry month west of the Divide, snowpack in the mountains is still well above average, and practically all of western Colorado continues to be wetter than average for the October through April period (Figure 3). Abundant precipitation east of the Divide continued to add to the already above average winter totals. While the heavy precipitation has delayed some agricultural fieldwork, the winter wheat crop is looking good, and excellent summer water supplies are expected throughout the state.

However, the threat of flooding will continue during the heavy runoff period in May and June.

Colder than average temperatures were observed across most of Colorado in April (Figure 4). While some areas in west-central Colorado and along the Front Range from Denver to Fort Collins were near average, most of the state ended up one to three degrees colder than usual for the month. The coldest temperatures, compared to average, occurred in the Arkansas Valley and the Central Mountains. At Salida, for example, the monthly temperature was 39.4°, 5 degrees colder than average.

The cool weather resulted in higher heating degree day totals than normal across most of Colorado (Figure 5). Since heating degree days are directly proportional to the amount of energy required for space heating, higher totals mean that more energy is needed to maintain comfortable indoor temperatures. West of the Continental Divide, totals ranged from 405 at Grand Junction, which is average, to 1065 at Dillon, 10 percent above average. East of the Divide, totals ranged from near average in the Denver-Greeley-Fort Collins area to 20 percent or more above average in the Arkansas Valley. Table 1 contains specific data for several cities in the state.

April's heating degree day totals were considerably greater than last year, particularly east of the Divide (Figure 6). This means higher heating bills than last April for most Colorado residents. Totals ranged from 2 percent less than April 1979 at Pagosa Springs to 35 percent more than last year at Lamar.

Figure 1. April 1980 precipitation amounts (inches).

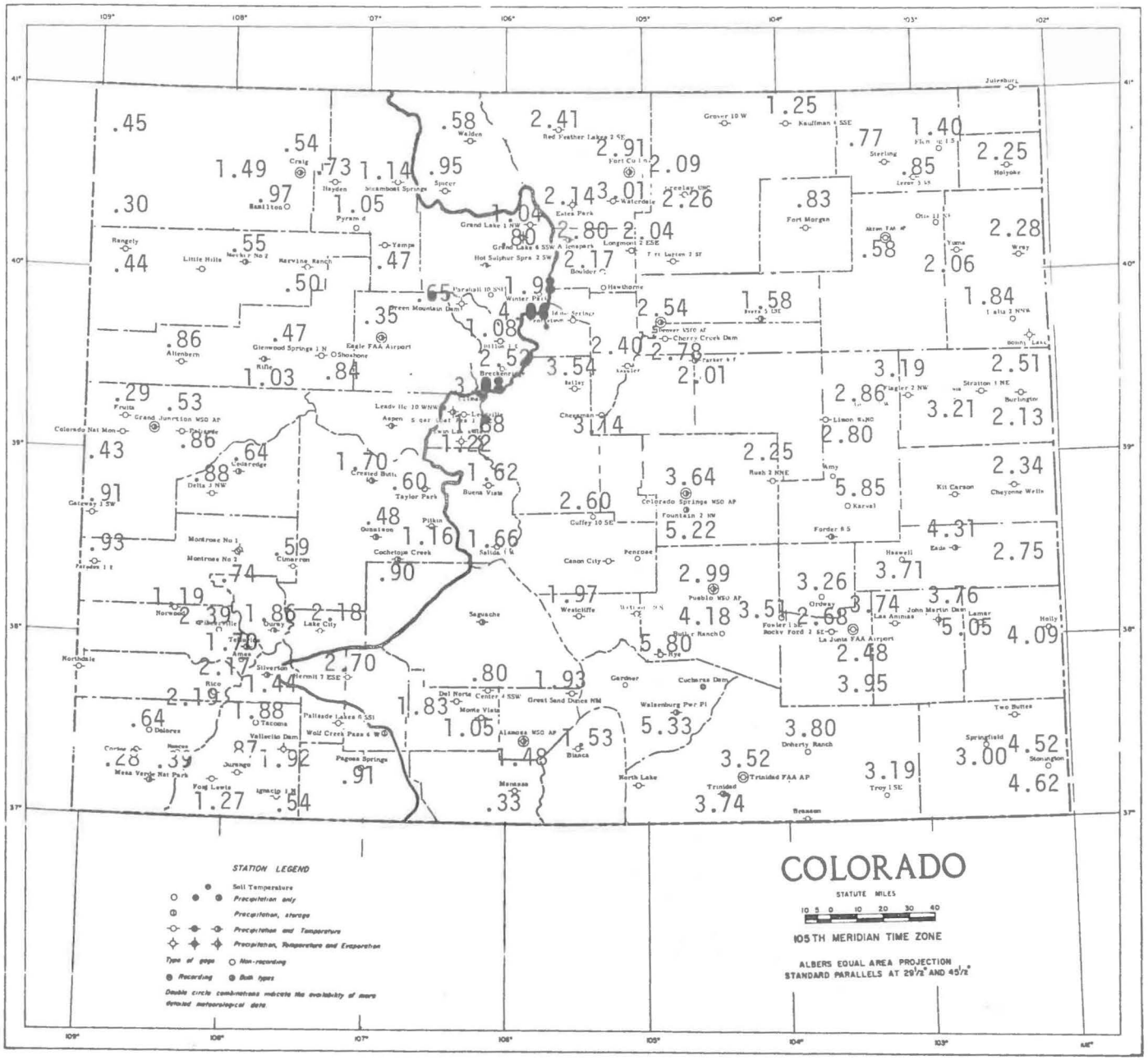


Figure 2. Precipitation for April 1980 as a percent of the 1951-1970 average.

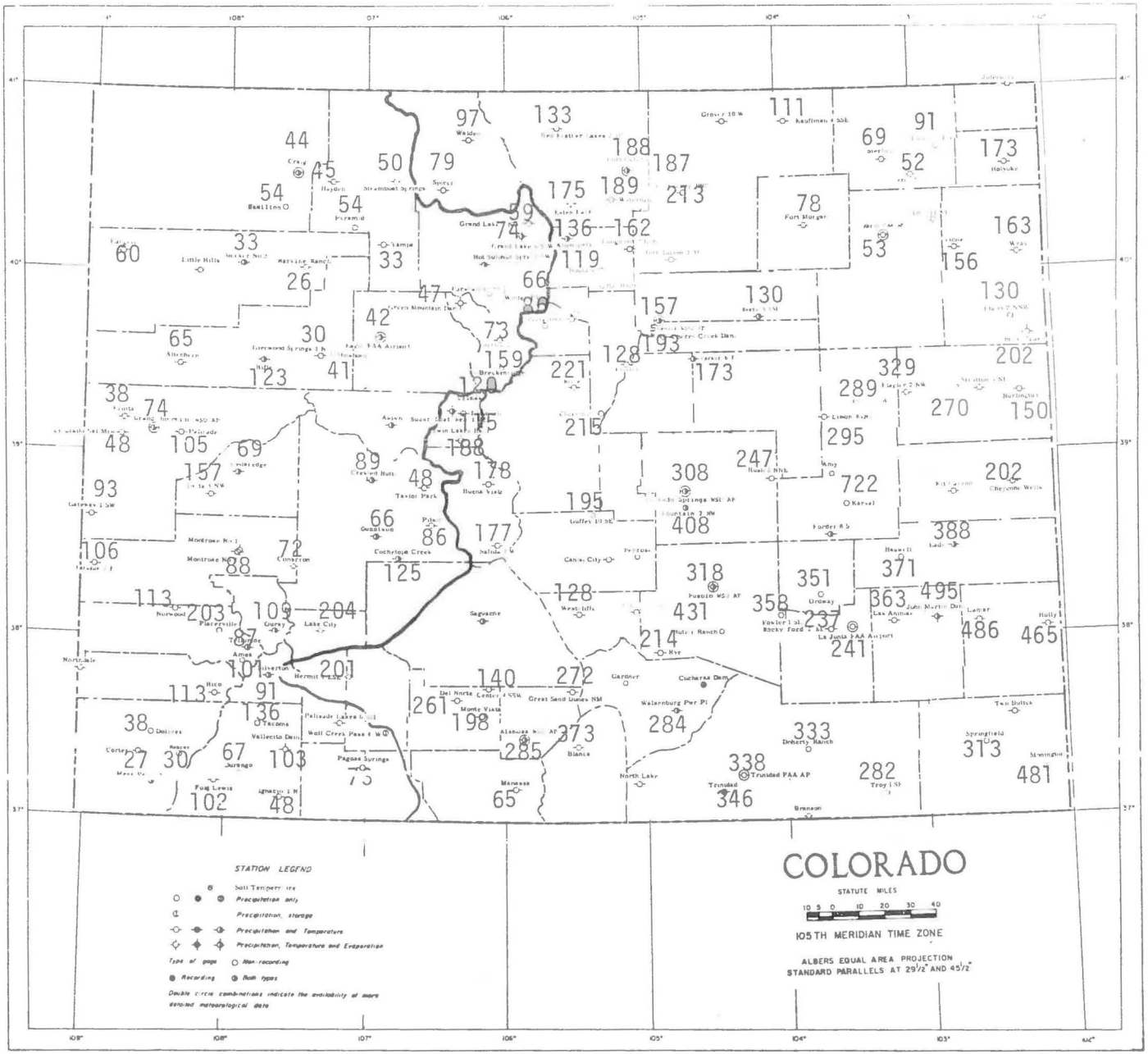


Figure 3. Precipitation for October 1979 through April 1980 as a percent of the 1951-1970 average.

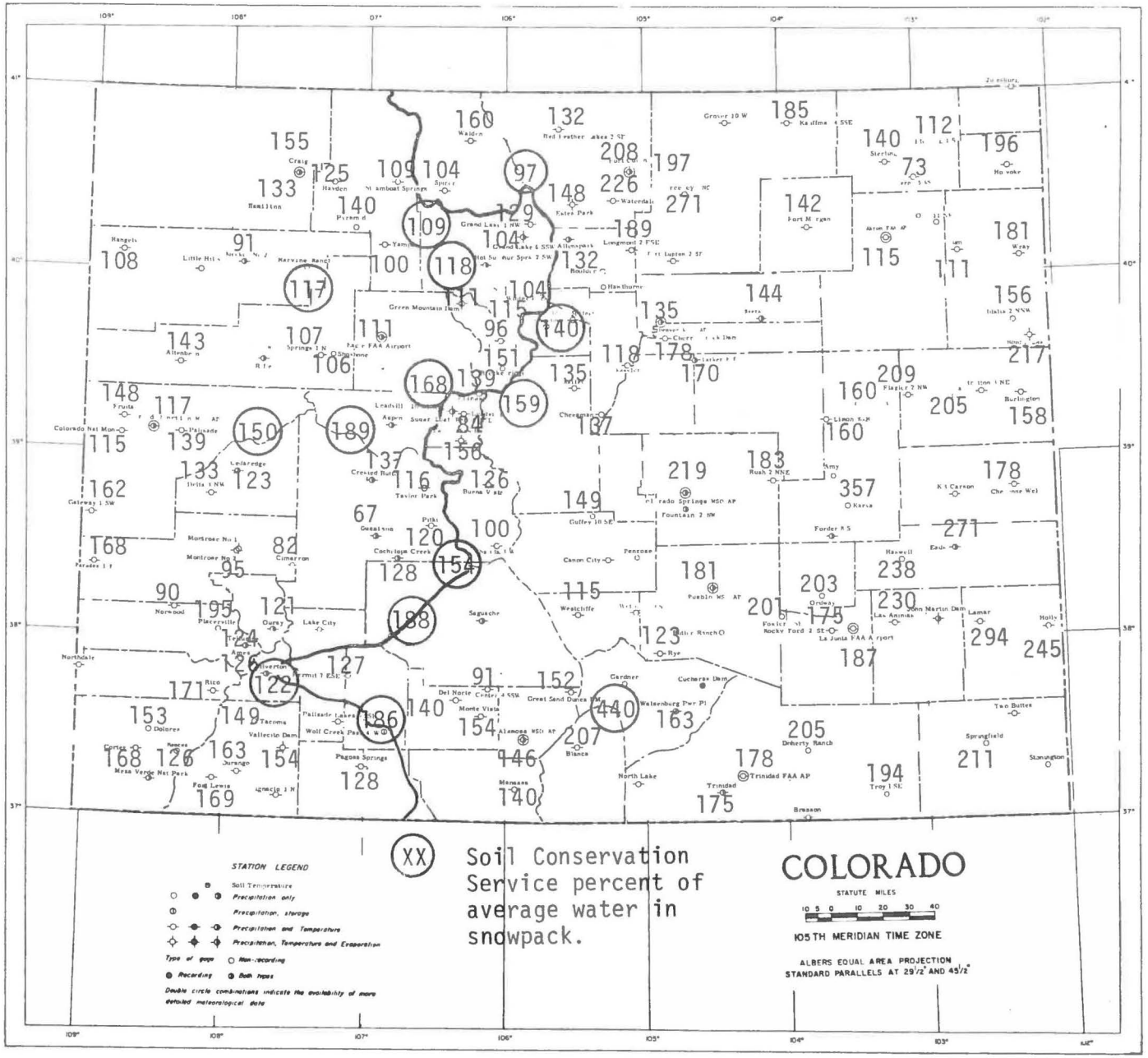


Figure 4. Temperatures for April 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

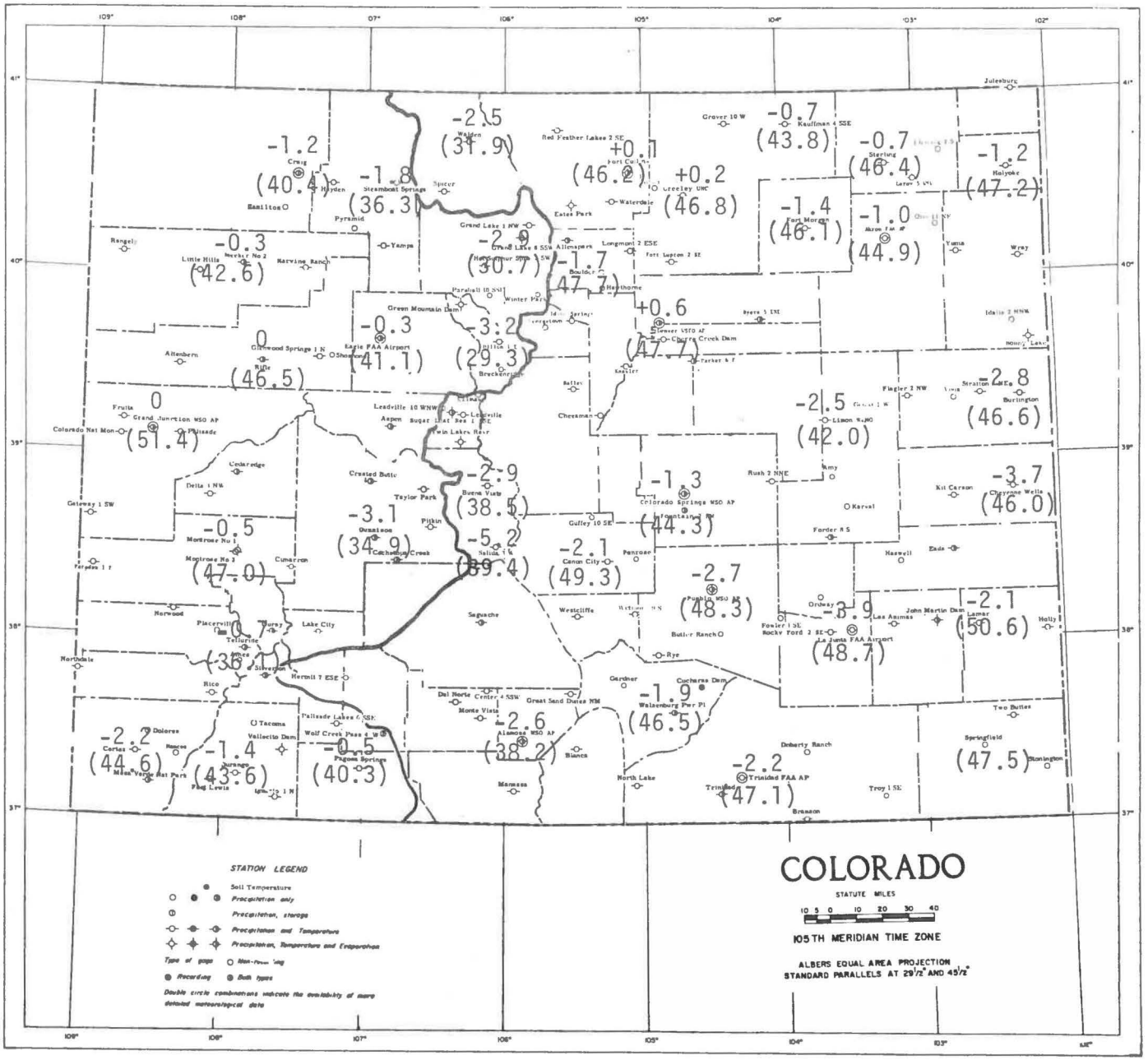


Figure 5. April 1980 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 average.

