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# COLORADO CLIMATE SUMMARY WATER—YEAR SERIES

OCTOBER 1978—SEPTEMBER 1979

NOLAN J. DOESKEN

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CLIMATOLOGY REPORT NO. 79-1

DEPARTMENT OF ATMOSPHERIC SCIENCE  
COLORADO STATE UNIVERSITY  
FORT COLLINS, COLORADO

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COLORADO CLIMATE SUMMARY

WATER-YEAR SERIES

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## 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 can be used for a variety of purposes. This publication is a collection of these summaries for the 1979 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 continued extensive irrigation, and to satisfy long-standing stream flow compacts with neighboring states. The demand for water peaks during the summer and then lessens as the summer comes to an end. 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.

Monthly average temperature information is also presented for a few locations. Beginning in 1979 this is supplemented by heating degree day data for parts of the state. 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, were displayed on maps. Occasionally, additional figures were also included. The accuracy of these data was 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 and temperature values may differ slightly from what was later published by the National Climatic Center.

## II. THE 1979 WATER YEAR

This section is a complete month-by-month summarization of the 1979 water year. In December, a special introduction to heating degree days was added. Heating degree day information accompanies the regular temperature and precipitation summaries for the months of December through April.

The year was characterized by a variety of extreme weather conditions. A mild and dry October quickly gave way to a stormy November and a severely cold and snowy winter. Fuel bills soared as temperatures plunged to the coldest readings in many years. Maybell, in northwestern Colorado, tied the all time record for the coldest temperature in the state with a  $-60^{\circ}\text{F}$  on January 1.

Frequent and heavy snowfalls piled up to record or near record depths in western and southwestern portions of the state. The San Juan mountains were especially hard hit. Durango totalled 132 inches of snowfall for the winter, 65 inches more than average. Wolf Creek Pass set new records for the state with a total of 837.5 inches of snowfall for the year and a maximum snowdepth of 251 inches on March 31. As the snow melted in May and June there was great concern about flooding along several major rivers including the Animas, the San Juan, and the Rio Grande. Fortunately, only minor flooding occurred.

With the exception of September it was a cool summer across the state, and a variety of severe weather pounded parts of the eastern Colorado. Heavy rainfalls were quite common and Denver set an all time record with a total of 5.85 inches in August. Tornadoes were reported in several parts of the state, including a rare mountain tornado at Manitou Springs on June 24. There were also a number of hailstorms, most notably the

awesome storm which struck Fort Collins on July 30 causing an estimated \$35 million in damage and killing one person.

The 1979 water year brought abundant precipitation to practically all of the state. Heavy spring runoff from the above average winter snowfall in the mountains restored many of the state's reservoirs to near capacity for the first time since before the severe 1976-77 winter drought. Even with a dry summer across the western half of Colorado, reservoir storage remained near or above average indicating that the state had finally recovered from the effects of several dry years in the mid-1970's.

Adequate precipitation also fell across the dryland agricultural areas in eastern Colorado and helped to produce an excellent winter wheat crop. Winterkill, resulting from the extremely cold winter, had some adverse effects on wheat. Cool summertime temperatures slowed the development of other Colorado crops and excessive August precipitation presented a few problems. But, in general, 1979 weather was favorable for agricultural activities.

## COLORADO CLIMATE -- OCTOBER 1978

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

October was dominated by clear weather with warm days and cool nights. This weather, often called Indian summer, finally ended temporarily when the first large-scale storm system since early May brought significant rains and snows to large areas of the state late in the month.

Precipitation amounts for the month of October and precipitation as a percent of average are shown in Figures 1 and 2, respectively. The entire month was dry except for the period from the 21st to the 26th when all of the state received some precipitation. A large storm system developed south of Colorado on the 21st and 22nd and was responsible for most of the rain and snow. The heaviest rains and snows occurred in the San Juan mountains and along the Front Range. On the 22nd, Allenspark received 2.30 inches. The precipitation there began as rain but changed to snow and accumulated to a depth of 14 inches. Most of the mountains in Colorado were whitened by the storm.

Precipitation was above average in October from the Sangre de Cristo's northward along the Front Range. Allenspark totalled 2.65 inches for the month, 241 percent of average. Greeley's total of 1.96 inches was 261 percent of average. The San Juan region also received near or above average precipitation, but the rest of the state was quite dry. A few spots in west-central Colorado missed nearly all the precipitation. For example, Grand Junction received only .03 inches, 3 percent of average. Precipitation was also below average across the eastern quarter of the state, but enough rain fell to benefit the emerging winter wheat.



October temperatures are shown in Figure 3. Practically the entire state was warmer than usual with the San Juans showing the greatest departures from average. The predominantly clear, dry weather resulted in daytime high temperatures well above average while nighttime temperatures were actually cooler than usual in many areas. For example, Alamosa experienced several days in early October with afternoon temperatures in the 70's, followed by nights with temperatures falling to record or near record levels in the upper teens or low 20's.

Figure 1. October 1978 precipitation amounts (inches).