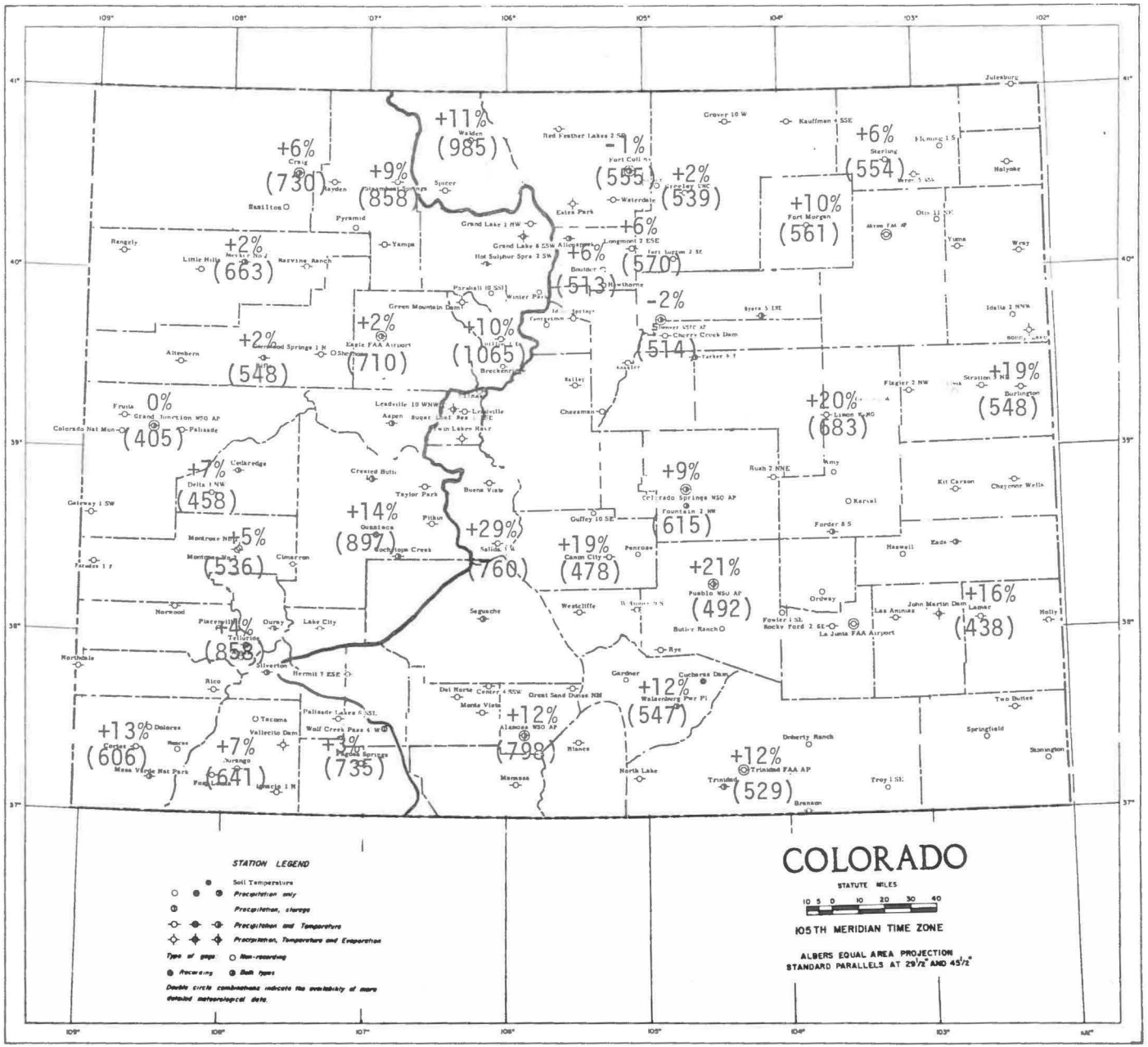


Figure 6. April 1980 Heating Degree Days as a percent above or below April 1979.

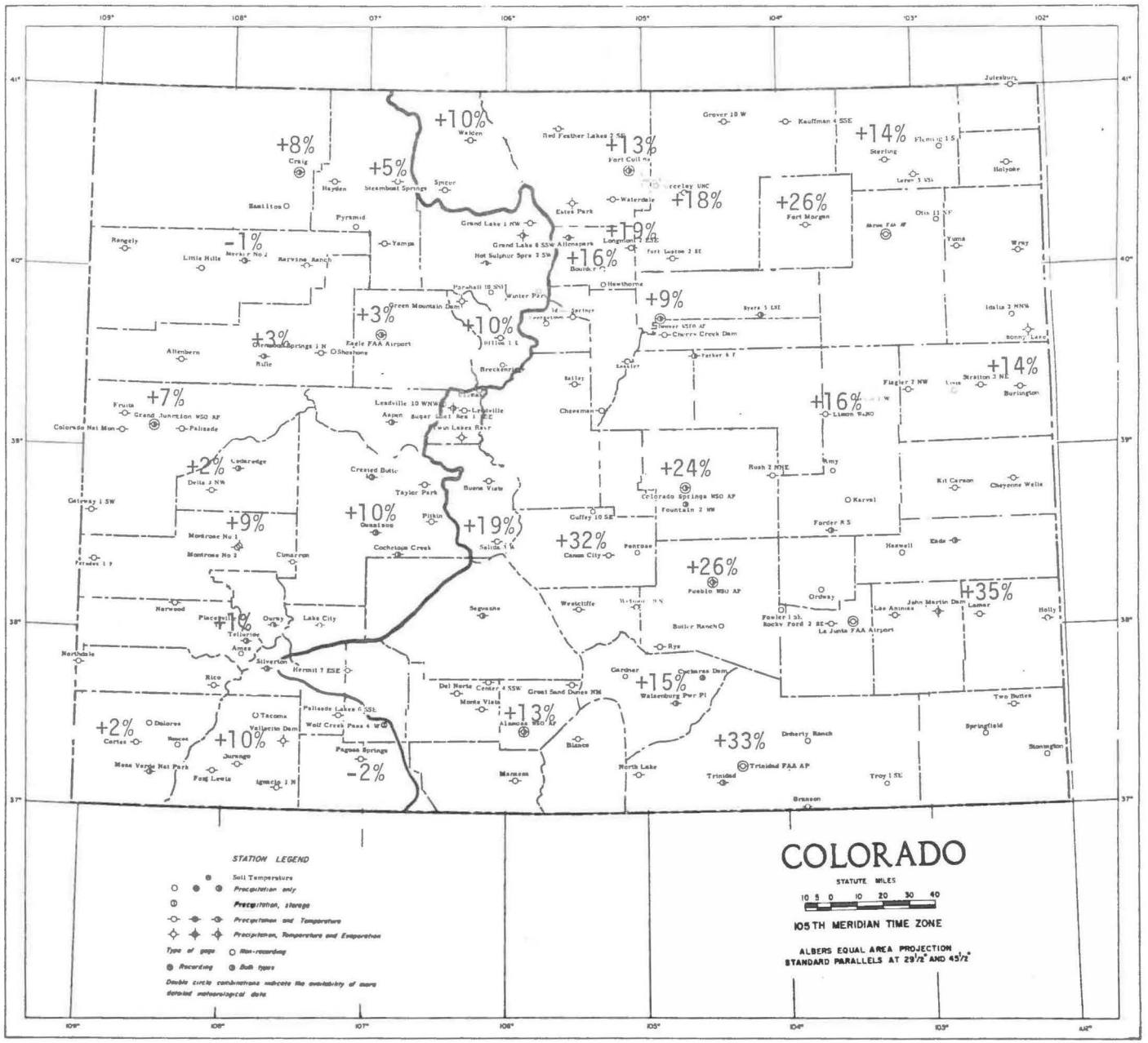


Table 1. Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590	1312	1438	1363	1029	1071	798			
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	569	1211								
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60		275	890	802	1100	820	802	513			
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	928	864	1257	866	907	548			
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4669
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	223	804	762	1051	703	691	478			
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407	1005	969	1180	883	901	615			
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391	1014	1118	1095	912	923	606			
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552	1199	1364	1326	1144	1078	730			
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738	1513	1456		761	450	198	50	
	1979-80	0	22	44	333	956	1164	1005	781	757	458			
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347	941	939	1204	876	828	514			
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1394	1467	1470	1300	1335	1065			
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1022	1078	1134	968	981	641			
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1221	1071	986	710			
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1273	1011	911	555			
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388	1084	908	561			
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	999	741	740	405			

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344	1082	922	539			
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1306	1648	1404	1382	1320	897			
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241	850	764	438			
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1353	997	1021	683			
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1312	1080	923	570			
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1182	994	987	663			
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065	826	821	536			
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1186	1077		735			
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135	797	751	492			
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106	912	834	548			
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1145	917	954	760			
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1411	1209	1196	858			
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1375	1020	951	554			
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214	1061	1192	858			
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	871	1041	792	738	529			
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413	1247	1274	985			
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	1020	732	774	547			

COLORADO CLIMATE -- MAY 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

May was characterized by cool, cloudy weather with plenty of precipitation all across Colorado.

The sun made only a few appearances during the first three weeks of the month, and precipitation fell practically every day on the plains, in the mountains, and across the western slope. While many daily totals were less than .10 inches, both Denver and Colorado Springs recorded at least a trace of precipitation each day for the first 17 days of May. A little snow was mixed with the rain along the Front Range, but significant accumulations were limited to the mountains, especially above 10,000 feet. Squaw Mountain, west of Denver, measured 81 inches of snow from May 1-17. Berthoud Pass totalled 41 inches for the month bringing their seasonal total to 420 inches.

During the prolonged wet spell, some particularly heavy rainfall amounts were noted. Waterdale, near the mouth of the Big Thompson Canyon, recorded 2.75 inches of rain on May 1 and many other areas along the Front Range also got soaked. Some high water and flood damage occurred along the Big Thompson and some of its tributaries.

Heavy showers were reported again on the 3rd and 4th, particularly in south central portions of the state. The next round of heavy precipitation occurred on the 7th and 8th. Colorado Springs measured 2.20 inches from that two-day siege.

Eastern Colorado enjoyed a bit of a respite from the rains from the 9th through the 12th, while parts of the western half of the state had their wettest weather of the month. Several locations, especially in the northwest quarter of the state, picked up more than an inch of precipitation during this period.

The last blast of wet weather lasted from the 14th through the 17th as the entire state was affected by a large slow moving storm system in the upper atmosphere. The heaviest precipitation fell east of the Continental Divide. One to two inch amounts were common east of the mountains, and Rye, southwest of Pueblo, totalled 3.20 inches in 3 days.

This large storm system finally moved east out of Colorado on the 18th and 19th. This shift in the upper air pattern resulted in a change to clear and dry weather which persisted for the rest of the month. It also permitted the visible plume of ash from the eruption of Mount St. Helens in Washington State to drift across the northeastern half of the state on the 19th.

A strong, cold storm system tried to push into Colorado for the Memorial Day weekend, but the main thrust of the storm stayed north in Wyoming and Montana. However, the storm left its mark on the state as high winds kicked up dust and caused scattered damage both east and west of the mountains on the 24th, 25th and 26th. Cold nighttime temperatures followed with some damaging frosts in the western valleys on the 25th and 26th. Sunny days and chilly nights continued through the end of the month.

Precipitation totals and precipitation as a percent of average for May appear in Figures 1 and 2, respectively. Except for the extreme northeast corner of Colorado, the entire state was wetter than average, and several areas received more than double the May average. The state's greatest precipitation total was 7.69 inches at Rye. The 3.15 inch total at Paradox was 420 percent of average.

Precipitation as a percent of average for the first 8 months of the 1980 water year is shown in Figure 3. East of the mountains, most locations have now experienced 6 or more months with above average precipitation, and west of the Divide, 5 months have been wetter than average. As a result, all but a few limited areas continue to be much wetter than usual.

May was cooler than average across the entire state (Figure 4). Temperatures in the Platte River Valley were generally 2 degrees cooler than usual, and the Arkansas Valley ended up about 3 degrees colder than average. West of the Divide conditions were more variable ranging from only 0.5 degrees below average at Eagle and 0.6 degrees below average at Steamboat Springs, to 4.8 degrees colder than usual at Cortez.

Cool temperatures resulted in more heating degree days than normal across all of the state (Figure 5 and Table 1). However, the percentages are not too significant now since the heart of the heating season is over. In comparison to May of 1979 (Figure 6), heating degree day totals varied from 24 percent more than last year at Durango (more energy needed to heat homes and businesses) to 21 percent less than last May at Canon City and Denver.

Figure 1. May 1980 precipitation amounts (inches).

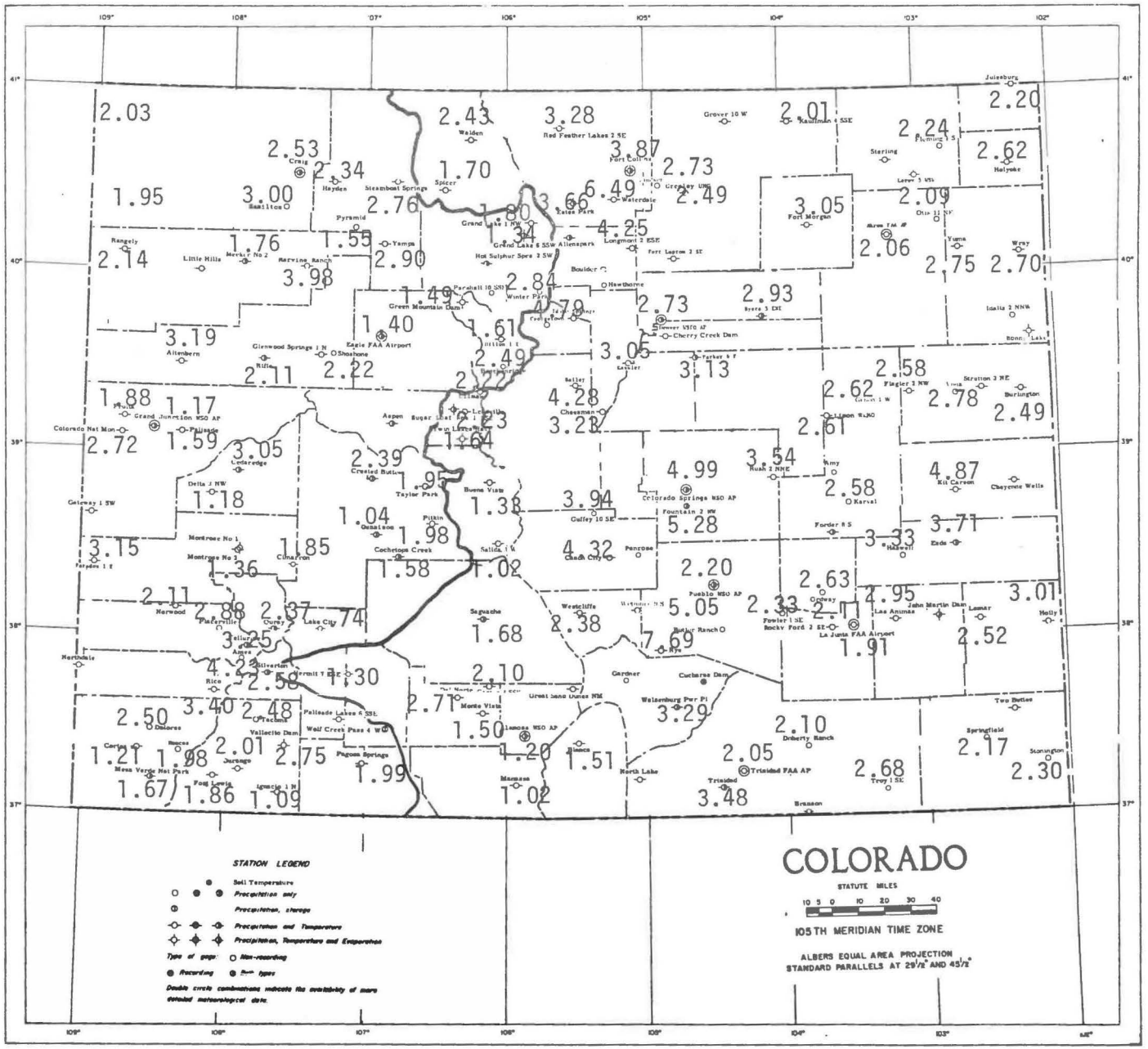


Figure 2. Precipitation for May 1980 as a percent of the 1951-1970 average.

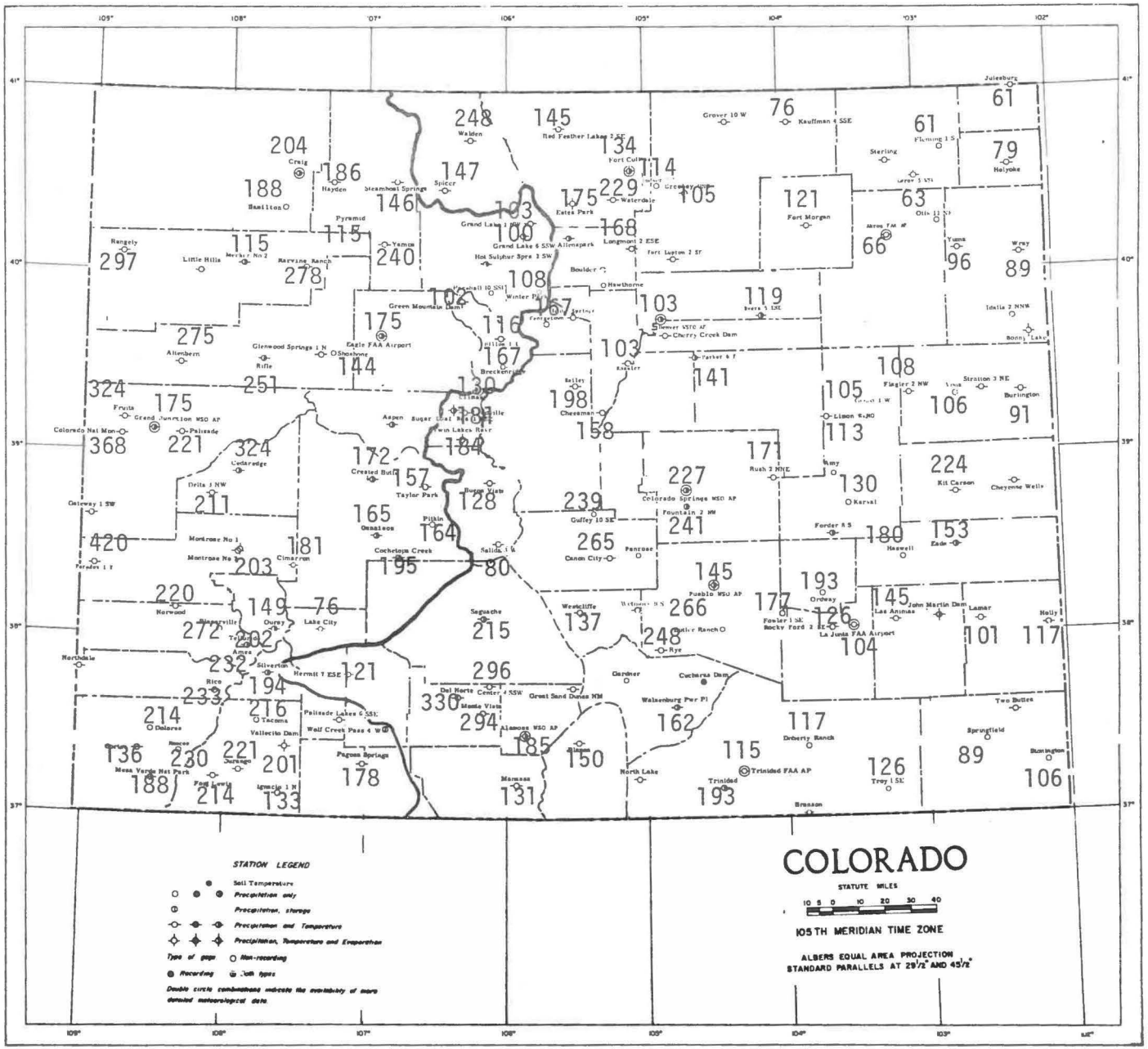


Figure 3. Precipitation for October 1979 through May 1980 as a percent of the 1951-1970 average.

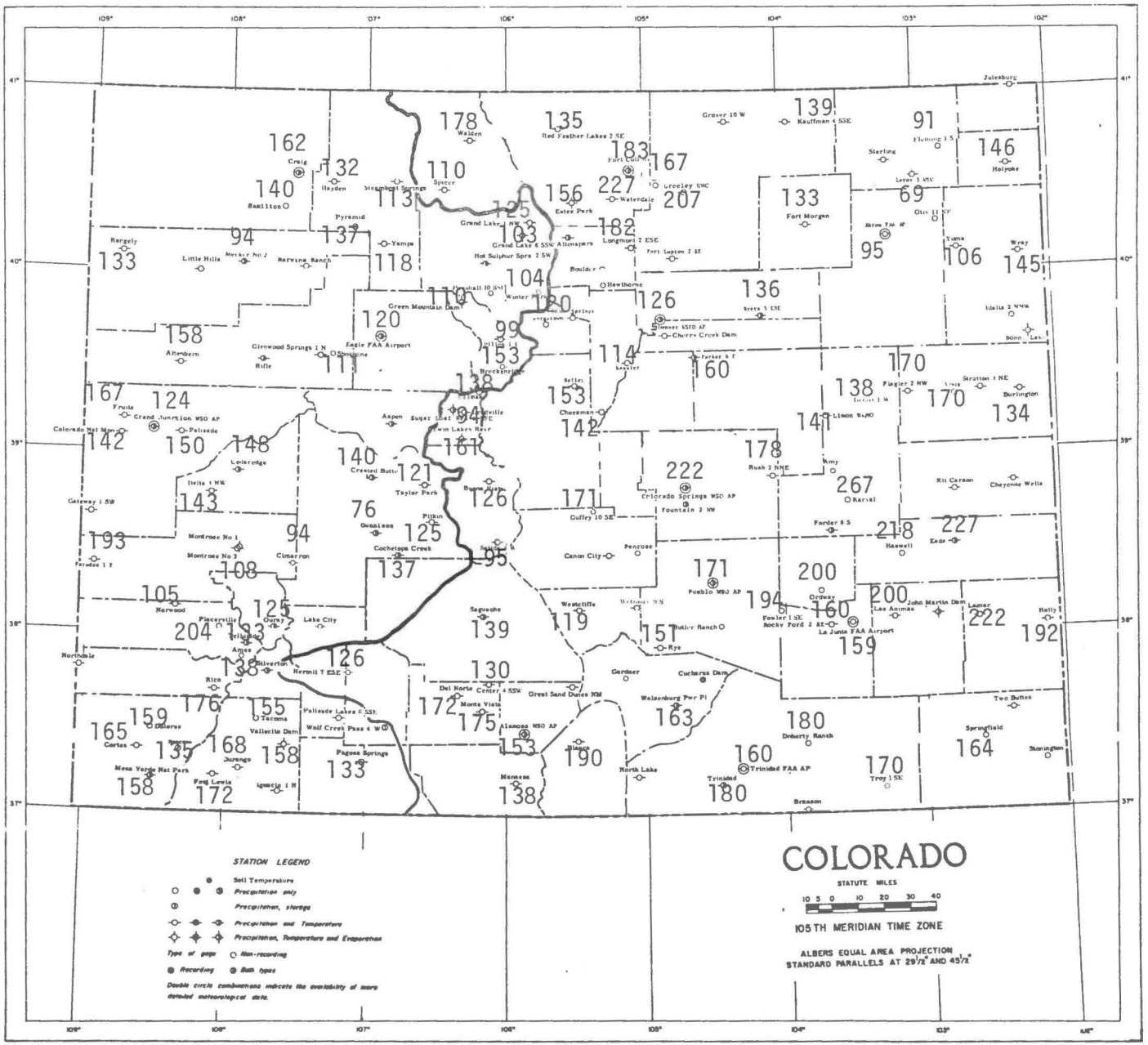


Figure 4. Temperatures for May 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

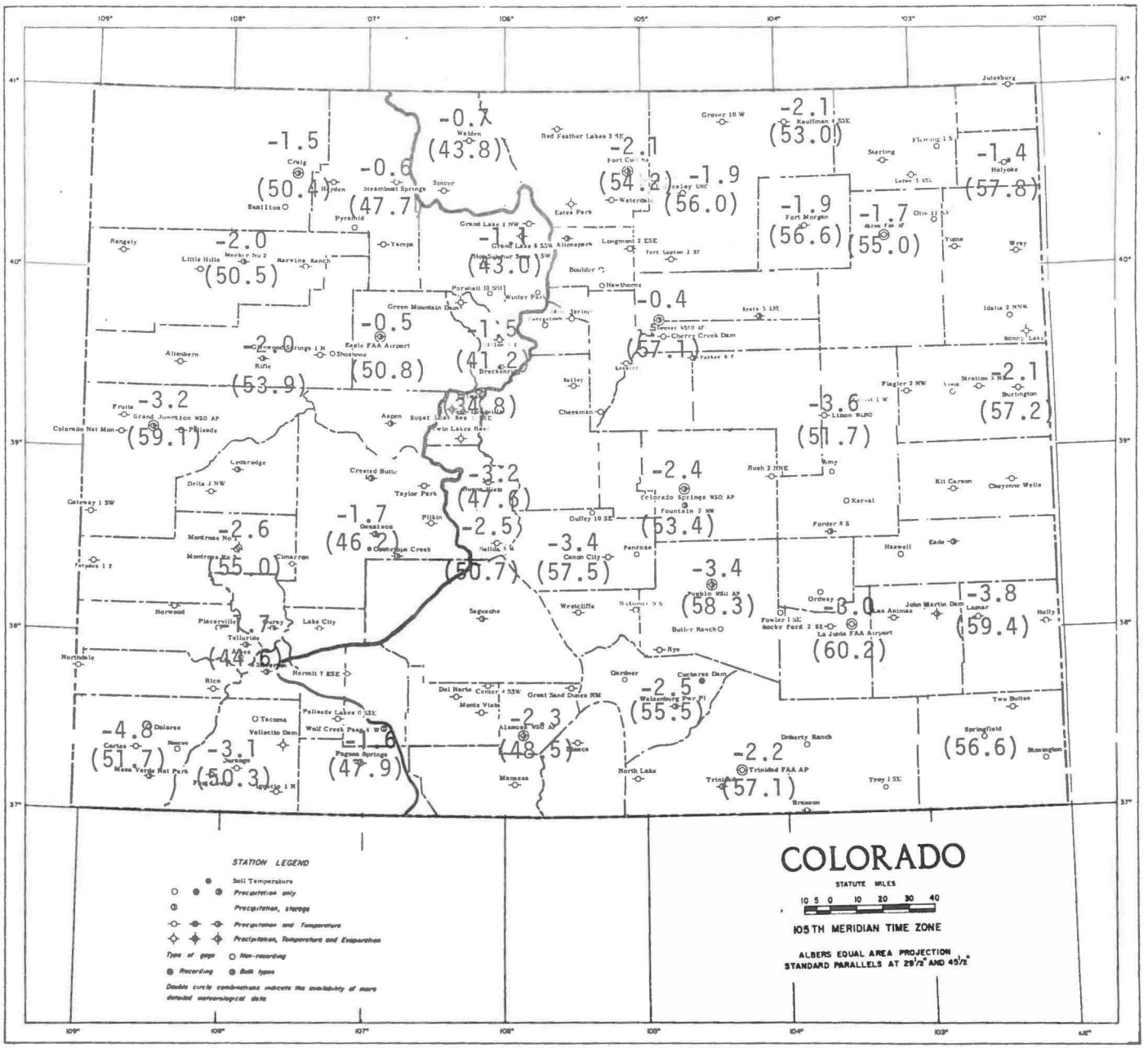


Figure 5. May 1980 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 average.

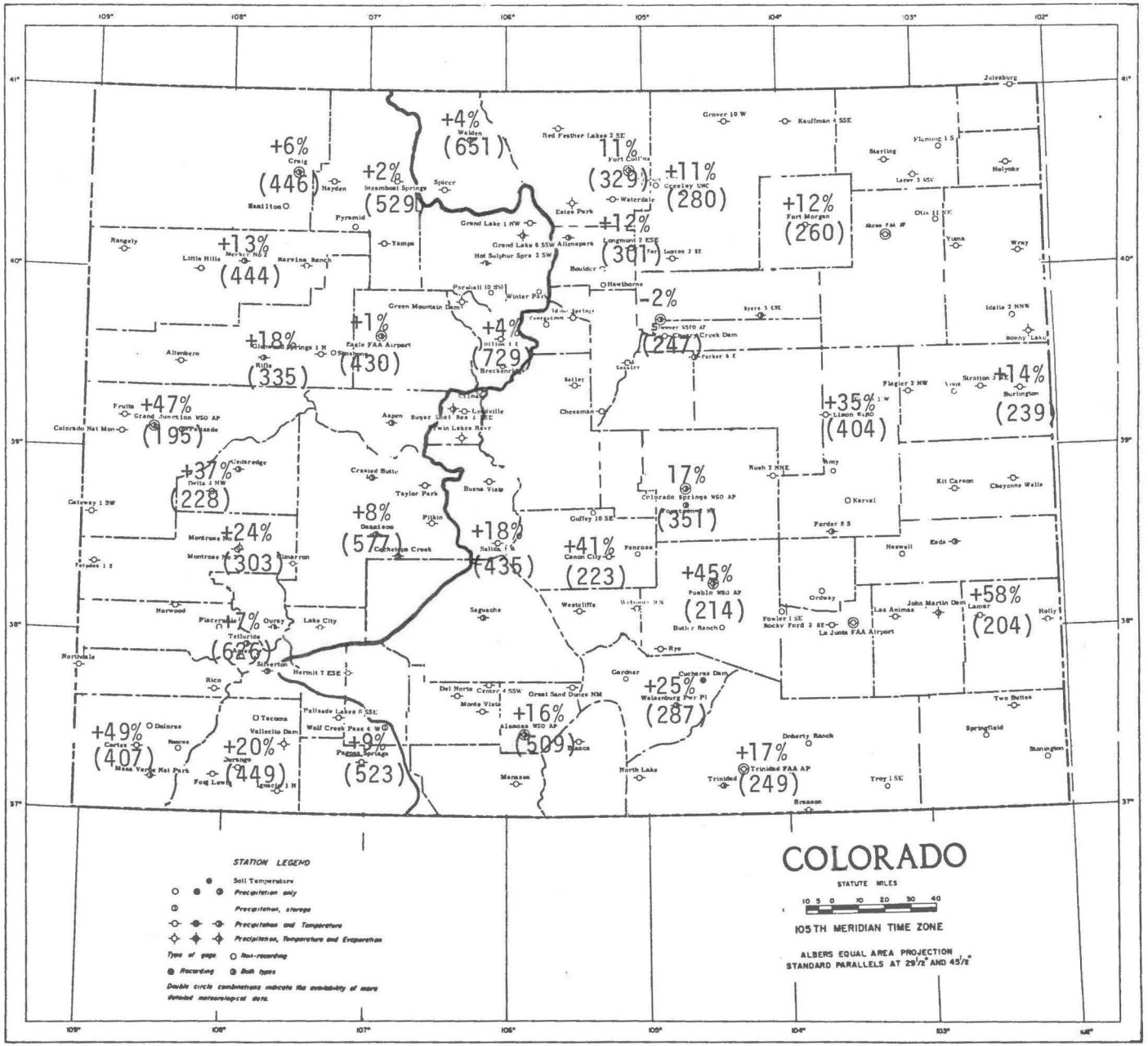


Figure 6. May 1980 Heating Degree Days as a percent above or below May 1979.

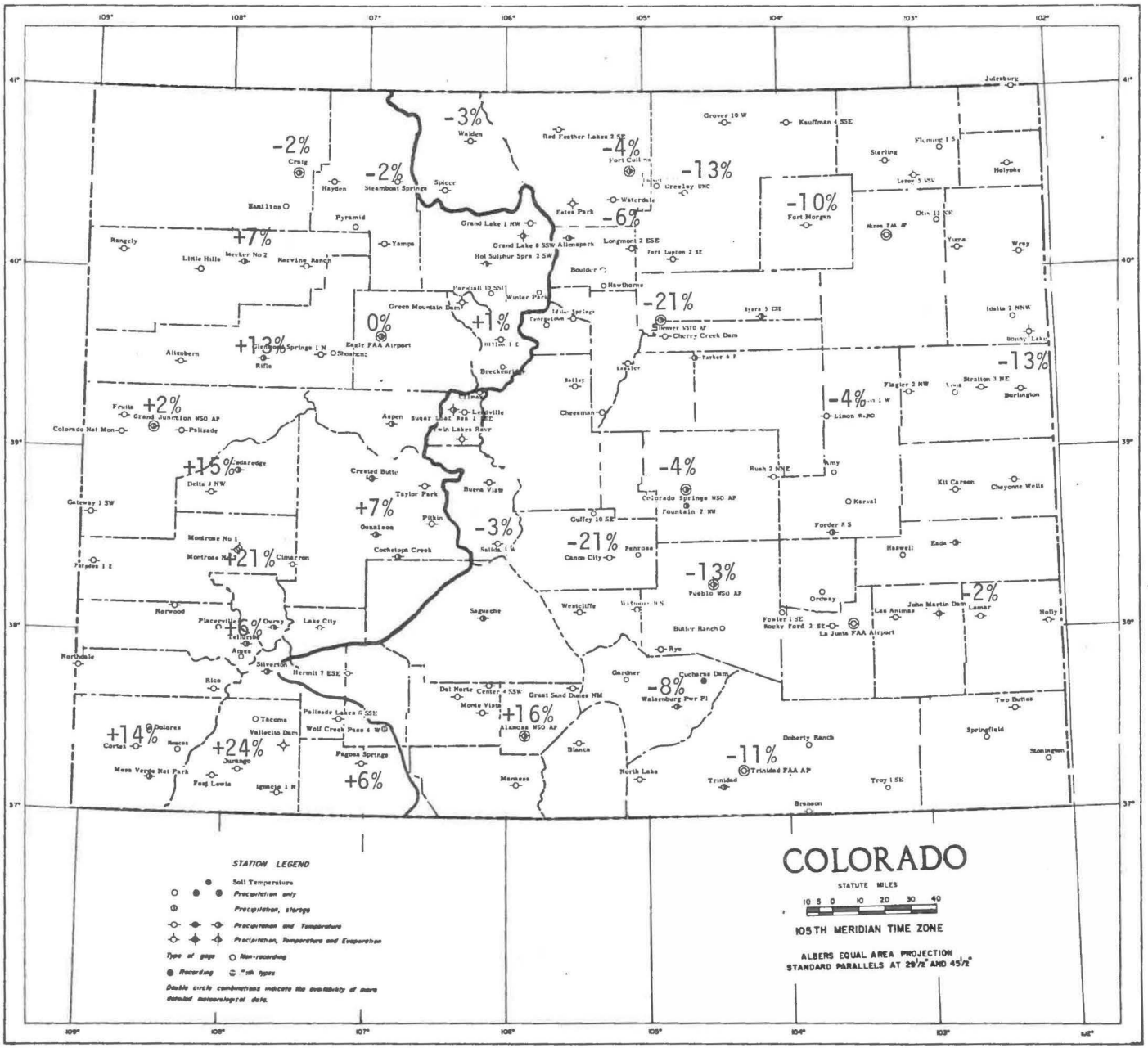


Table 1. Colorado Heating Degree Day Data

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1978-79	18	141	278	632	966	1762	1827	1518	1069	704	438	203	9556
	1979-80	57	127	267	590	1312	1438	1363	1029	1071	798	509		
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1978-79	31	128	299	584	954	1494	1538	1169	1072	777	524	253	8823
	1979-80	49	146	243	569	1211								
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1978-79	0	4	86	332	737	1118	1305	809	690	442			
	1979-80	2	60		275	890	802	1100	820	803	513			
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1978-79	3	26	51	379	827	1259	1514	937	733	481	275	54	6539
	1979-80	0	21	49	340	928	864	1257	866	910	548	239		
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1978-79	1	38	124							361	284	76	
	1979-80	0	13	50	223	804	762	1051	703	691	478	223		
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1978-79	3	44	119	400	848	1329	1484	906	825	494	336	97	6885
	1979-80	6	41	88	407	1005	969	1180	883	901	615	351		
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1978-79	6	11	171	385	789	1367	1467	1105	930	595	356	117	7299
	1979-80	10	42	77	391	1014	1118	1095	912	922	606	407		
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1978-79	20	99	283	619	1027	1607	1695	1214	1057	673	453	184	8931
	1979-80	8	82	129	552	1199	1364	1326	1144	1078	730	446		
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1978-79	0	4	126	390	738	1513	1456		761	450	198	50	
	1979-80	0	22	44	333	956	1164	1005	781	762	458	228		
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1978-79	0	20	96	366	811	1245	1450	854	751	473	313	81	6460
	1979-80	0	20	58	347	941	939	1204	876	828	514	247		
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1394	1467	1470	1300	1335	1065	729		
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1022	1078	1134	968	981	641	449		
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1221	1071	999	710	430		
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1273	1011	911	555	329		
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388	1084	913	561	260		
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	999	741	740	405	195		

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344	1082	922	539	280		
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1306	1648	1404	1382	1320	897	577		
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241	850	774	438	204		
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1353	997	1021	683	404		
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1312	1080	923	570	301		
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1182	994	987	663	444		
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065	826	821	536	303		
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1186	1077	1080	735	523		
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135	797	751	492	214		
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106	912	834	548	335		
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1145	917	954	760	435		
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1411	1209	1196	858	529		
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1375	1020	971	554			
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214	1061	1192	858	626		
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0		63	299	873	871	1041	792	765	529	249		
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413	1247	1274	985	651		
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	1020	732	774	547	287		

COLORADO CLIMATE -- JUNE 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Hot and dry were the two words that best described June weather conditions in Colorado. While rivers and streams flowing out of the mountains ran full and fast from the rapid snowmelt in the high country, the surrounding lands dried out quickly. Bright sunshine, high temperatures, little precipitation, and frequent strong winds combined to dry both mountains and plains, and by the end of the month forested areas were experiencing the greatest early-season fire danger in many years.

There were very few weather changes during the month. During the first week of June, warm sunny days and cool nights were the rule. A brief period of cloudy and cooler weather affected areas east of the mountains on the 7th, 8th and 9th and a few light showers were reported from Colorado Springs southward. Temperatures then began their upward climb. The first 100-degree readings of the year occurred in parts of southeastern Colorado on the 12th, and many similar days followed.