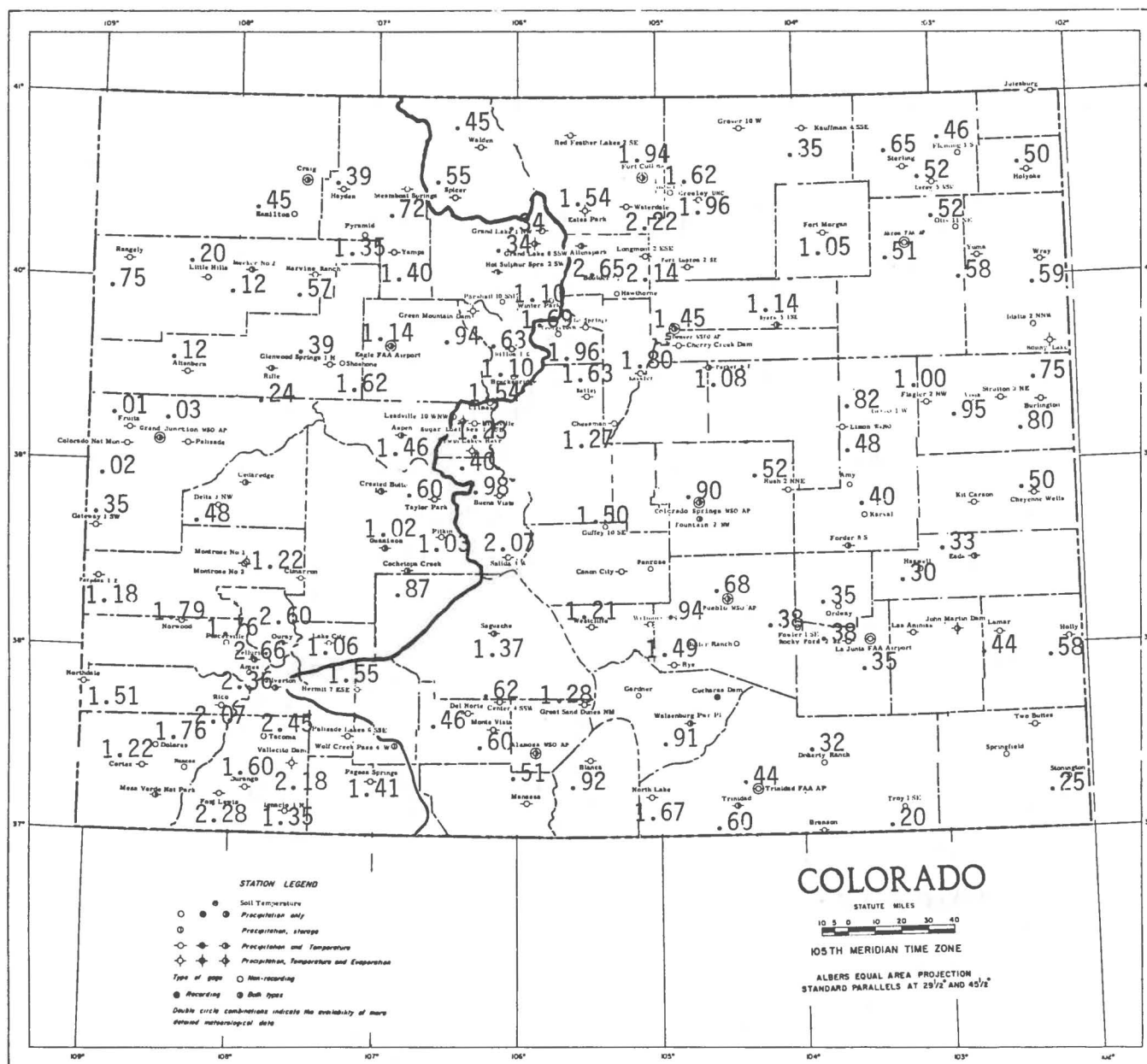
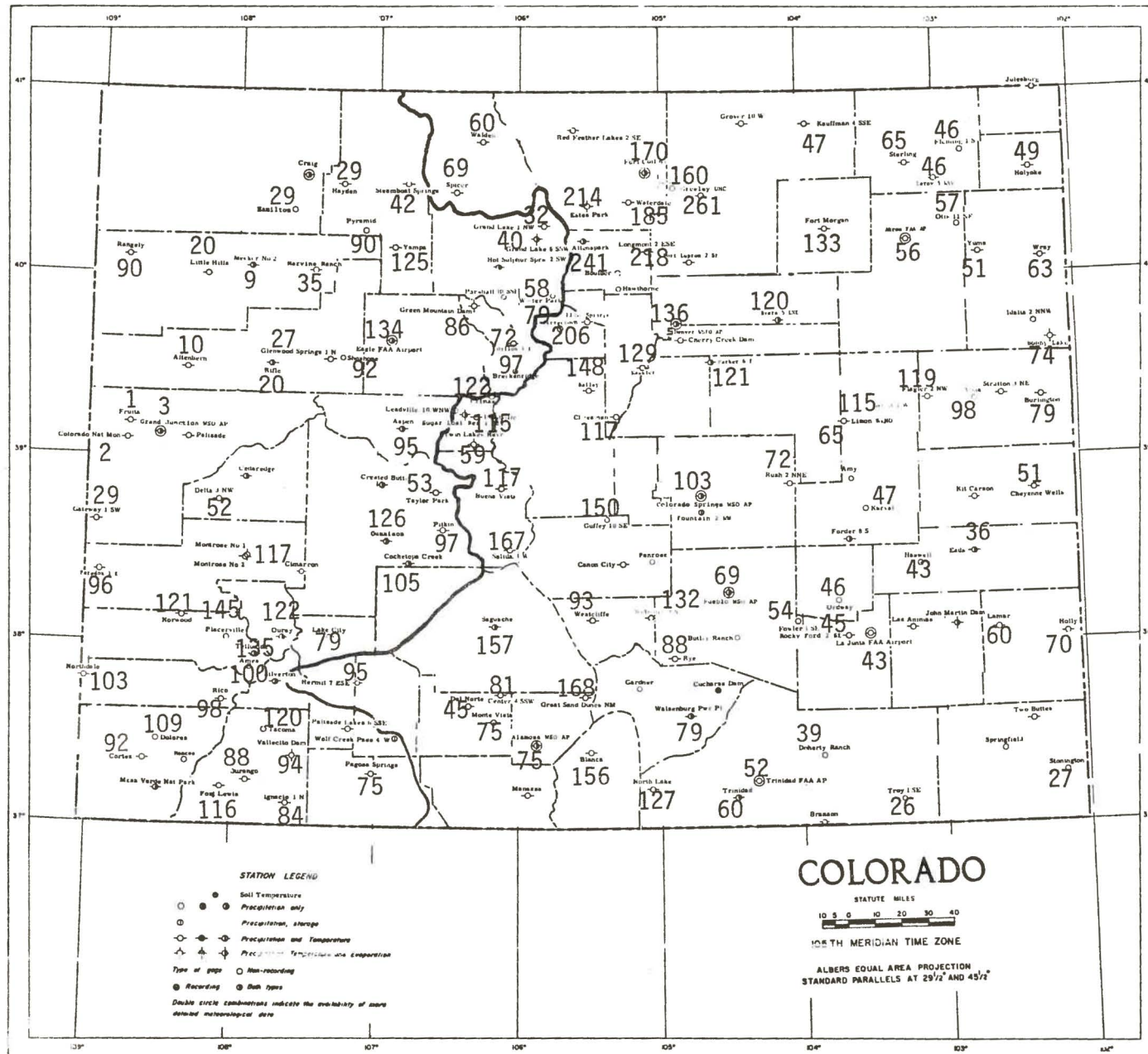


Figure 2. Precipitation for October 1978 as a percent of average (1951-1970).







## COLORADO CLIMATE -- NOVEMBER 1978

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Colorado was bombarded by an assortment of unusual weather in November. A few thunderstorms rumbled across southwestern portions of the state on the 2nd and 11th bringing heavy rains and high winds to some locations. Record-shattering high temperatures were recorded across much of the state on the 8th and 9th. A temperature of 83° was observed at Pueblo on the 8th, the highest temperature ever recorded there in November. Then winter stepped in, bringing much colder temperatures with fog, light snow, and dangerous freezing drizzle to areas in eastern Colorado from the 10th to the 12th. At the same time, heavy rains turned to wet snows across the western half of the state. In just four days from the 10th through the 13th, Wolf Creek Pass received 52 inches of snow with a water equivalent of 4.95 inches. Later in the month, the Eastern Plains were besieged by another ice storm similar to the unusual storm which struck last February. Dense fog and below freezing temperatures from the 19th and 22nd resulted in heavy deposits of ice, especially in southeastern Colorado. Power lines snapped, and many people were without electricity. The area around Eads was particularly hard hit. As the month ended, yet another storm rolled across the state. Precipitation fell statewide on the 25th and 26th as a massive storm system moved in from California. The storm maintained its eastward movement out of Colorado, but snows continued in the mountains along and west of the Continental Divide through the end of the month.