While the Western Slope remained sunny and dry, some moisture gradually moved into eastern Colorado during the middle of the month setting off a few severe thunderstorms out on the plains. Heavy rains with some of these storms brought welcome moisture to limited areas, but the hail and high winds which accompanied these storms produced some crop damage to ripening wheat fields. The heaviest storms were reported in northeastern and east central Colorado on the 15th, 16th, 18th, 19th and 20th. The Leroy station southeast of Sterling received 1.92 inches of rain the evening of the 18th. Burlington recorded 2.55 inches from one storm the evening of the 19th. The weak cold front which helped initiate the storms on the 18th and 19th was also responsible for an unexpected cool day across northeastern Colorado on the 19th. A light easterly "upslope" wind behind the front produced a low cloud cover which held high temperatures in the 60's and 70's for one day--20 degrees cooler than they had been.

The remainder of the month was mostly dry and very hot across the entire state as the heatwave centered in Texas became more pronounced and widespread. Temperatures soared above the 100-degree mark at Walsh, in extreme southeastern Colorado on each of the last 8 days of June. Highs of 108° at Walsh on the 23rd and at Las Animas on the 26th were the highest readings in the state. Several daily record temperatures were reached or exceeded in many parts of the state during that period, and 100-degree readings were also observed at Palisade and Grand Junction on the Western Slope. Mountain stations reported unusually high temperatures for June with readings in the 80's, but nighttime lows still dropped back into the 30's and 40's. Strong winds with the hot temperatures helped to fan several major forest fires which started during the last week in June.

A minor change in the weather pattern at the end of the month allowed moisture to start streaming northward across Arizona and New Mexico. A few very light showers were reported in and near the mountains on June 30th, the first rain in 6 weeks in some areas.

Precipitation amounts and percents of average are shown in Figures 1 and 2, respectively. June is typically the driest month of the year in the mountains and western valleys of Colorado, but rarely does so much of the state escape precipitation. Most stations from the Front Range westward received less than 10 percent of the June average. Berthoud Pass received no precipitation at all, the first month on record with no precipitation. Denver received .09 inches of rain, 5 percent of average making this the 3rd driest June on record and the driest since 1916. Precipitation was heavier across the Eastern Plains, but only a few limited areas were above average.

The dry weather across the state affected the water-year precipitation totals (Figure 3). A few areas in the Central Mountains have now fallen slightly behind average, but most of the state continues above average.

June temperatures for many Colorado cities are shown in Figure 4. Above average temperatures were noted across the entire state with the warmest readings, relative to average, occurring east of the mountains. In most areas, daytime temperatures were much above average while nighttime readings were near average. The dry conditions contributed to the

fairly comfortable nighttime temperatures. As a result, monthly temperatures ended up only one to five degrees warmer than usual across the state.

The final tabulation of heating degree day data for the 1979-80 heating season is shown in Table 1. June added very little to the seasonal totals. Totals for the entire season were very near average across the state and considerably less than last year in most areas. All other factors equal, energy consumption for space heating this season, as indicated by heating degree day totals, should have been less than 1978-79 by an average of about 5 percent. However, the difference was much greater in western Colorado. Grand Junction, for example, totalled 19 percent fewer heating degree days than last season.

Figure 1. June 1980 precipitation amounts (inches).

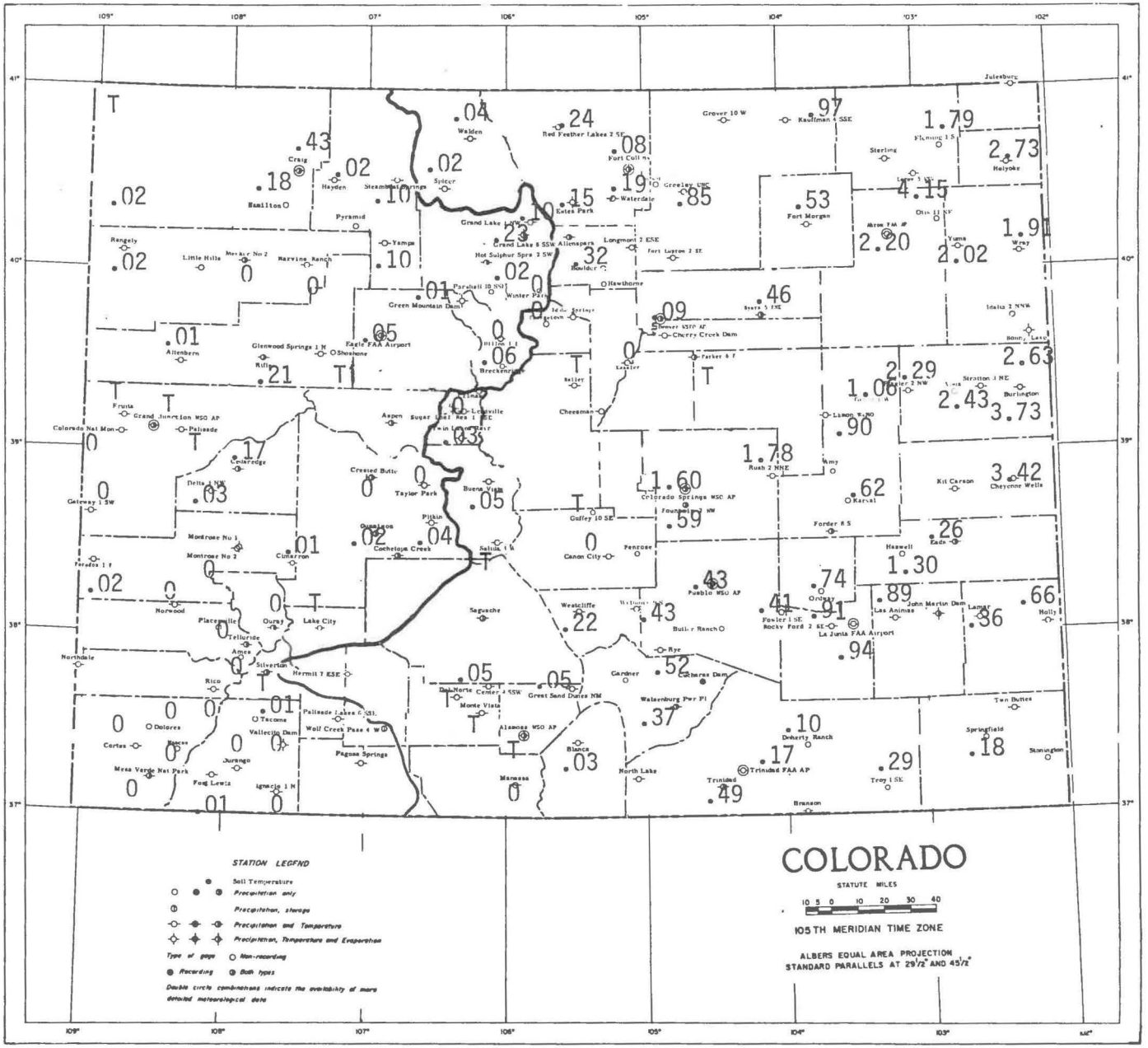


Figure 2. Precipitation for June 1980 as a percent of the 1951-1970 average.

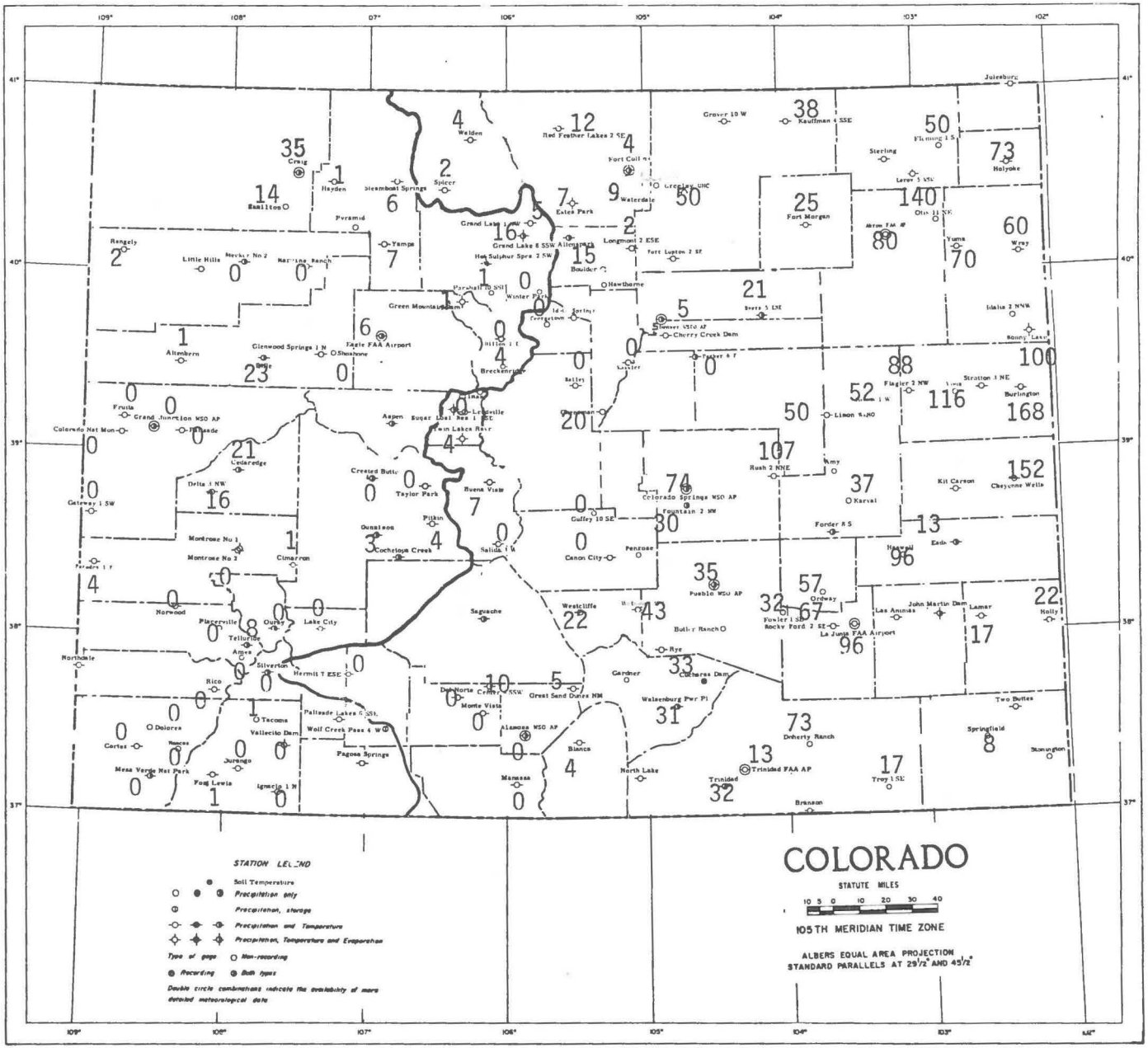


Figure 3. Precipitation for October 1979 through June 1980 as a percent of the 1951-1970 average.

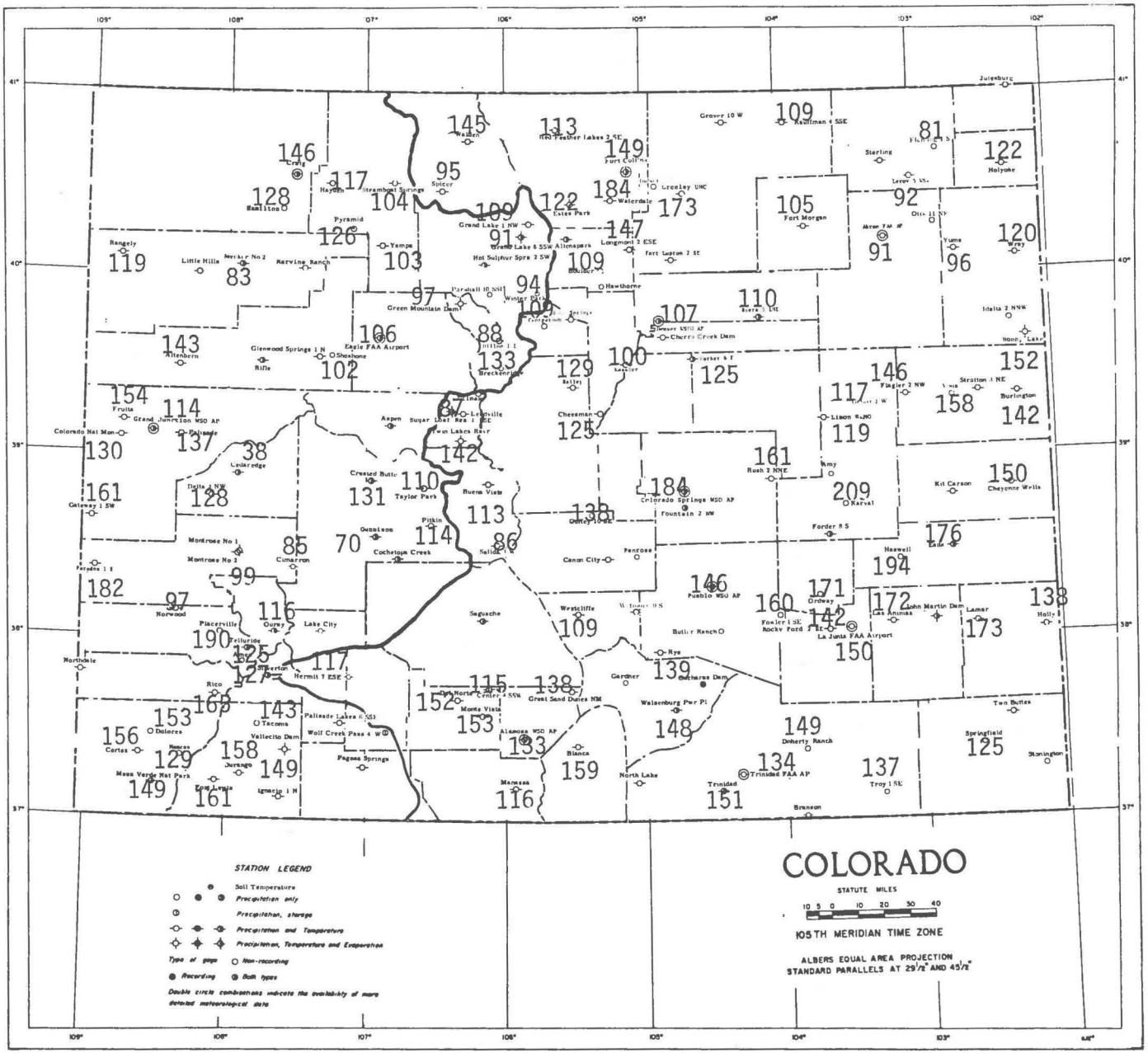
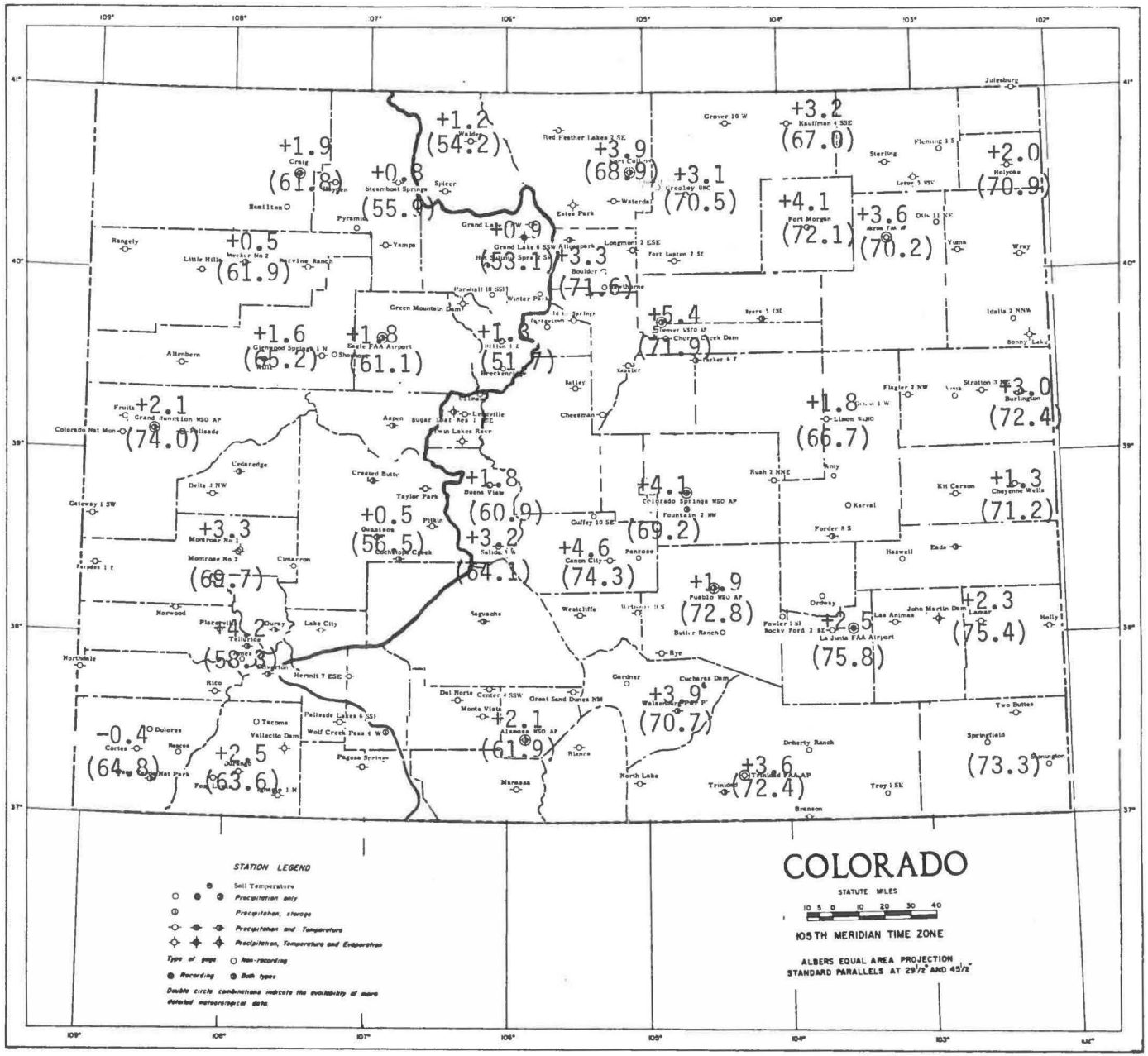


Figure 4. Temperatures for June 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.



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	1978-79	242	347	495	811	1079	1603	1762	1343	1276	970	724	484	11136
	1979-80	250	325	441	766	1394	1467	1470	1300	1335	1065	729	392	10934
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1978-79	7	31	178	415	801	1378	1470	1117	917	582	362	137	7395
	1979-80	16	63	54	402	1022	1078	1134	968	981	641	449	77	6885
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1978-79	25	84	269	587	906	1607	1680	1192	970	686	431	197	8634
	1979-80	32	101	211	566	1206	1476	1221	1071	999	710	430	123	8146
Ft. Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1978-79	2	20	114	445	863	1309	1484	922	754	489	343	82	6827
	1979-80	1	33	86	375	1013	1030	1273	1011	911	555	329	24	6641
Ft. Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1978-79	3	26	93	405	855	1447	1599	1036	756	444	289	80	7033
	1979-80	0	17	63	322	1011	1211	1388	1084	913	561	260	10	6835
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1978-79	0	6	95	313	737	1510	1493	1154	732	377	192	37	6646
	1979-80	0	0	0	209	945	1175	999	741	740	405	195	4	5413
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1978-79	1	8	101	438	863	1380	1514	936	733	457	321	78	6830
	1979-80	0	26	70	379	1011	1118	1344	1082	922	539	280	14	6785
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1978-79	112	209	385	682	1023	1905	1930	1616	1308	814	541	313	10838
	1979-80	137	203	343	652	1306	1648	1404	1382	1320	897	577	247	10116
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1978-79	0	6	45	301	750	1179	1433	857	602	324	209	28	5734
	1979-80	0	3	26	252	820	933	1241	850	774	438	204	7	5538
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1978-79	3	55	149	459	903	1352	1546	980	866	588	420	117	7438
	1979-80	3	55	116	464	1072	1054	1353	997	1021	683	404	55	7277
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1978-79	4	26	107	418	830	1313	1515	977	773	480	320	98	6861
	1979-80	0	36	70	361	1054	1066	1312	1080	923	570	301	15	6788
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1978-79	15	54	242	500	933	1441	1520	1051	951	673	414	149	7943
	1979-80	6	69	137	496	1138	1276	1182	994	987	663	444	106	7498
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1978-79	0	11	136	366	752	1410	1450	1054	783	492	250	88	6792
	1979-80	3	27	42	334	979	1136	1065	826	821	536	303	15	6087
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1978-79	48	138	284	538	860	1456	1518	1209	1059	752	495	258	
	1979-80	77	111	243	541	1136	1192	1186	1077	1080	735	523		
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1978-79	0	6	59	347	778	1264	1509	849	674	391	247	48	6172
	1979-80	0	8	45	299	870	959	1135	797	751	492	214	6	5576
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1978-79	1	24	174	441	783	1528	1546	1132	831	532	296	104	7392
	1979-80				420	1040	1222	1106	912	834	548	335	49	
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1978-79	0	42	185	524	897	1352	1406	998	951	641	448	162	7606
	1979-80	39	106	195	508	1107	1065	1145	917	954	760	435	67	7298
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1978-79	125	207	369	679	1015	1665	1746	1241	1104	814	542	326	9836
	1979-80	131	189	316	685	1248	1520	1411	1209	1196	858	529	266	9558
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1978-79	3	25	145	525	975	1522	1602	1017	769	484	311	73	7451
	1979-80	0	41	91	408	1053	1163	1375	1020	971	554			
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1978-79	95	189	341	600	978	1429	1501	1127	1122	851	590	310	9133
	1979-80	121	217	273	589	1187	1142	1214	1061	1192	858	626	198	8678
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1978-79	0	8	66	309	720	1127	1320	785	716	399	281	68	5799
	1979-80	0	21	63	299	873	871	1041	792	765	529	249	14	5517
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1978-79	189	312	462	791	1131	1625	1714	1236	1229	897	668	382	10636
	1979-80	188	260	407	757	1393	1340	1413	1247	1274	985	651	317	10232
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1978-79	0	23	110	347	719	1189	1331	810	731	474	313	96	6143
	1979-80	0	26	82	336	929	880	1020	732	774	547	287	6	5619

COLORADO CLIMATE -- JULY 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

The record-breaking 1980 heat wave which baked broad areas of the southern and central United States also had some effect on Colorado in July. Above average temperatures across the state for the second month in a row, accompanied by below average precipitation in most areas, resulted in heavy use of irrigation water and also put the word "drought" back into street corner conversation.

Thunderstorms rumbled across much of the state early in July ending what had become a string of more than 40 consecutive rainless days in many mountain and Western Slope locations. More than an inch of rain was recorded on the 1st and 2nd both in the Central Mountains and in scattered areas on the northeastern plains. Dillon and Meeker recorded 1.02 and 1.14 inches of rain, respectively, on the 2nd which helped greatly to reduce the serious forest fire hazard in those areas.

The Fourth of July marked the beginning of a prolonged period of hot weather, especially east of the Continental Divide. Colorado Springs set a local record with 14 consecutive days (4th through the 17th) with temperatures of 90° or above. At Las Animas, temperatures soared past the 100-degree mark on 23 of the last 28 days of July. The 109° reading on the 12th tied with Holly's 109° on the 10th as the state's highest temperature for the month. But neither came close to Colorado's all-time highest temperature of 118° recorded in Bennett back on July 11, 1888.

The Western Slope did not escape the heat altogether. Grand Junction hit 100° only once in July, but Delta reached the century mark 5 times and Palisade 16 times. Higher elevations were much cooler, as they always are during the summer months. For example, the highest temperature recorded during the month at Aspen's new cooperative weather station was only 83°.

Rainfall during the last 4 weeks of the month was generally light but very scattered and variable--typical of summer thunderstorm activity.

Most of the rain fell during two one-week periods, the 7th through the 14th and the 20th through the 27th. While all of Colorado got some rain, heavy storms were limited to scattered areas on the Eastern Plains. Akron, for example was drenched by 3.19 inches of rain on the 20th (Sterling received golfball size hail and one inch of rain from that storm). Walsh, in extreme southeast Colorado, reported nearly two and one-half inches of rain from a nighttime storm on the 22nd. Storms in Weld County on the 25th produced damaging winds, severe hail, and some tornado reports. These storms were associated with cooler air which tried to push into Colorado from the 20th to the 27th. However, the heat again took over, and on the 29th temperatures skyrocketed. Pueblo, for example, hit 106°, their hottest on record. Longmont and Fort Morgan both reached 105°, their hottest temperatures since July 1973. By comparison, the low that morning at Pitkin was only 33°. Pitkin, in the mountains east of Gunnison, also had the distinction of reporting the coldest temperature in the state for the month, 29° on the morning of the 7th.

Temperatures for July and departures from average are shown in Figure 1. All of Colorado with the exception of the immediate Grand Junction and Gunnison areas were hotter than average for the month. West of the Divide temperatures ended up 1 to 2 degrees warmer than average, while east of the mountains the range was mostly from 2 to 4 degrees warmer than usual. Colorado Springs' July mean temperature of 75.3° was 4.4 degrees warmer than average. That may not sound like much but that makes this the 2nd hottest month on record. At Pueblo, July also tied as the second hottest month, and at Denver this was the 3rd hottest month reported since the official station was moved to the airport. For the months of June and July combined this has been the hottest early summer since 1963 east of the mountains, but conditions still don't come close to the magnitude of the heat and drought of the 1930's.

Precipitation totals and percents of average for July are shown in Figures 2 and 3, respectively. Rainfall varied tremendously across the state ranging from just .10 inches at Cortez, 9 percent of average, to 5.77 inches at Akron, 207 percent of average. Areas with above average

precipitation were limited to the Colorado River valley from Utah to Glenwood Springs, a small region from Breckenridge to near Steamboat Springs, and a band across northeastern Colorado from Denver to Sterling and Wray. The driest conditions were reported across the southern half of the state. Many locations in the San Juan Mountains, the San Luis Valley, and the Arkansas Valley reported 50% or less of the average July precipitation.

Precipitation as a percent of average for the first 10 months of the 1980 water year is displayed in Figure 4. The effects of the wet winter still dominate the totals, as most areas of the state remain wetter than average for the year. However, totals are rapidly dropping as a result of the dry summer. In the mountains, particularly the San Juans, this wet winter-dry summer combination is occurring for the 3rd year in a row.

Note: Heating degree day information is omitted this month. Most areas below 6,000 feet received 0 in July. Dillon reported 227, 22 percent fewer than normal.

Figure 1. Temperatures for July 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.

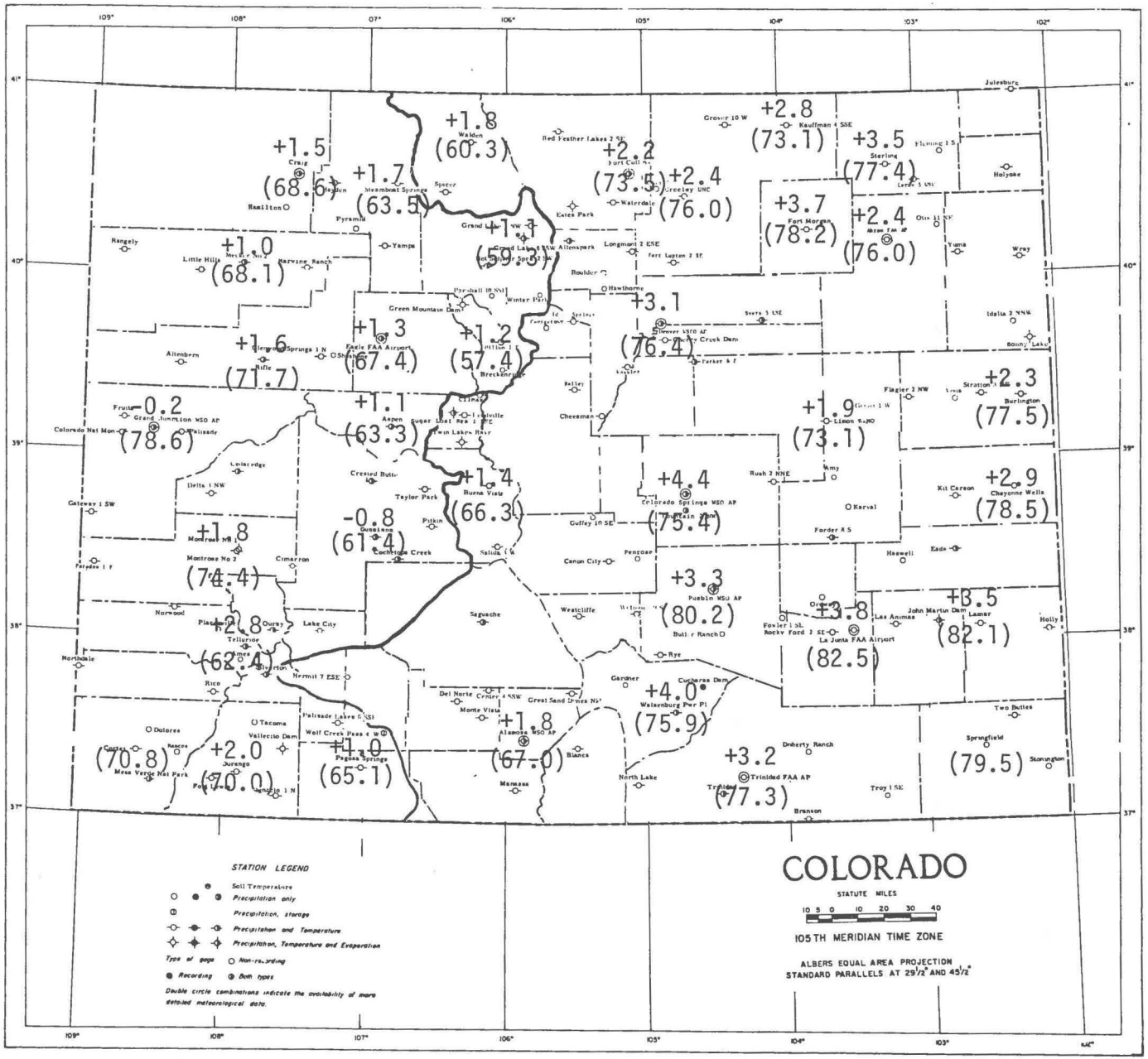


Figure 2. July 1980 Precipitation Amounts (inches).

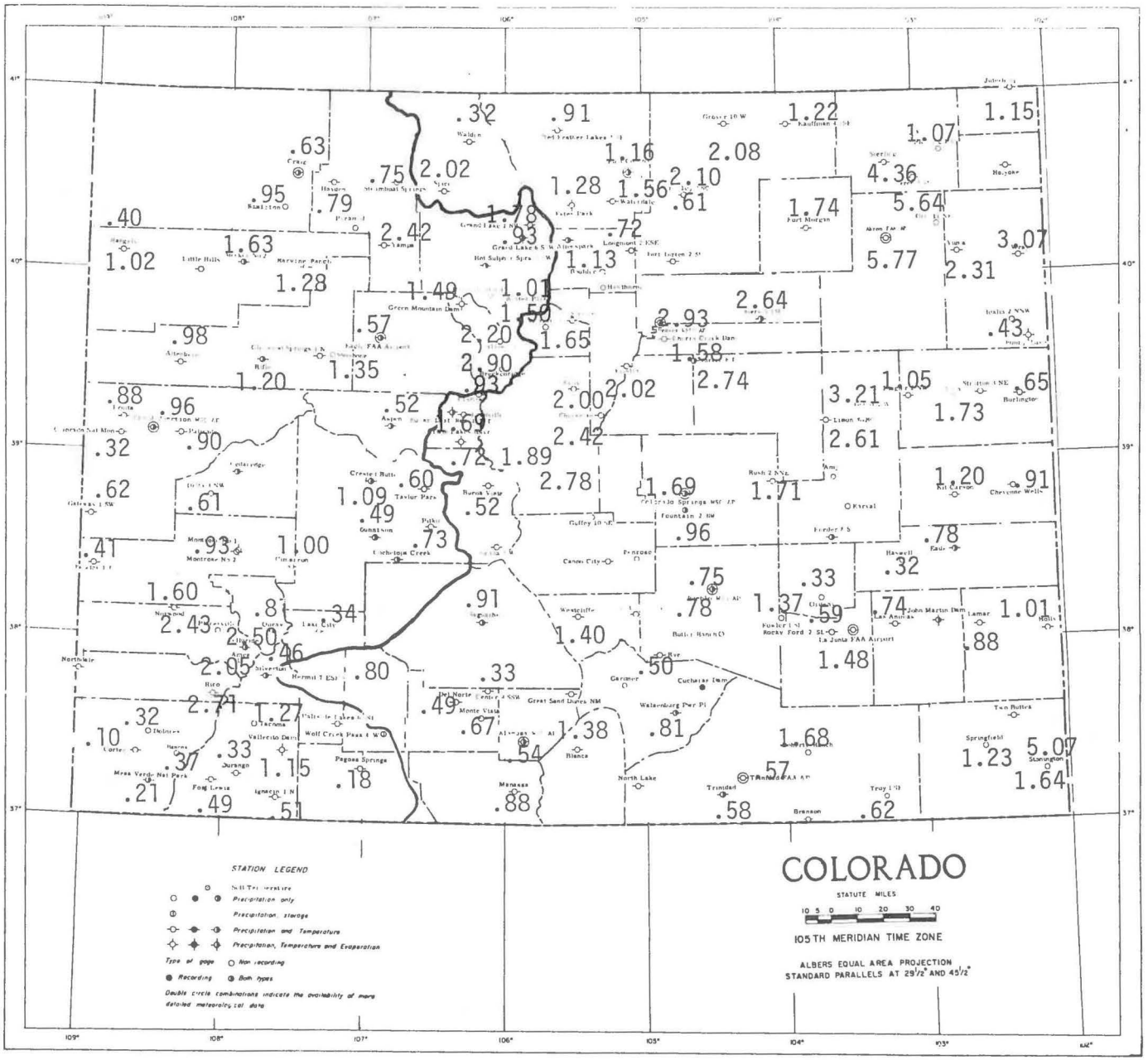


Figure 3. Precipitation for July 1980 as a percent of the 1951-1970 average.