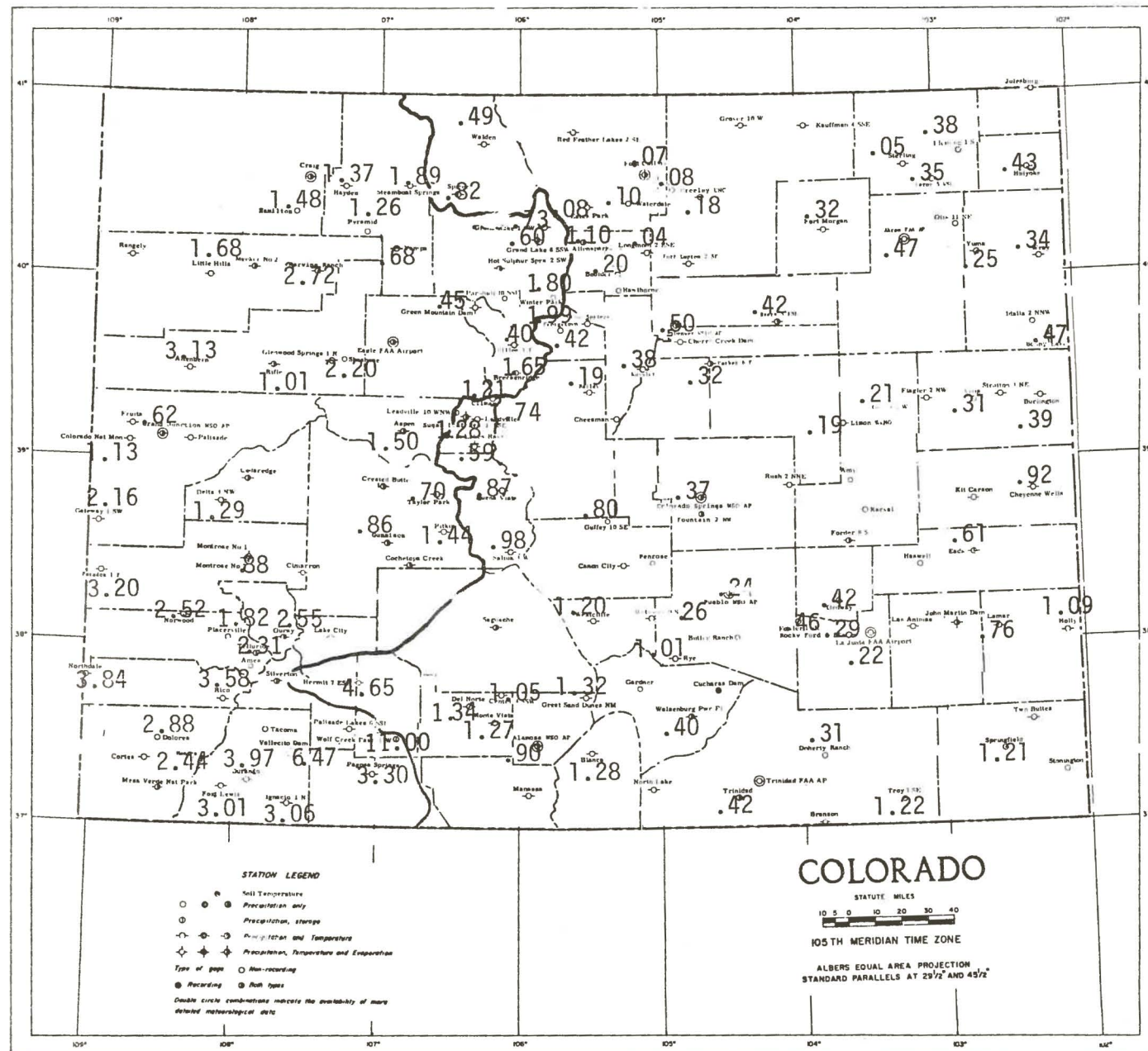
Precipitation amounts for November are shown in Figure 1, and precipitation as a percent of average appears in Figure 2. Most areas on the Eastern Plains received only light precipitation. The driest region was along the Front Range north of Denver. Longmont recorded only .04 inches of precipitation, 8 percent of average. However, most of the rest of the state received above average precipitation. The San Luis Valley, which usually experiences little precipitation during the winter months, received more than one inch in most locations. That may not sound like much, but the 1.27 inches measured at Monte Vista was 438 percent of average. By far the wettest part of the state was the San Juans. Several places recorded

more than three times their average November precipitation. Wolf Creek Pass totalled exactly 11.00 inches of liquid water for the month eclipsing the old November record by more than 3 inches. Eight or more inches of snow fell on 9 different days, and the total monthly snowfall was 117 inches, making this one of the snowiest Novembers on record. However, these heavy snows were mostly limited to the higher elevations. Lower elevations received mostly rain.

Precipitation as a percent of average for the first two months of the 1979 water year is shown in Figure 3. Despite the late October and November storms, precipitation is still below average across much of the eastern quarter of the state. However, little precipitation usually falls at this time of year in those areas, so these deficits are not particularly significant at this time. The Northern Mountains and parts of the Central Mountains are also below average as of the end of November, but the San Juans, the San Luis Valley and most of the Front Range area is above or well above average.

Temperatures for November are shown on Figure 4. The first 9 days of the month were much warmer than usual, but chilly weather dominated most of the remainder of the month, especially across the Eastern Plains. The result was a cooler than average month east of the Continental Divide except for the San Luis Valley. West of the Divide, temperatures were warmer than average. The extensive cloudiness associated with the abundant precipitation kept nighttime temperatures relatively warm. For example, at Pagosa Springs, the average minimum temperature was 23.6°, which is more than 7° warmer than usual.

Figure 1. November 1978 precipitation amounts (inches).



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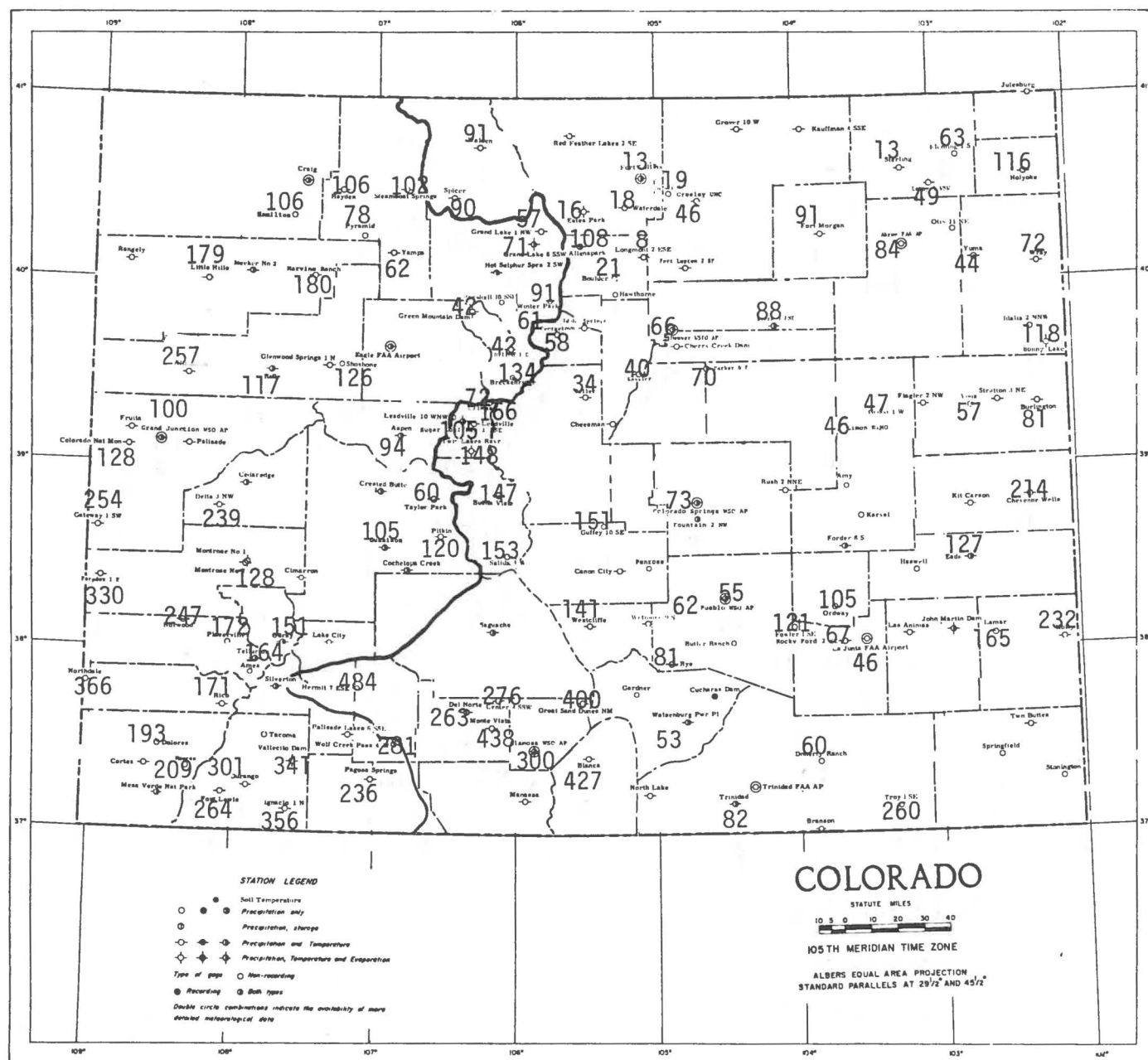
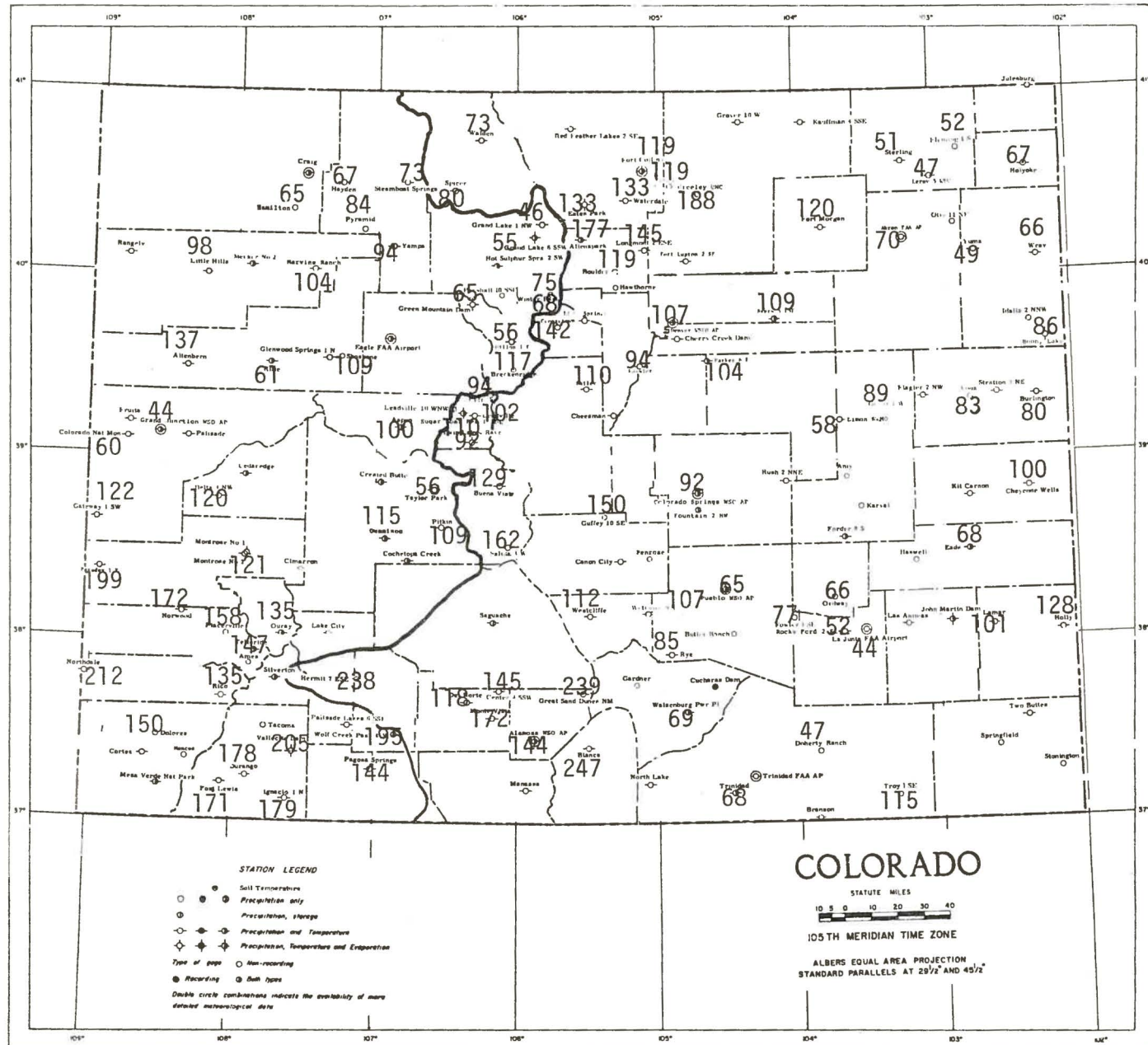




Figure 3. Precipitation for October and November 1978  
as a percent of average (1951-1970).





## COLORADO CLIMATE -- DECEMBER 1978

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Harsh winter weather affected most of Colorado during December. Above-average precipitation coupled with temperatures considerably colder than usual made this one of the most severe Decembers in the last half century.

The first of three major storm systems entered the state early in the month. On December 1 and 2 snow fell across the entire state, but areas from the Front Range westward to Utah were hardest hit. Six-inch snowfalls were common at lower elevations with more than a foot in the mountains. The snow was followed by subzero temperatures.

The first storm had hardly ended before a new storm dropped down into Colorado from the northwest. A ferocious downslope windstorm, which developed early on December 4 along the Front Range, marked the beginning of the second huge storm. The winds, which gusted to as high as 148 mph near Boulder, brought briefly warmer temperatures to the areas east of the mountains, but by the following morning a new surge of cold air pushed southward across eastern Colorado. At the same time, a mass of moist Pacific air moved into the state from the southwest. Heavy snows developed and continued for two days. By the morning of the 7th, as much as one to two feet of new snow had accumulated along the Front Range and in the San Luis Valley with even greater amounts in the mountains. During the heart of the storm, Salida and Westcliffe recorded 24-hour snowfall totals of 25 and 27 inches, respectively. As the skies cleared, temperatures plummeted, and new record lows were set statewide on the morning of December 8. Examples of some of the new records for the day were  $-16^{\circ}$  at Fort

Collins,  $-23^{\circ}$  at Pueblo, and  $-42^{\circ}$  at Alamosa (temperatures in degrees Fahrenheit). Temperatures as low as  $-50^{\circ}$  were observed in several mountain valley locations.

It remained quite cold until the third storm moved into southwest Colorado on December 17. Exceptionally heavy snows fell on the San Juan Mountains with rain mixed with the snow at lower elevations west of the Continental Divide. Durango received 2.57 inches of precipitation, while Wolf Creek Pass established a new one-day precipitation record with 4.10 inches on the 20th and totalled 68 inches of snow from the three-day storm.

December ended with generally cold temperatures across the state. Occasional snows fell in the Northern and Central Mountains and along portions of the Front Range.

Precipitation amounts and precipitation as a percent of average for December are shown in Figures 1 and 2, respectively. Practically the entire state experienced above-average precipitation, and more than half of the stations in the western two-thirds of the state received more than double their average precipitation. In parts of southwestern Colorado and in the San Luis Valley this was the second consecutive month in which more than 200 percent of the average precipitation fell. The 201 inches of snow at Wolf Creek Pass surpassed the old December record by 5 inches and brought this season's snowfall total to 349 inches. Below-average precipitation was limited to scattered areas on the Eastern Plains and to a few locations in the Northern and Central Mountains.