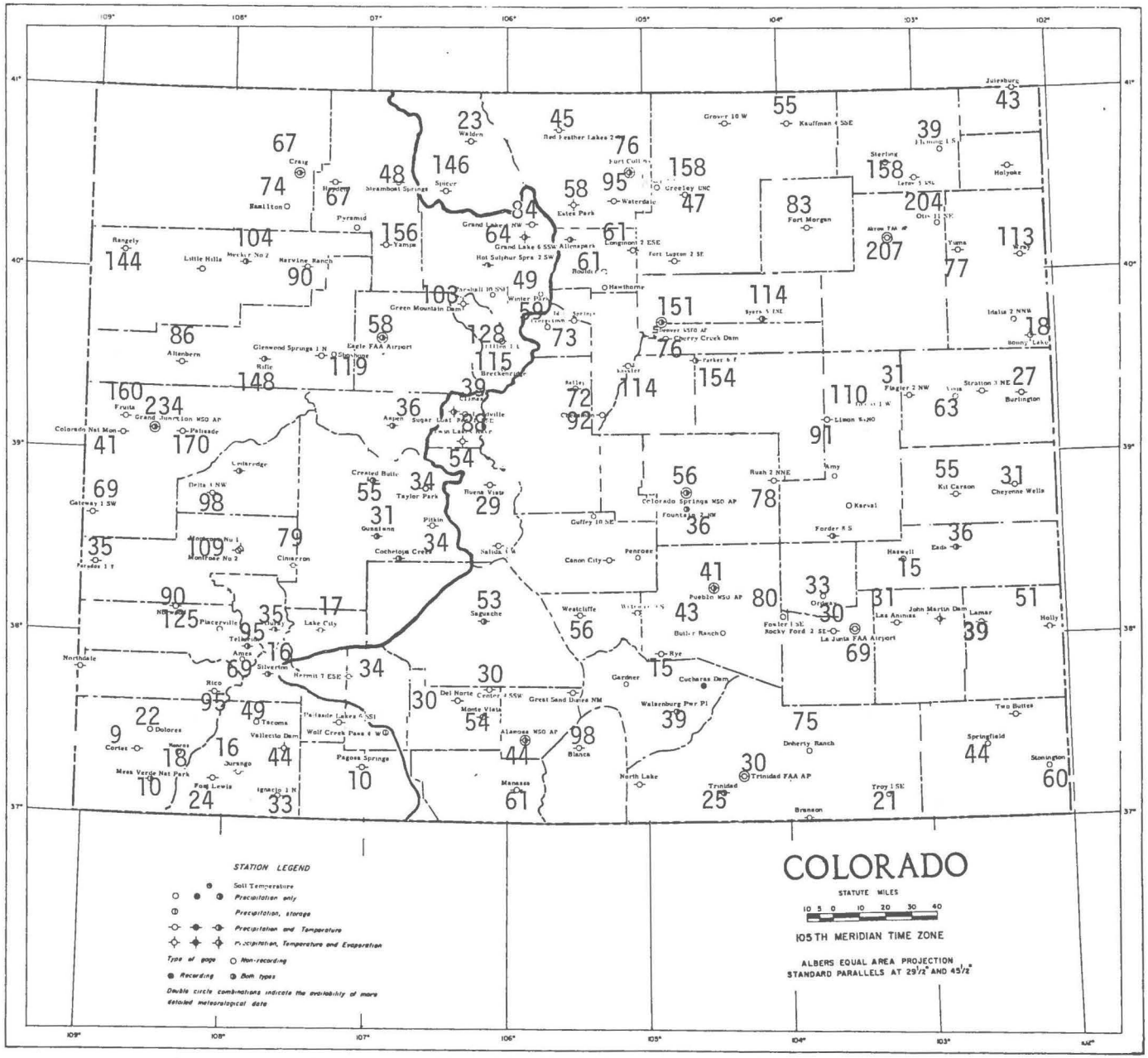
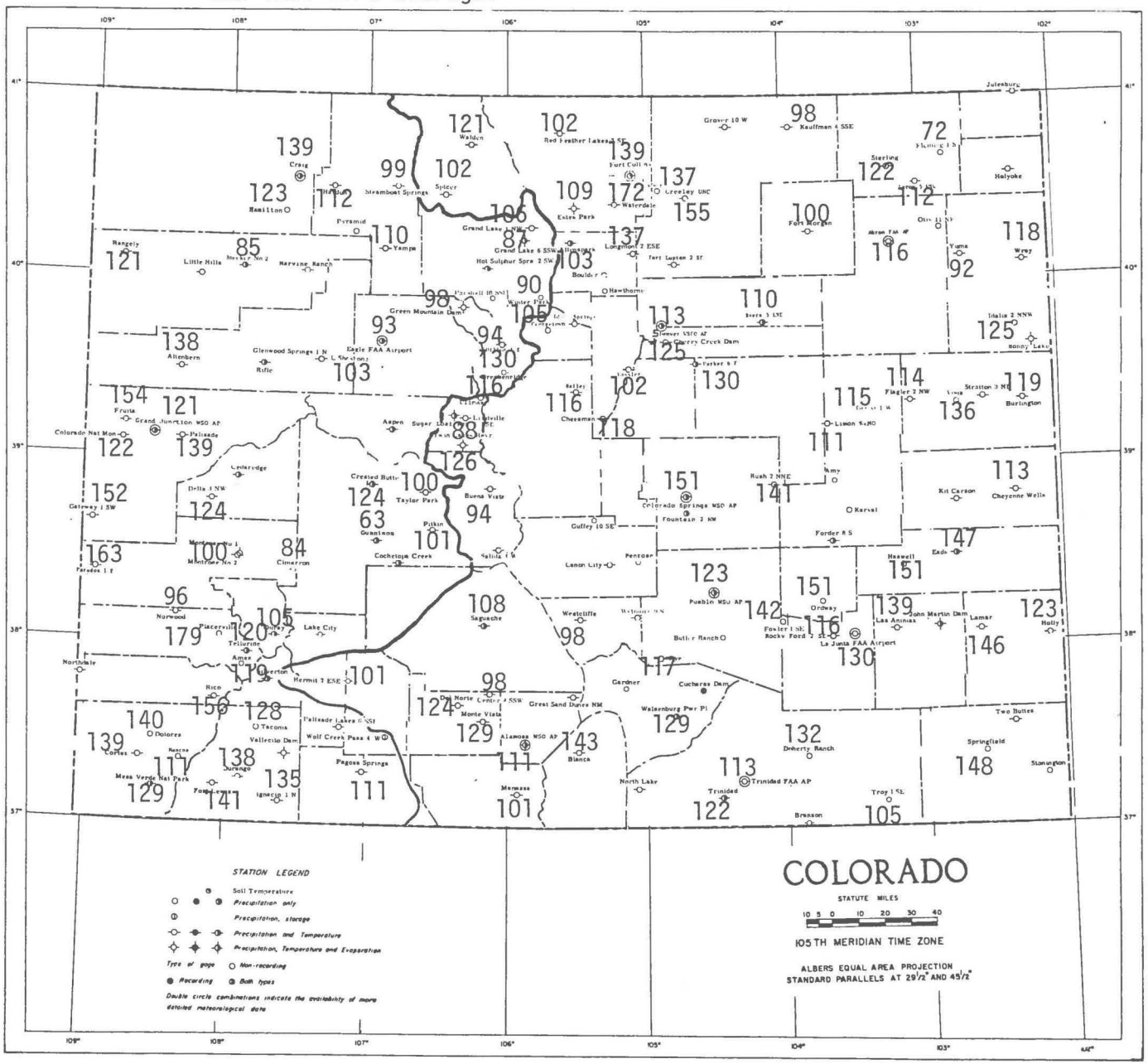


Figure 4. Precipitation for October 1979 through July 1980 as a percent of the 1951-1970 average.



COLORADO CLIMATE -- AUGUST 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Colorado experienced enjoyable summer weather during most of August. The extreme heat of June and July gradually gave way to more seasonal temperatures. Showers and thunderstorms moistened much of the state, but severe storms were few and widely scattered.

Hot temperatures with scattered but mostly light afternoon and evening thunderstorm activity dominated the first 13 days of August. Daytime temperatures in the 90's and with a few low 100's were common east of the mountains and at lower elevations on the Western Slope. The hottest temperatures for the month in the eastern half of Colorado were reached on the 6th and 7th. Denver hit 100° on the 6th setting a new record for the date as well as being the first 100° reading there since July 6, 1973. The state's hottest temperature was recorded at Las Animas; 107° on the 7th. The only appreciable rain to fall early in the month soaked the Walsenburg-Trinidad vicinity and the Holyoke area during the evening of the 8th. The Trinidad airport recorded 1.46 inches of rain from that storm.

A change in the upper level wind flow began to bring moisture followed by cooler temperatures into the state on the 13th and 14th. Showers and thunderstorms, some of them heavy, dampened most of the state from the 13th to the 16th. Heavy storms dropped more than 2 inches of rain on both Colorado Springs and Pueblo on the 14th causing flooding in some areas. At Colorado Springs, 2.07 inches of rain fell in just one hour during the late afternoon. Other areas around the state also received more than one inch of rain that day including Burlington, Parker, and Hayden.

The next several days were generally dry and cool across the state. A cool air mass settled over the state on the 20th and 21st and brought a gentle taste of fall to parts of the state, especially in the mountains. Grand Lake reported a low of 20° on the morning of the 20th, but Rio Grande Reservoir's 19° on the following morning was the state's lowest temperature for the month.

Warm, moist air began to flow back into Colorado on the 22nd and 23rd first setting off storms in the western half of the state and then bringing precipitation to most of the remainder of the state on the 24th through the 27th. One half to one inch rainfall amounts were common during this rainy period across much of western Colorado. In several areas this was the heaviest precipitation to fall in over 3 months. The greatest precipitation totals were recorded at Hamilton in northwestern Colorado, where 2.43 inches of rain fell from the 23rd through the 26th, and at Wolf Creek Pass where 3.80 inches of rain fell during that same period.

Cooler weather across the state on the 26th and 27th was followed by another brief warming trend. But as the month ended, another cold front crossed the state kicking off a few severe thunderstorms in northeastern portions of Colorado late at night on the 30th. Akron reported hail along with .80 inches of rain from that storm. Temperatures dropped quickly that night all across the state. Sterling reported a morning low on the 31st of only 39^{o}.

Precipitation totals and percents of average for August appear in Figures 1 and 2, respectively. Averaged over the entire state, precipitation for the month was less than usual. However, there was considerable variation. In general, near average to above average precipitation was observed over northeastern and northwestern Colorado, the lower Front Range from Denver to Walsenburg, and parts of the San Juans. Below average rainfall occurred over southeastern Colorado, along the Front Range north from Denver, the San Luis Valley, the upper Arkansas Valley, the Central Mountain region, and much of the southwestern portion of the state. Totals ranged from .15 inches at Ordway (11 percent of average) and .21 at Alamosa (17 percent of average) to 4.59 inches at Colorado Springs (190 percent of average) and 7.45 at Wolf Creek Pass (220 percent of average).

With only one month remaining in the 1980 water year, precipitation totals continue near or above average for the year (Figure 3). However, the dry summer over much of the state has had a significant

effect on reducing precipitation excesses.

Temperatures for August and departures from average are displayed in Figure 4. For most of the state, August was a near-average month. Significantly above average temperatures were limited to southeastern areas of the state. LaJunta, for example, averaged 79.7^{o} for the month, 3.3 degrees warmer than usual.

Note: Heating degree day information is omitted this month. Totals were close to average across the state and ranged from 0 to 15 east of the mountains and on the Western Slope to more than 300 at Dillon and other mountain locations.

Figure 1. August 1980 precipitation amounts (inches).

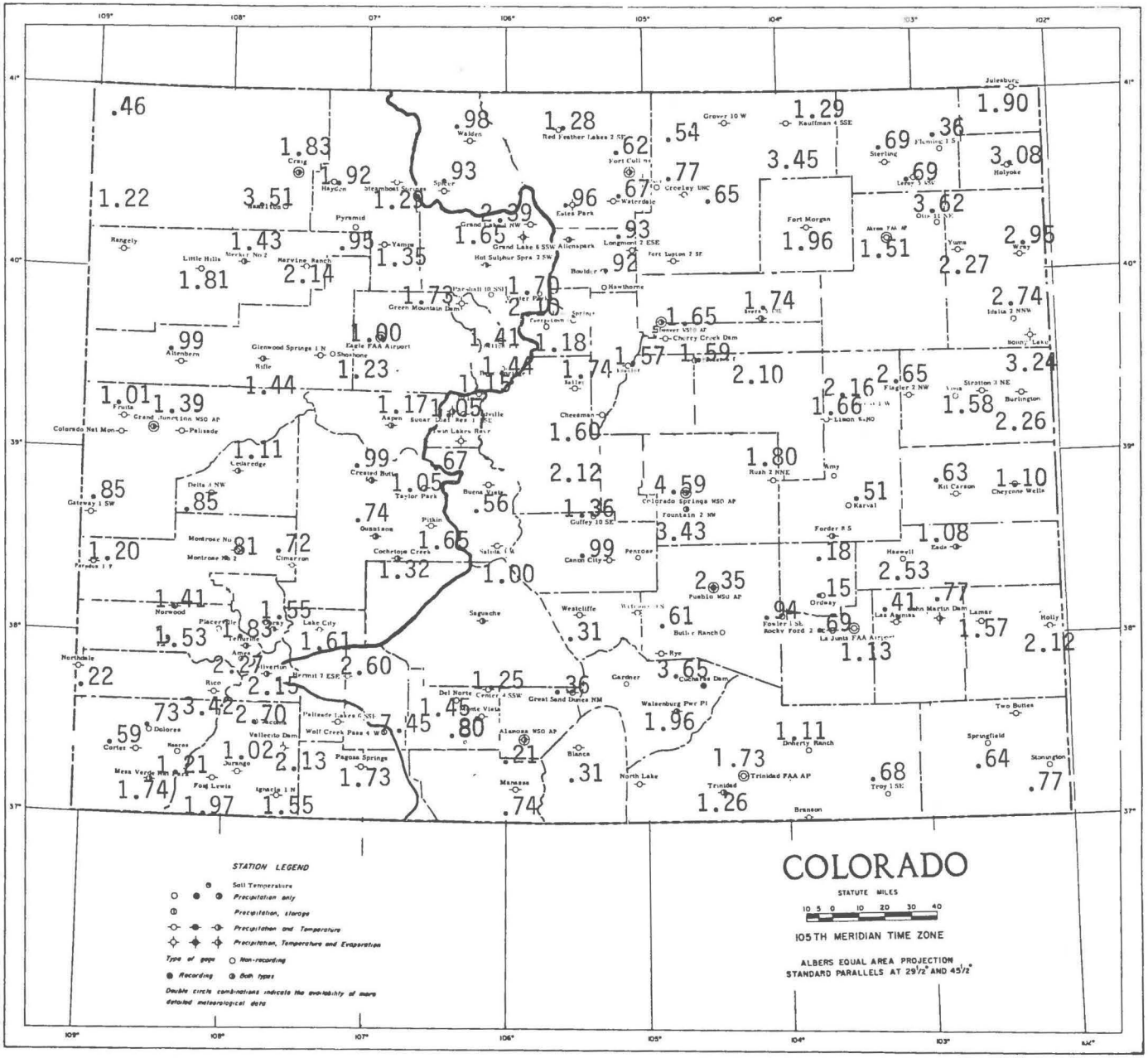


Figure 2. Precipitation for August 1980 as a percent of the 1951-1970 average.

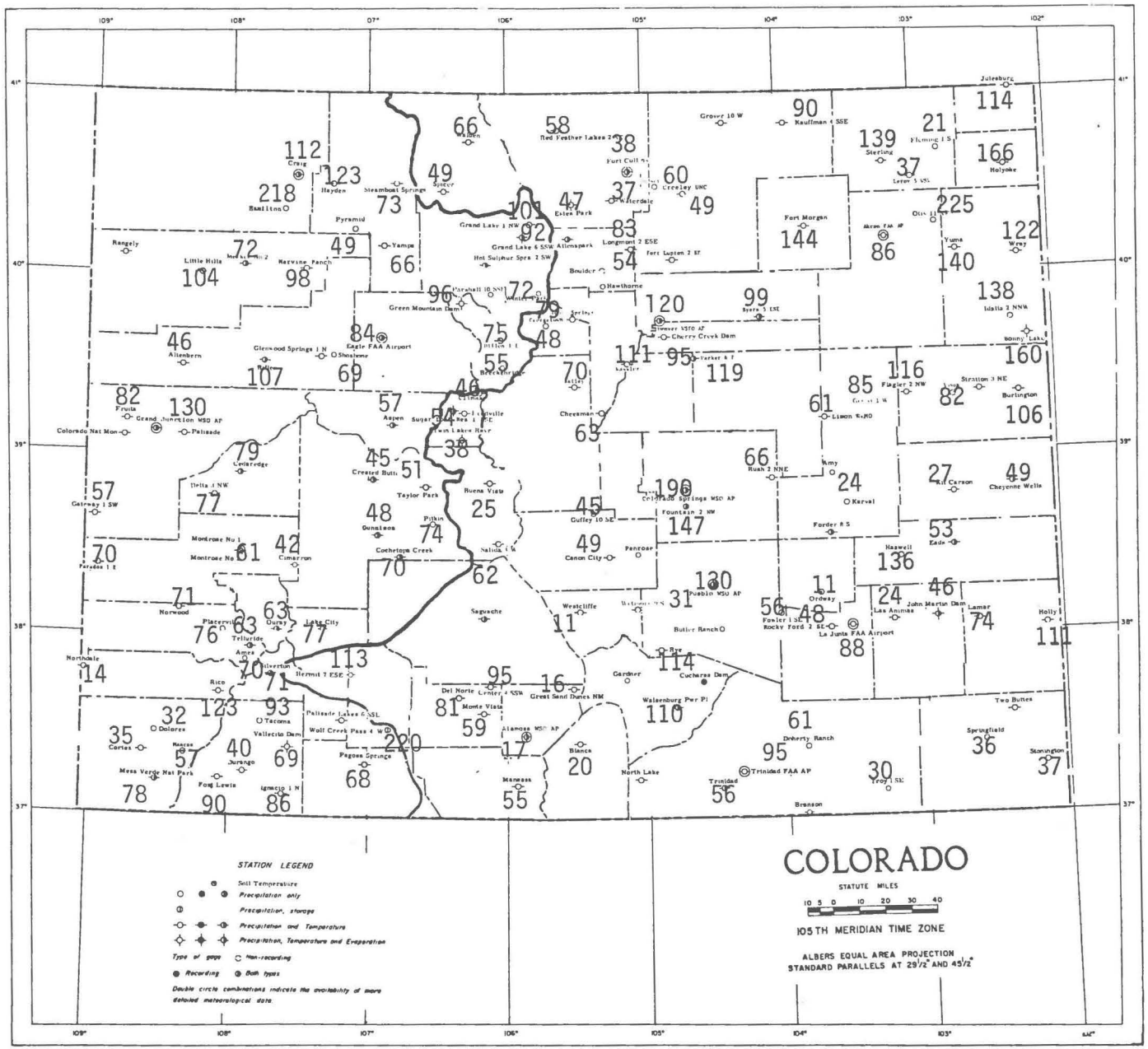


Figure 3. Precipitation for October 1979 through August 1980 as a percent of the 1951-1970 average.