Figure 3 shows October through December precipitation as a percent of average. The December snows have lifted precipitation totals in northwest Colorado and in the Northern and Central Mountains back up to near average, while the San Juans continue much above average. Precipitation totals are also above average along the Front Range and across the San Luis Valley.



The Eastern Plains are still drier than usual but their moisture situation has improved.

Temperatures for December are shown in Figure 4. All of Colorado was considerably colder than normal with temperatures ranging from five degrees below average in the southeast to 12.6 degrees below average at Grand Junction. Along the Front Range, this was the coldest December since 1932, while at Grand Junction it has not been this cold since 1919. In the San Luis Valley, Center recorded 26 days with temperatures below zero and 13 days with temperatures at or below -20 degrees.

## Introduction to Heating Degree Days

Many of us are taking a good look at our utility bills when they arrive each month in the mail. The rising costs for heating our homes and businesses are encouraging us to try to conserve energy. Lowering thermostats and installing better insulation, among other things, can result in considerable savings, so many of us are giving it a try. But how can we check to see how well our efforts are paying off? Typically, the first thing we do is compare this month's bill to the corresponding one from last year to see how much our energy consumption has gone down. Perhaps you did this and were shocked to find that your consumption last month was greater than last year in spite of your attempts to conserve. Don't be dismayed. You weren't alone. Since mid November, temperatures have been colder than usual and much colder than they were a year ago. Unless your conservation practices have been very successful, you probably used more energy than last year.

Several 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 ( $65^{\circ}$  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.

There are great variations in average temperature from place to place across the state of Colorado. These variations are clearly indicated in Figure 5 which shows average seasonal heating degree day totals for many locations in the state. For example, Gunnison averages nearly 10,000 heating degree days each year while Canon City averages only 4,660. Since fuel consumption is roughly proportional to degree days, much less energy is needed to heat a home in Canon City than to heat that identical structure in Gunnison. There are other factors which should be taken into account such as wind and sunshine, but the heating degree day concept has proven to be a useful index of heating fuel requirements.

Heating degree day information for December is shown in Figures 6 and 7. As a result of the extreme cold, from 14% to 37% more heating degree days were accumulated than in an average December. Compared to last year, when Colorado experienced a mild December, the difference is even more extreme. The heating degree day total this past month ranged from 25% higher than last year in the Limon area to 55% more in Grand

Junction. Unless serious energy conservation efforts have been in force, this means that considerably more fuel was needed to heat homes and businesses.





Figure 2. Precipitation for December 1978 as a percent of average (1951-1970).

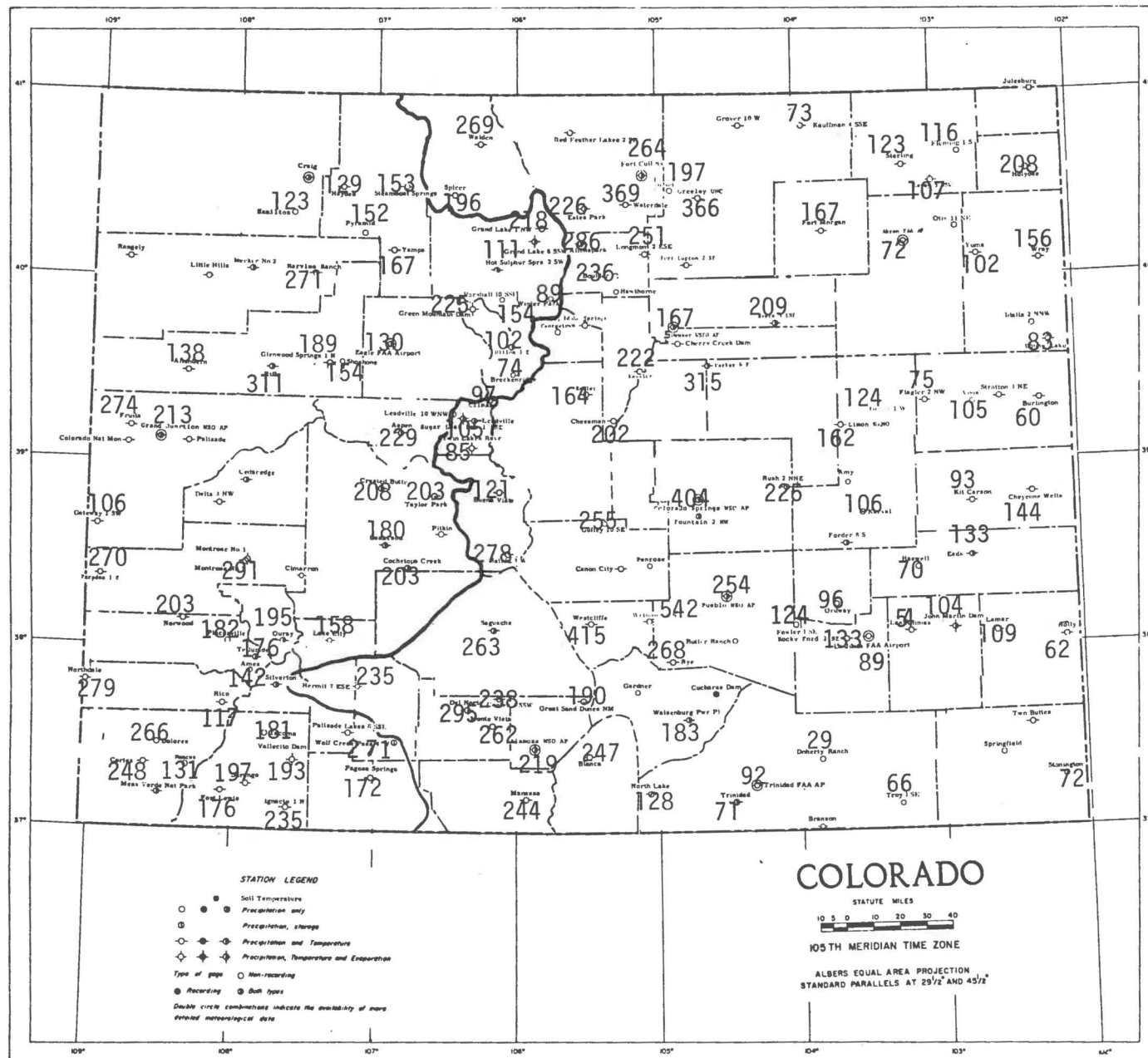


Figure 3. Precipitation for October through December 1978 as a percent of average (1951-1970).