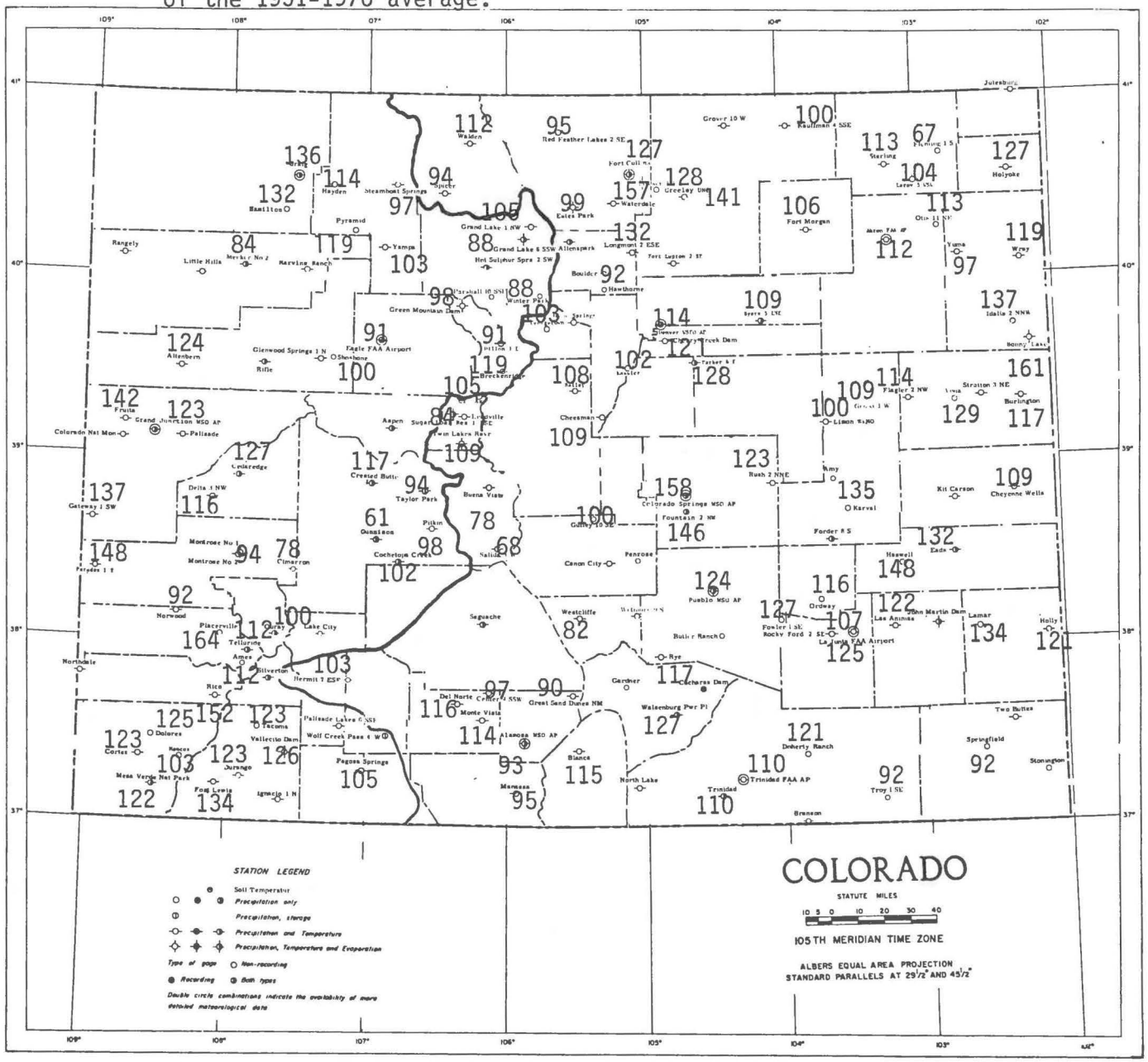
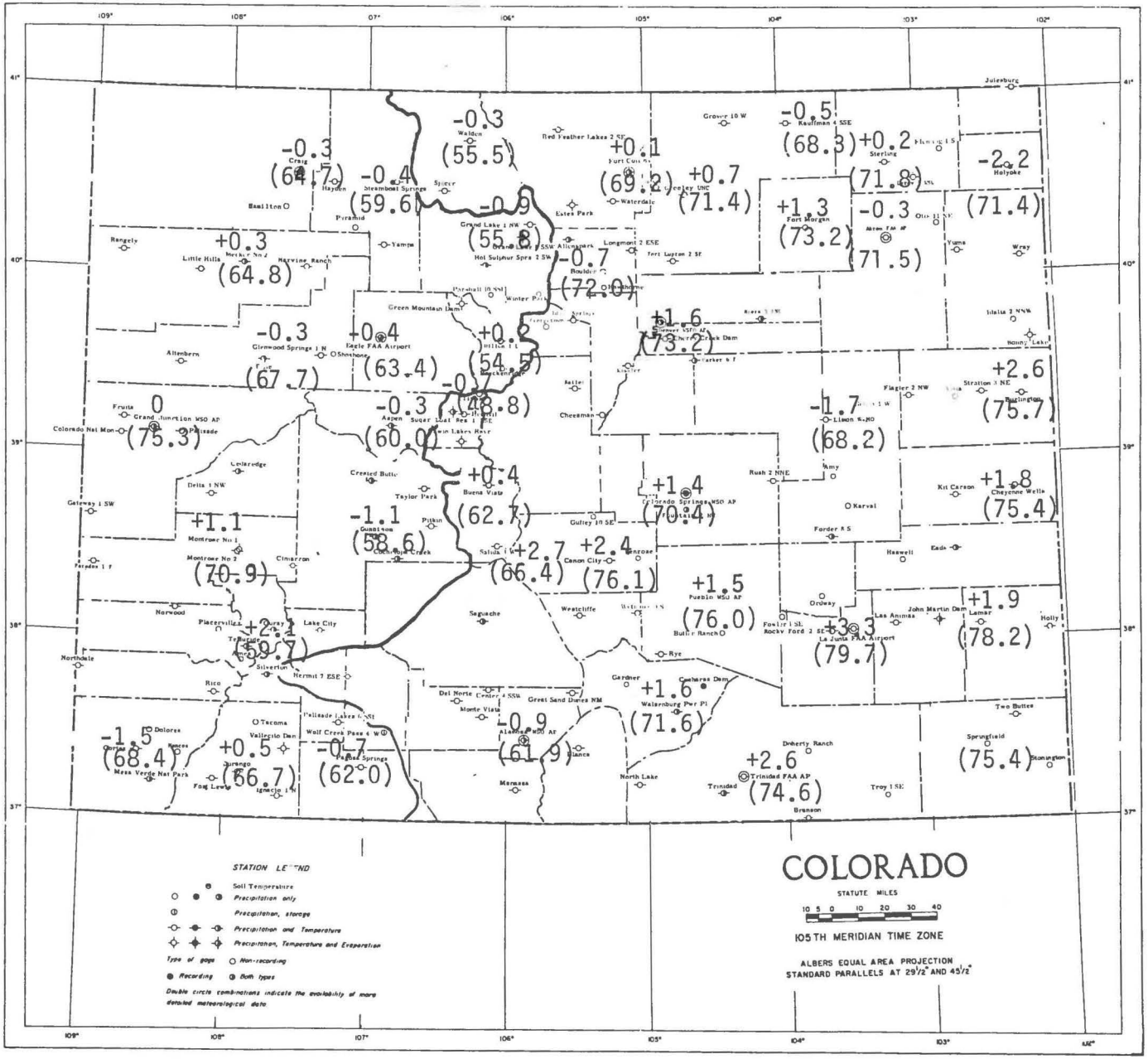


Figure 4. Temperatures for August 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.



COLORADO CLIMATE -- SEPTEMBER 1980

Colorado Climate Center
Department of Atmospheric Science
Colorado State University

Warm temperatures, plenty of sunshine, light winds, and low humidity combined to make September a comfortable and beautiful month across all of Colorado.

A few showers moved across the Eastern Plains early on September 1. But sunshine and summer-like temperatures promptly moved in as high pressure dominated the central U. S.

Daytime temperatures in the 80's and 90's, with pleasantly cool nighttime readings, were observed statewide from the 2nd through the 8th. Even high in the mountains the temperatures were comfortable ranging from the 30's at night to highs in the 60's and 70's.

Cloudiness gradually increased through the period and a few rain showers developed over southwestern portions of the state on the 6th. Beginning on the 8th, a storm system in the upper atmosphere over California drew moisture into the state from the south. At the same time, a cool high pressure center dropped down over Montana bringing easterly "upslope" winds to the Front Range and Eastern Plains. Rain, heavy in some local areas, fell across the entire state on the 8th, 9th, and 10th. Breckenridge recorded 1.67 inches of rain on the 8th. The Trinidad airport measured 1.77 inches on the 9th, and Bonny Lake, near Burlington, received 2.50 inches the same day. Unseasonably cold temperatures accompanied the rain east of the mountains putting a touch of autumn into the Colorado air. At Colorado Springs, for example, the temperature stayed in the 40's and 50's on both the 9th and 10th in sharp contrast to the mid-80 degree weather the previous week.

The rain tapered off on the 10th, skies cleared, and warmer temperatures quickly returned. A few widely scattered and mostly light showers were noted on the 12th, 14th, and again on the 16th, especially near and east of the mountains. Otherwise dry weather dominated the state.

A brief, but intense heat wave affected Colorado on the 18th and 19th. Temperatures soared into the 90's east of the mountains on the

19th setting new records at several cities (Denver, 93°; Pueblo, 98°). In the Arkansas Valley at Lamar and LaJunta, 100-degree temperatures occurred--the last 100 degree readings of the summer.

A small area of showers and thunderstorms moved down over north central Colorado late at night on the 19th. Fort Collins recorded an unexpected .66 inches of precipitation from that storm and Walden received .50. The high mountains were nicely dusted with snow from this system. The storms dissipated as they moved southward and by morning skies were clear again statewide.

Beautiful cool fall weather followed these showers into the state. From the 22nd to the 26th temperatures were below average and many locations reported their coldest temperatures for the month. It was 15° at Taylor Park Dam on the morning of the 26th, the state's coldest reading. Low temperatures in the 30's were reported statewide on the 23rd but most major agricultural areas escaped an early killing frost.

The month ended with warmer temperatures and bright sunshine--just perfect for viewing the changing aspen in the mountains.

Temperatures for the month as a whole and departures from average are shown in Figure 1. Temperatures were warmer than usual all across Colorado. East of the mountains temperatures were generally 2 to 3 degrees above average, while the western half of the state averaged about 1 degree warmer than usual. Large day-to-night temperature ranges were noted, particularly in the mountain valleys.

At Gunnison, for example, high temperatures averaged 74.4° for the month while the lows averaged 30.2°. This is a difference of more than 44 degrees. On one clear day late in the month the temperature rose from a morning low of 24° to a high of 81°. September and October in Colorado are the months when these large clear-weather temperature changes are most likely to occur because of the clear air, warm ground, and lengthening nights.

Precipitation totals and percents of average for September appear in Figures 2 and 3, respectively. There was considerable variation across the state. Totals ranged from just a trace at Julesburg and Leroy near Sterling to 2.94 inches at Bonny Lake and 3.06 inches at Vallecito Dam

near Durango. For much of the state September precipitation was less than average. However, along with the beautiful sunny weather, several areas ended up wetter than usual. The southern slopes of the San Juan Mountains, portions of the Central Mountains, North Park, the east central plains, parts of the Arkansas Valley, and the Trinidad-Walsenburg area all were above average. Practically all of this precipitation fell on 1 or 2 days during the September 8-10 period.

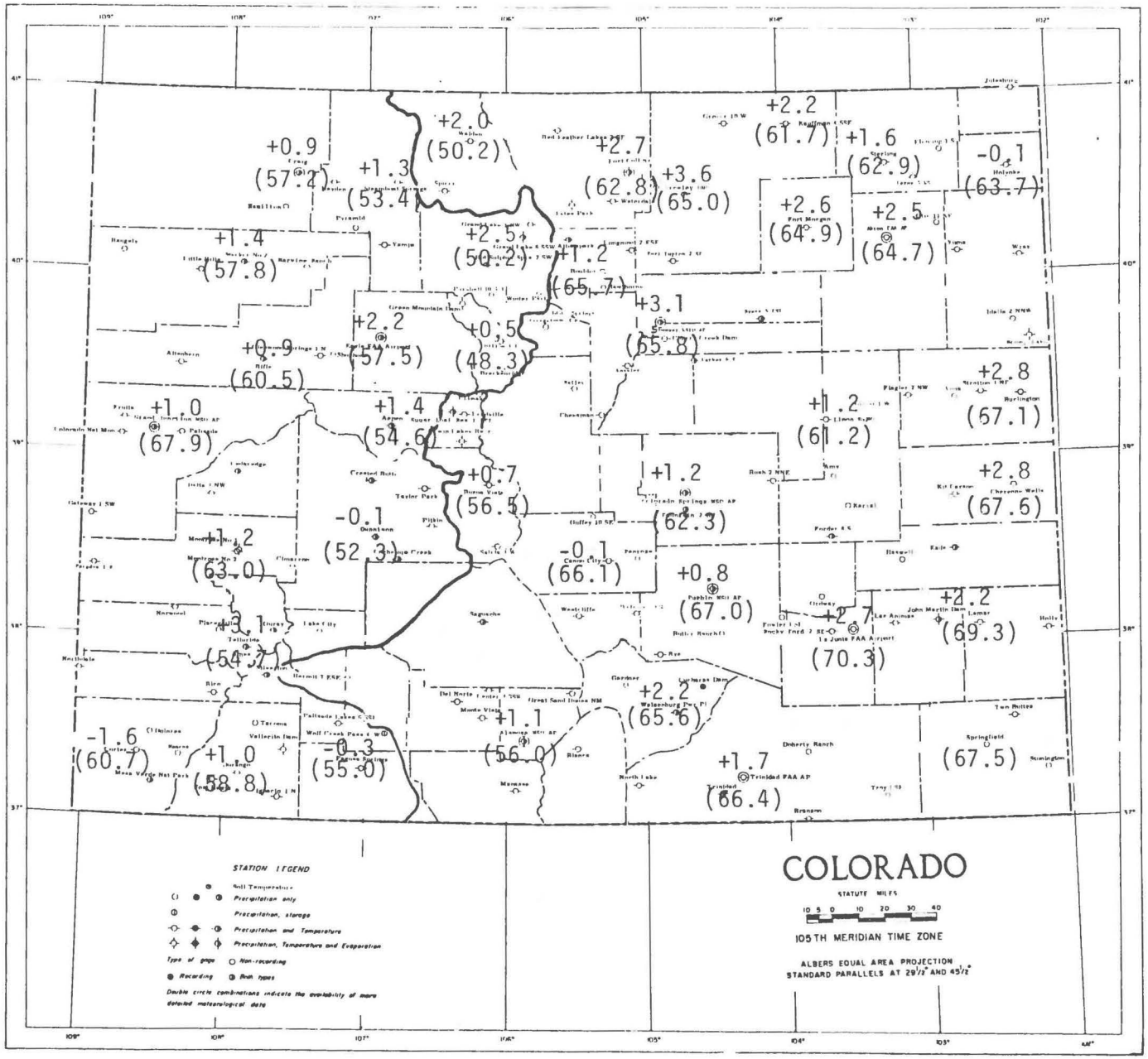
Heating degree day information for the state is shown in Table 1. Totals for September ranged from 21 at Grand Junction to 495 at Dillon. Totals were less than average across the state (less energy needed to heat homes and businesses than usual) but generally about the same as last year. More detailed information will be presented in future months as we get into the heart of the winter season.

1980 Water Year Precipitation Summary

September was the last month in the 1980 Water Year. The year could perhaps best be described in terms of two seasons: 1) Winter - much above average precipitation and snowfall, and 2) Summer - dry and hot.

Precipitation as a percent of average for the summer (June - September) and the entire 1980 Water Year is shown in Figures 4 and 5, respectively. It was indeed a dry summer across most of Colorado. Although there was plenty of variability, the mountains and western valleys generally received about 50 to 60 percent of their average precipitation. The San Luis Valley, the Arkansas Valley, and most of the Front Range were similarly dry. Berthoud Pass recorded only 4.84 inches of precipitation during the summer, 5.51 inches less than average. The driest location in the state this summer was Alamosa where only 1.21 inches of rain fell, 32% of average. The only area with near or above average precipitation extended from Denver and Colorado Springs northeastward. Akron totalled 10.01 inches of rain for the June through September summer period, 119% of average. The wettest weather station in Colorado during the summer was Bonny Lake near Burlington where 13.62 inches of rain fell, 162% of average.

Figure 1. Temperatures for September 1980 in degrees Fahrenheit (in parentheses) and the departure from the 1951-1970 average.



Despite the dry summer, total water year precipitation was still above average across most of the state. The only areas which ended up drier than average were parts of the upper Colorado drainage from Eagle to Granby and Winter Park, the Gunnison Valley, parts of the upper Arkansas drainage, and local areas on the northeastern plains.

This has been the third consecutive water year with a very dry summer (especially in the mountains) following a wet winter across most of the state. Winter precipitation has been adequate, however, to increase water supplies and reservoir storage. Storage has increased each year since the record winter drought in 1976-77. But drier winters are inevitable, and we must always be aware of our sensitivity to climate and our susceptibility to drought.

Figure 2. September 1980 precipitation amounts (inches).

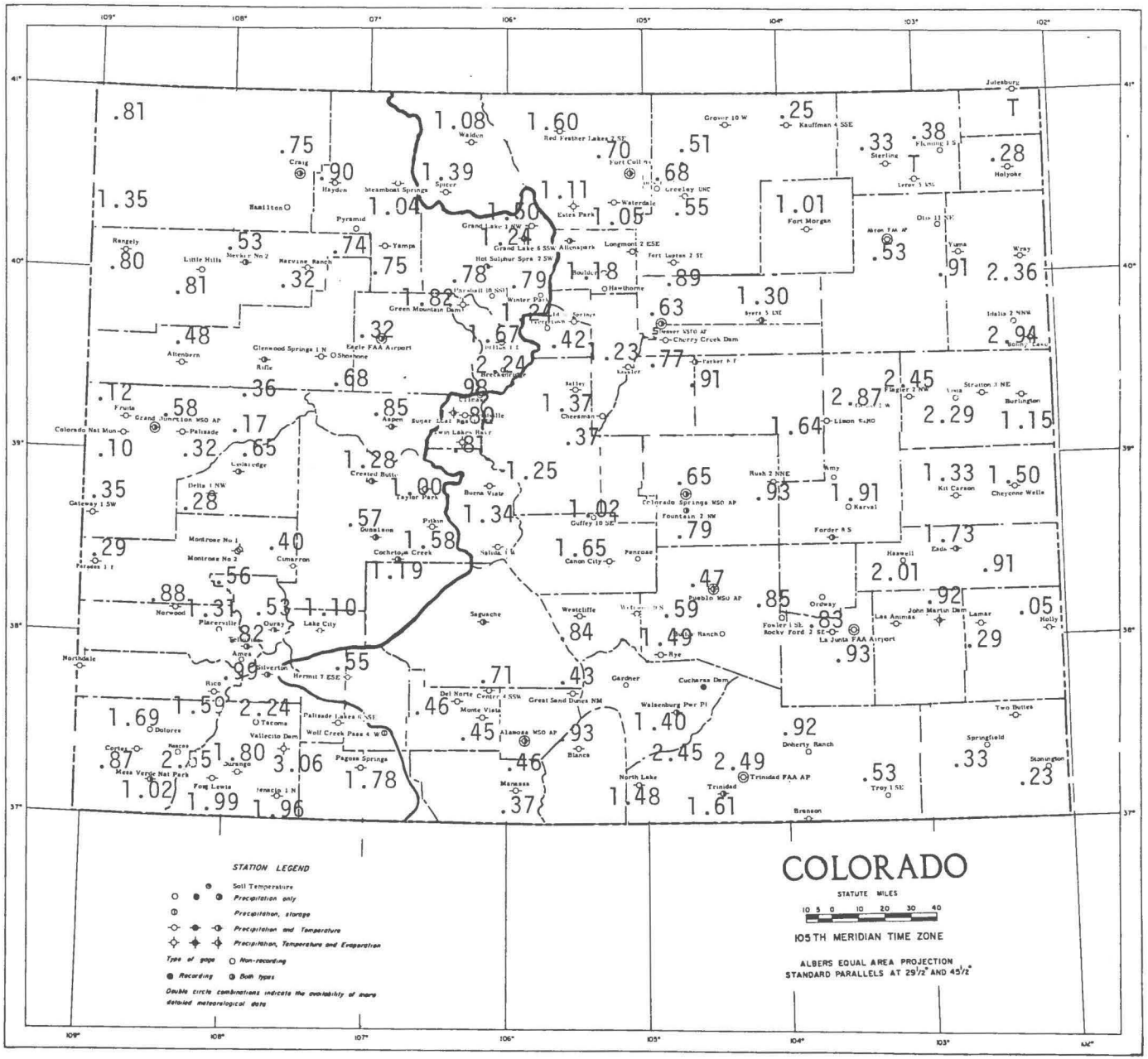


Figure 3. Precipitation for September 1980 as a percent of the 1951-1970 average.