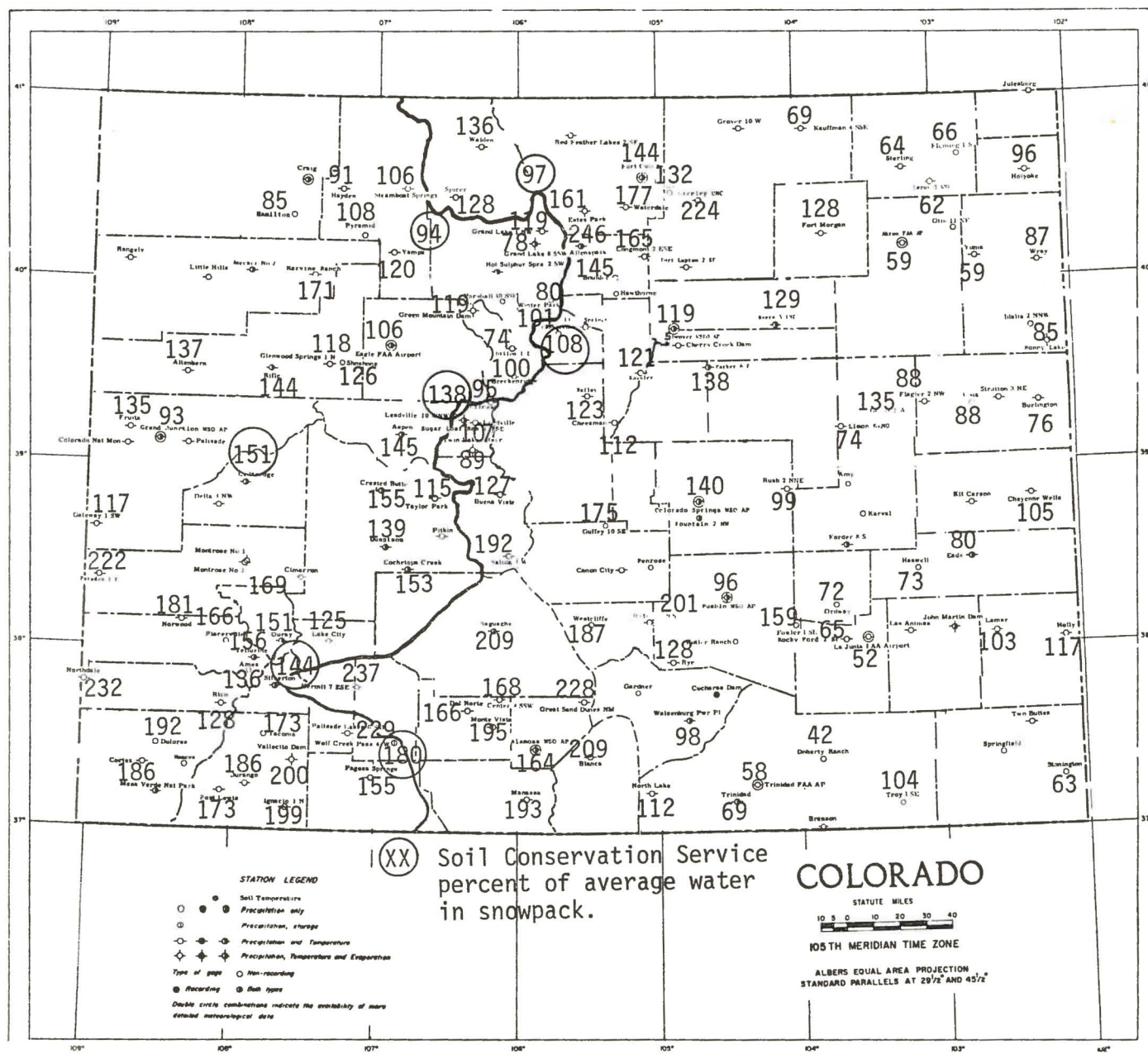




Figure 5. Average Seasonal (July-June) Heating Degree Day Totals, 65° base.

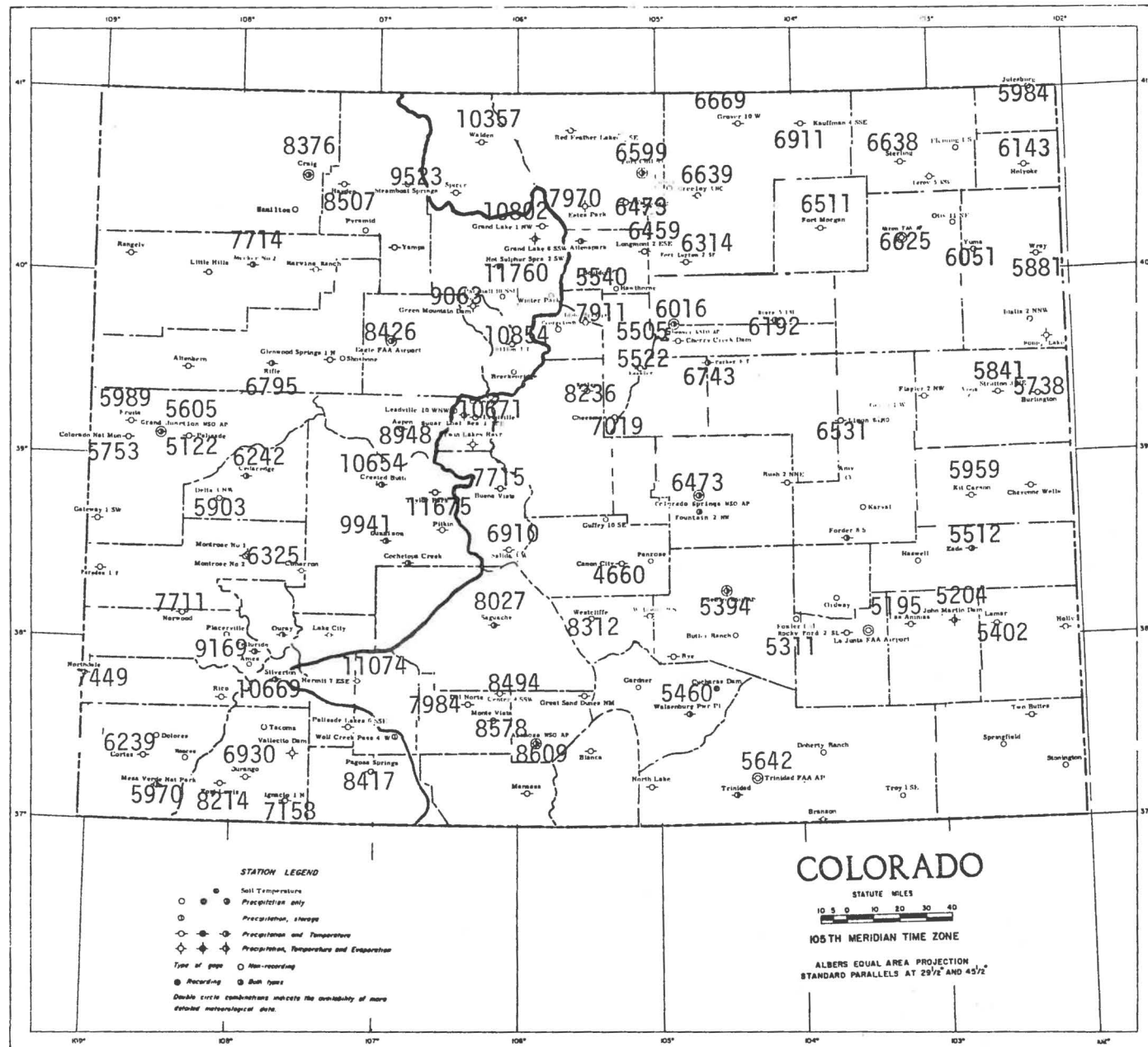


Figure 6. December 1978 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 averages.

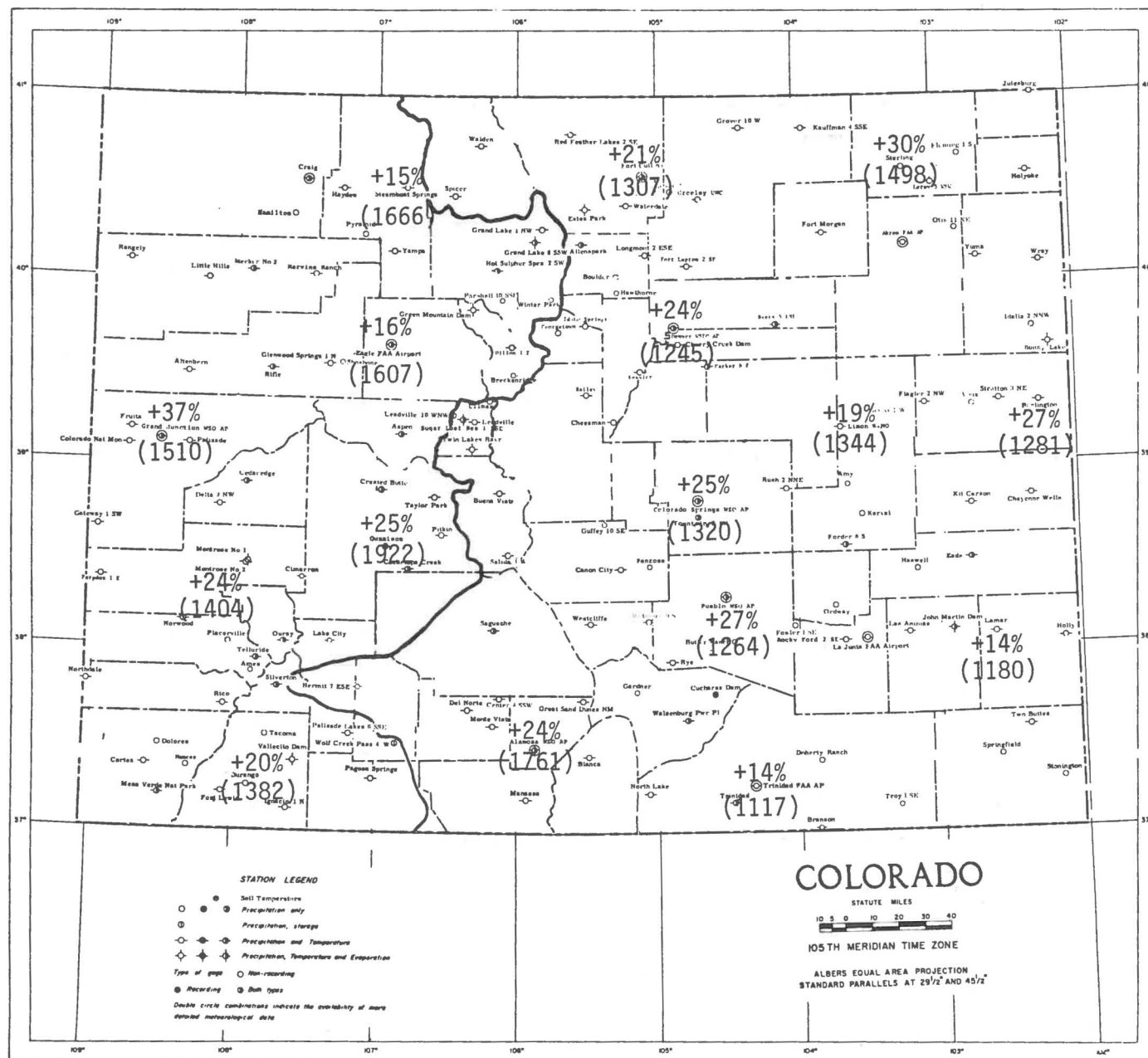
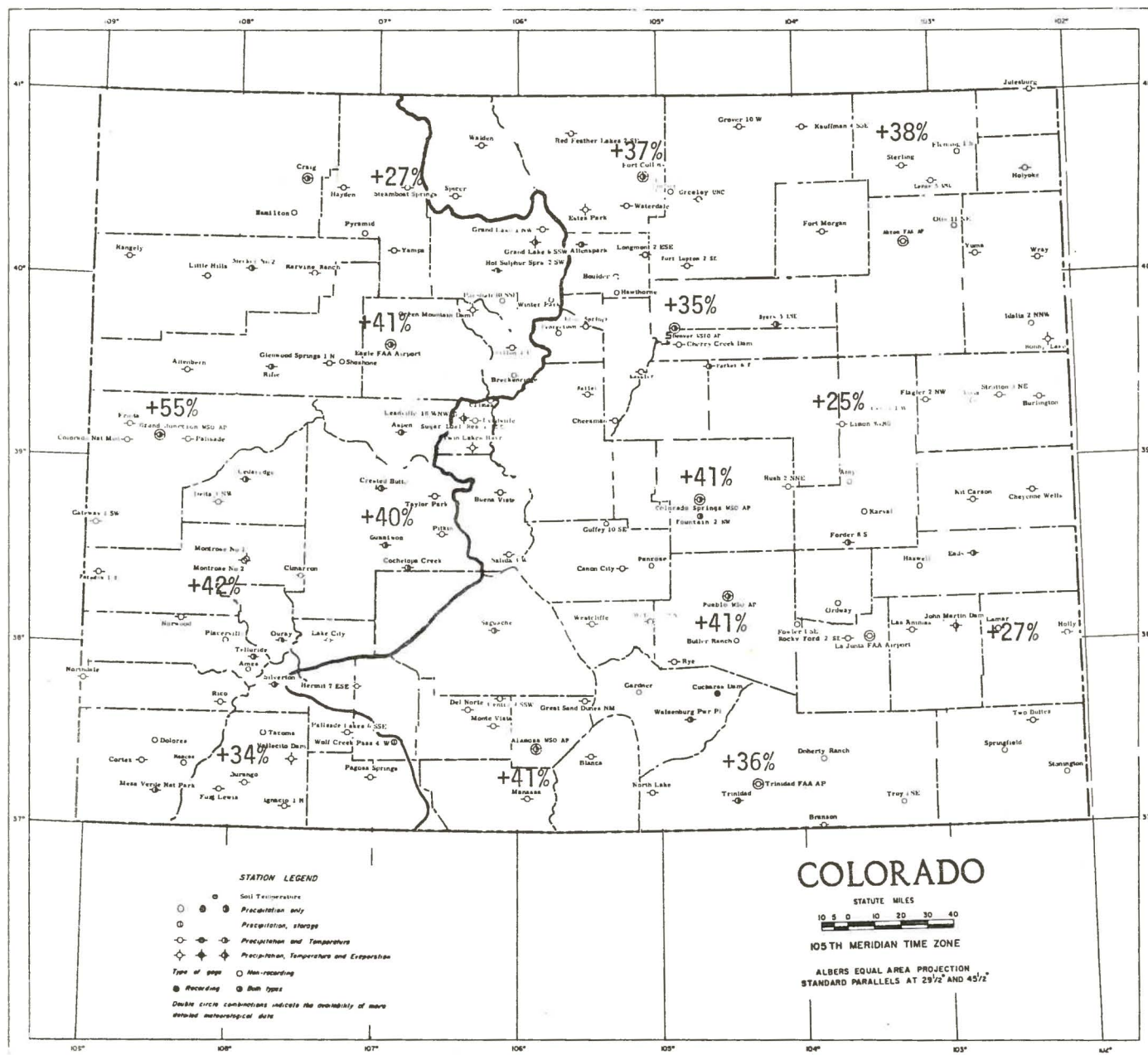




Figure 7. December 1978 Heating Degree Days as a percent above or below December 1977.