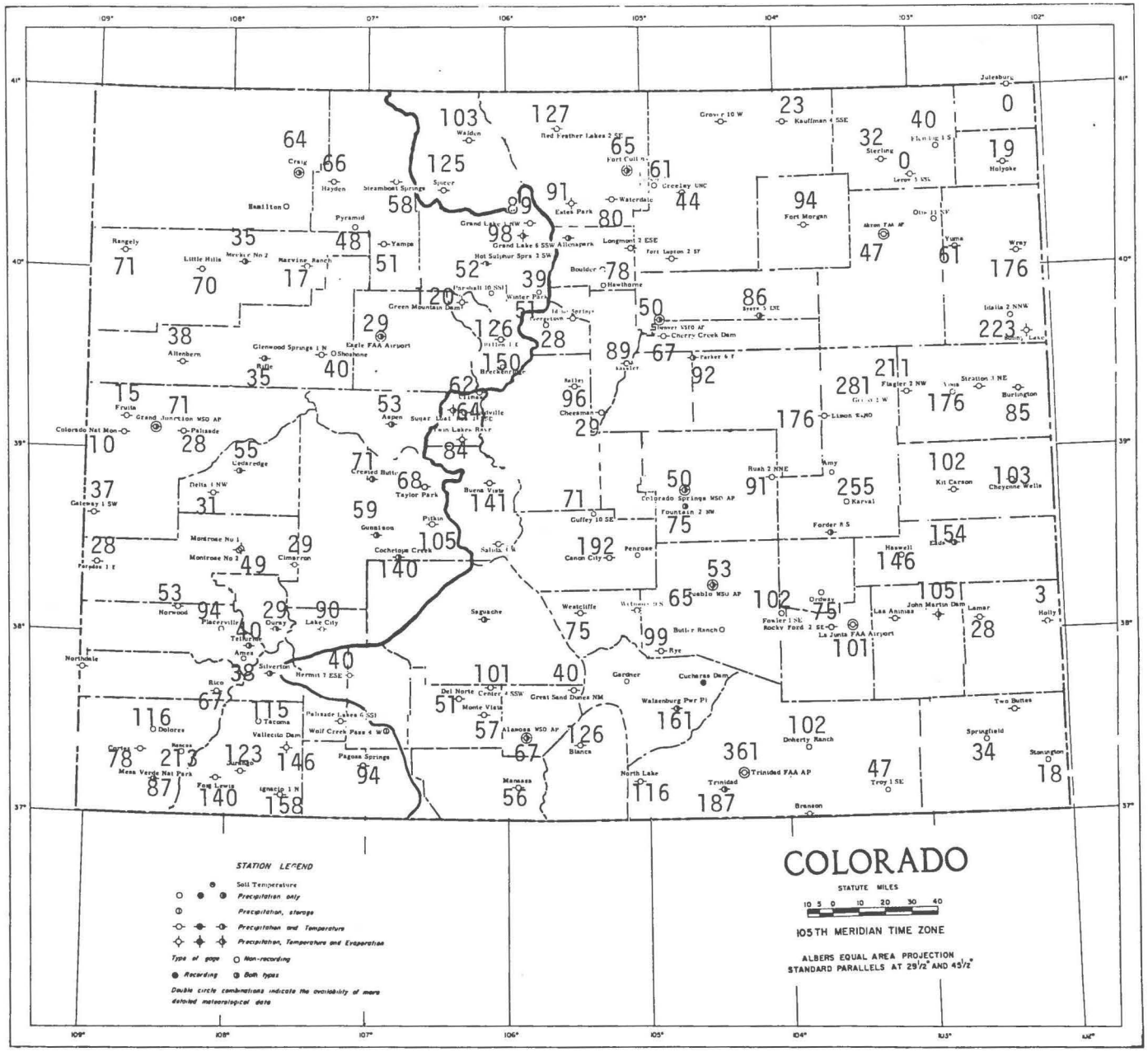


Figure 4. 1980 summer precipitation (June through September) as a percent of the 1951-1970 average.

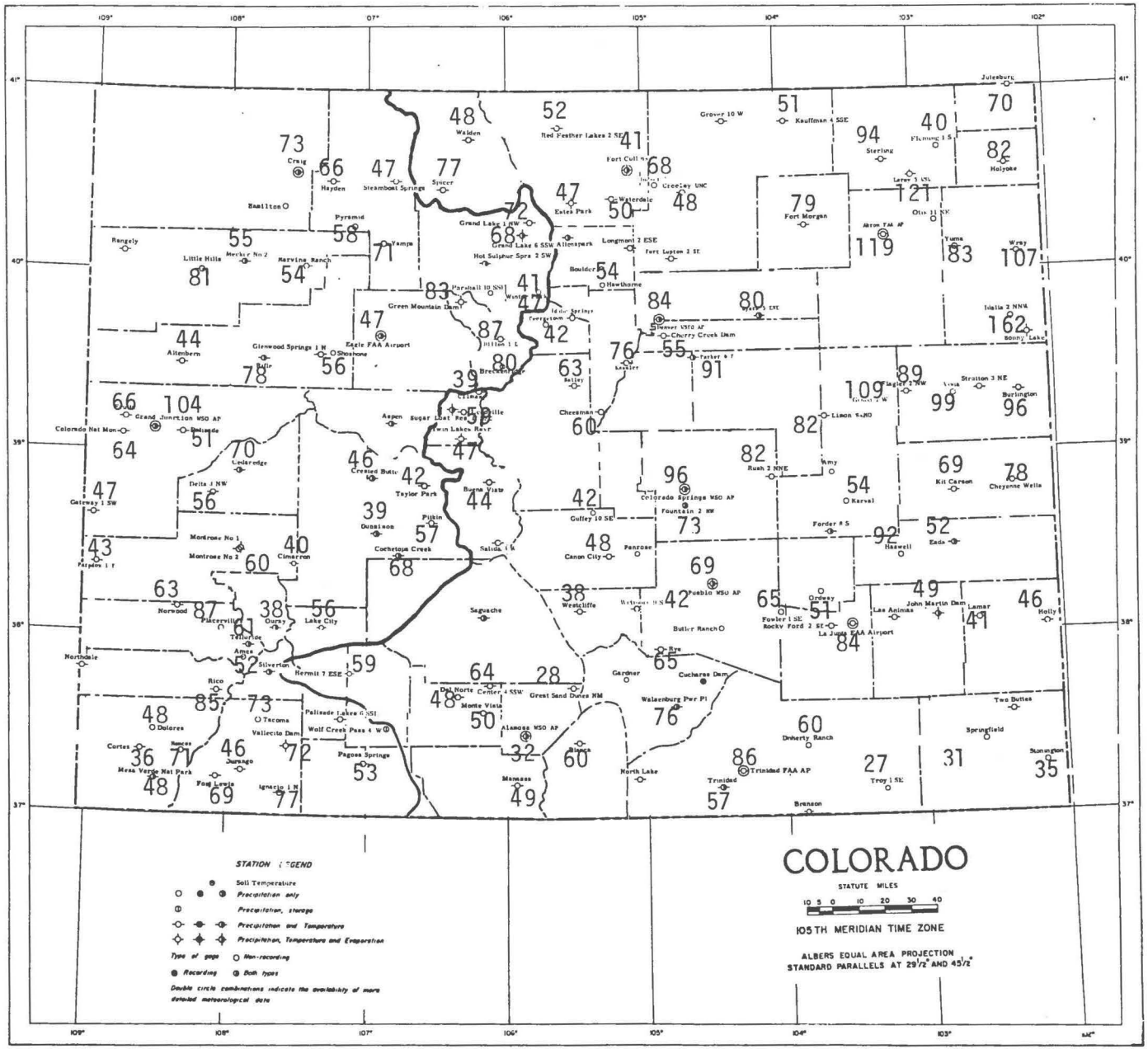


Figure 5. Precipitation for the 1980 water year (October 1979 through September 1980) as a percent of the 1951-1970 average.

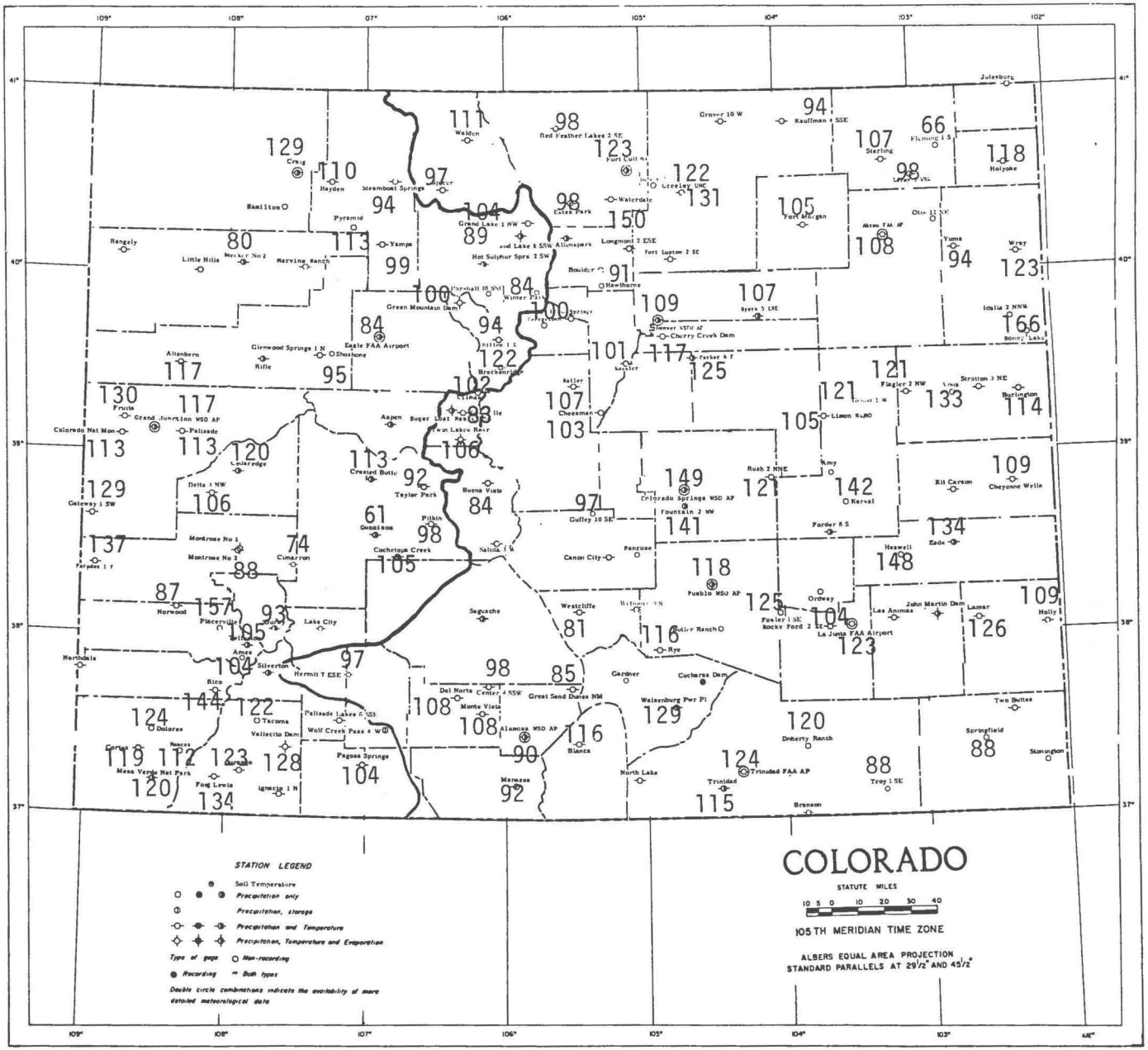


Table 1. Colorado Heating Degree Day Data

		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANNUAL
Alamosa	average	55	96	294	648	1053	1420	1482	1182	1054	714	440	171	8609
	1979-80	57	127	267	590	1312	1438	1363	1029	1071	798	504	107	8663
	1980-81	5	102	263										
Aspen	average	113	161	345	654	1026	1324	1392	1176	1144	792	530	291	8948
	1979-80	49	141	243	569	1211								
	1980-81	59	159	305										
Boulder	average	6	0	139	367	690	905	992	826	809	482	236	88	5540
	1979-80	2	44	85	279	890	802	1094	820	803	513	287	8	5627
	1980-81		1	61										
Burlington	average	0	0	102	363	741	1011	1085	882	828	462	210	54	5738
	1979-80	0	21	49	340	928	864	1257	866	910	547	242	7	6028
	1980-81	0	0	60										
Canon City	average	0	0	57	285	600	806	877	728	713	402	158	34	4660
	1979-80	0	13	50	223	804	762	1051	703	684	475	246	10	5021
	1980-81	0	0	45										
Colorado Springs	average	9	13	155	456	825	1054	1128	944	921	564	301	103	6473
	1979-80	6	41	88	407	1005	969	1180	883	901	615	351	32	6478
	1980-81	0	7	113										
Cortez	average	0	10	110	425	807	1104	1156	904	834	534	274	81	6239
	1979-80	10	50	77	391	1014	1118	1095	912	922	606	407	61	6663
	1980-81	2	29	131										
Craig	average	32	58	275	608	996	1342	1479	1193	1094	687	419	193	8376
	1979-80	8	82	129	552	1199	1364	1326	1144	1078	730	446	111	8169
	1980-81	7	68	220										
Delta	average	0	0	94	394	813	1135	1197	890	753	429	167	31	5903
	1979-80	0	22	44	333	956	1164	1005	781	762	458	228	11	5764
	1980-81	0	1	48										
Denver	average	0	0	120	408	768	1004	1088	902	868	525	253	80	6016
	1979-80	0	20	58	347	941	939	1204	876	828	514	247	9	5983
	1980-81	0	4	56										
Dillon	average	291	341	519	809	1173	1442	1519	1319	1321	966	701	453	10854
	1979-80	250	325	441	766	1394	1467	1470	1300	1335	1065	729	392	10934
	1980-81	227	315	495										
Durango	average	20	37	198	502	843	1147	1212	958	880	597	375	161	6930
	1979-80	16	63		402	1022	1078	1134	968	981	633	452	66	
	1980-81	3	39	150										
Eagle	average	43	79	285	626	1023	1386	1457	1168	1051	693	425	190	8426
	1979-80	32	101	211	566	1206	1476	1221	1071	999	724	437	132	8176
	1980-81	8	89	227										
Fort Collins	average	7	12	175	477	834	1076	1184	960	918	558	297	101	6599
	1979-80	1	33	86	375	1013	1030	1273	1011	911	555	324	22	6634
	1980-81	0	14	88										
Fort Morgan	average	0	0	132	439	849	1141	1262	986	899	509	233	61	6511
	1979-80	0	19	63	322	1011	1211	1388	1084	913	563	266	10	6845
	1980-81	0	8	75										
Grand Junction	average	0	0	60	324	756	1101	1190	879	738	404	133	20	5605
	1979-80	0	3	0	209	945	1175	999	741	740	405	195	4	5416
	1980-81	0	2	21										

		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANNUAL
Greeley	average	0	5	153	465	870	1147	1256	991	911	528	253	60	6639
	1979-80	0	26	70	379	1011	1118	1344	1082	918	539	280	14	6781
	1980-81	0	4	56										
Gunnison	average	103	169	384	704	1110	1538	1686	1397	1246	789	533	282	9941
	1979-80	137	203	343	652	1306	1648	1404	1382	1320	897	577	247	10116
	1980-81	106	191	371										
Lamar	average	0	0	57	320	741	1032	1107	854	766	377	129	19	5402
	1979-80	0	3	26	254	820	933	1241	850	774	438	205	7	5541
	1980-81	0	0	28										
Limon	average	8	6	144	448	834	1070	1156	960	936	570	299	100	6531
	1979-80	3	55	116	464	1072	1054	1353	997	1021	683	404	58	7280
	1980-81	0	12	139										
Longmont	average	0	7	155	457	828	1076	1184	952	902	537	269	92	6459
	1979-80	0	36	70	361	1054	1066	1312	1080	923	574	301	15	6792
	1980-81	0	4											
Meeker	average	28	56	261	564	927	1240	1345	1086	998	651	394	164	7714
	1979-80	6	69	137	496	1138	1276	1182	994	987	663	444	106	7498
	1980-81	5	60	211										
Montrose	average	0	9	129	435	828	1132	1197	935	834	510	245	71	6325
	1979-80	3	27	42	334	979	1136	1065	826	821	536	303	15	6087
	1980-81	0	17	82										
Pagosa Springs	average	95	114	291	611	981	1311	1401	1140	1048	711	481	233	8417
	1979-80	77	111	243	541	1136	1192	1186	1077	1080	735	518	203	8099
	1980-81	24	109	294										
Pueblo	average	0	0	55	335	726	992	1082	848	775	405	148	28	5394
	1979-80	0	8	45	299	870	959	1135	797	751	492	214	6	5576
	1980-81	0	0	46										
Rifle	average	7	22	167	481	861	1200	1296	997	859	537	283	85	6795
	1979-80				420	1040	1222	1106	912	834	553	325	49	
	1980-81		27	139										
Salida	average	28	69	240	536	854	1094	1132	958	905	588	369	139	6910
	1979-80	39	106	197	508	1107	1065	1145	917	954	760	435	65	7298
	1980-81	0	39											
Steamboat Springs	average	116	159	384	691	1086	1451	1553	1277	1190	789	521	306	9523
	1979-80	131	189	316	685	1248	1520	1411	1209	1196	859	529	266	9559
	1980-81	61	165	343										
Sterling	average	0	6	158	459	849	1150	1249	986	927	522	256	76	6638
	1979-80	0	41	91	398	1053	1163	1375	1020	968	554	240	18	6921
	1980-81	0	5	102										
Telluride	average	185	229	399	676	1017	1290	1333	1140	1147	825	583	345	9169
	1979-80	121	217	273	589	1187	1142	1214	1061	1192	858	626	198	8678
	1980-81	78	162	301										
Trinidad	average	0	0	81	364	732	980	1054	868	822	471	212	58	5642
	1979-80	0	21	63	299	873	871	1041	792	765	551	260	15	5551
	1980-81	0	0	53										
Walden	average	197	270	489	803	1149	1438	1538	1313	1280	891	626	363	10357
	1979-80	188	260	407	757	1393	1340	1413	1247	1274	985	651	317	10232
	1980-81	142	284	439										
Walsenberg	average	6	12	93	364	690	911	977	820	806	489	230	62	5460
	1979-80	0	26	82	336	929	880	1020	732	774	547	287	6	5619
	1980-81	0	0	52										