## COLORADO CLIMATE -- JANUARY 1979

Colorado Climatology Office  
Department of Atmospheric Sciences  
Colorado State University

Cold and snowy weather persisted throughout Colorado in January. For the second month in a row, temperatures were much colder than average while precipitation was considerably above average. This combination has resulted in one of the most severe two-month periods of winter weather this state has experienced in the past century.

Temperatures for January are shown in Figure 1. The entire state experienced a colder than average month. West of the Continental Divide temperatures varied from 4.8° below average at Pagosa Springs to 10° below average at Grand Junction. The greatest departures from average were noted east of the Divide. At La Junta, the mean January temperature was 14° below average, and at Pueblo this was the coldest month ever recorded.

All of January was extremely cold except for a few mild days in the middle of the month. Deep snow cover across much of the state (and across much of the nation) helped to hold down daytime temperatures. High temperatures averaged more than 10° colder than usual statewide, while in parts of eastern Colorado the departure from average was more than 15°. Minimum temperatures were also colder than average. Below zero readings occurred everywhere in the state, and at Hot Sulphur Springs the temperature fell below zero on 30 out of 31 nights. The coldest temperature was a -60° Fahrenheit at Maybell. If their instrument is proven accurate, that will tie the record for the coldest temperature ever recorded in Colorado.

Dry weather usually accompanies extreme cold, but that was not the case in January. Despite the cold, moisture from the Pacific frequently

invaded western Colorado. The resulting storms were not as heavy as those in December, but the snow kept piling up. At Telluride, an inch or more of snow fell on 21 days and more than 80 inches of snow fell during the month. The largest snowstorm began on January 12 as a low pressure area moved eastward across New Mexico. One to two feet of snow fell on the San Juans and as much as 6 inches of snow accumulated in southeastern Colorado by the 13th.

Precipitation amounts and precipitation as a percent of average for January are shown in Figures 2 and 3, respectively. This was the second straight month with above average precipitation over most of the state. In the San Juan Mountains and surrounding valleys, January was the third month in a row with excessive precipitation. Many locations reported more than double the average precipitation. Farther north, precipitation totals were not so extreme, but all of the Central and Northern Mountains were snowier than usual. The precipitation pattern was typically confusing across the Eastern Plains. Totals ranged from .03 inches near Kauffman (14 percent of average) to 1.05 inches at Lamar (228 percent of average). However, on the whole the Eastern Plains were wetter than usual.

Precipitation from October through January as a percent of average is shown in Figure 4. The figure shows an encouraging picture in terms of available water resources for next summer. The entire area from the Front Range westward to Utah has received above average precipitation so far this winter. Snowpack measurements range from 102 percent at Cameron Pass to a remarkable 229 percent at Purgatory. In parts of southwest Colorado, precipitation has already exceeded the average October through May totals. On the Eastern Plains, precipitation totals are near average for this time of year.

Note: For the remainder of this winter and during subsequent winters additional summary information on heating degree days will accompany the monthly climate summary. This information is designed to help you assess fuel usage and energy conservation measures. If you have any questions concerning heating degree days, please contact the Colorado Climatology Office.

Heating degree day totals, a measure of how much energy will be needed to heat homes and businesses, were much above average in January (see Figure 5). The cold temperatures resulted in more heating degree days than usual and above average energy consumption for heating. Heating degree day totals varied across the state from 12 percent above average at Steamboat Springs to 40 percent above average at Burlington. Compared to last January (Figure 6), heating degree day totals ranged from 12 percent greater at Sterling to 40 percent greater at Alamosa and Eagle. The prolonged cold weather, along with higher per unit fuel costs, have resulted in record high fuel bills for many consumers.





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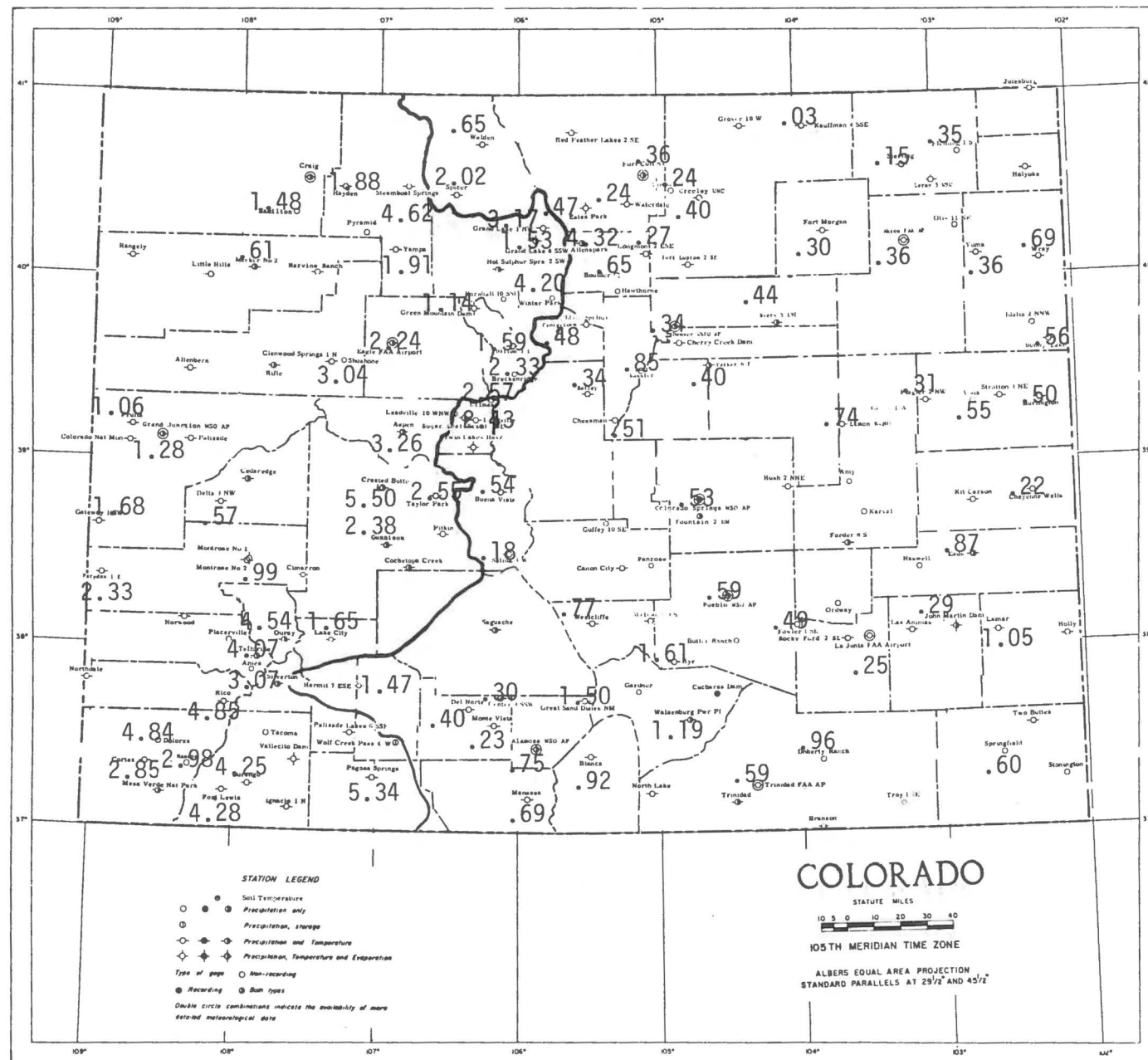


Figure 3. Precipitation for January 1979 as a percent of average (1951-1970).

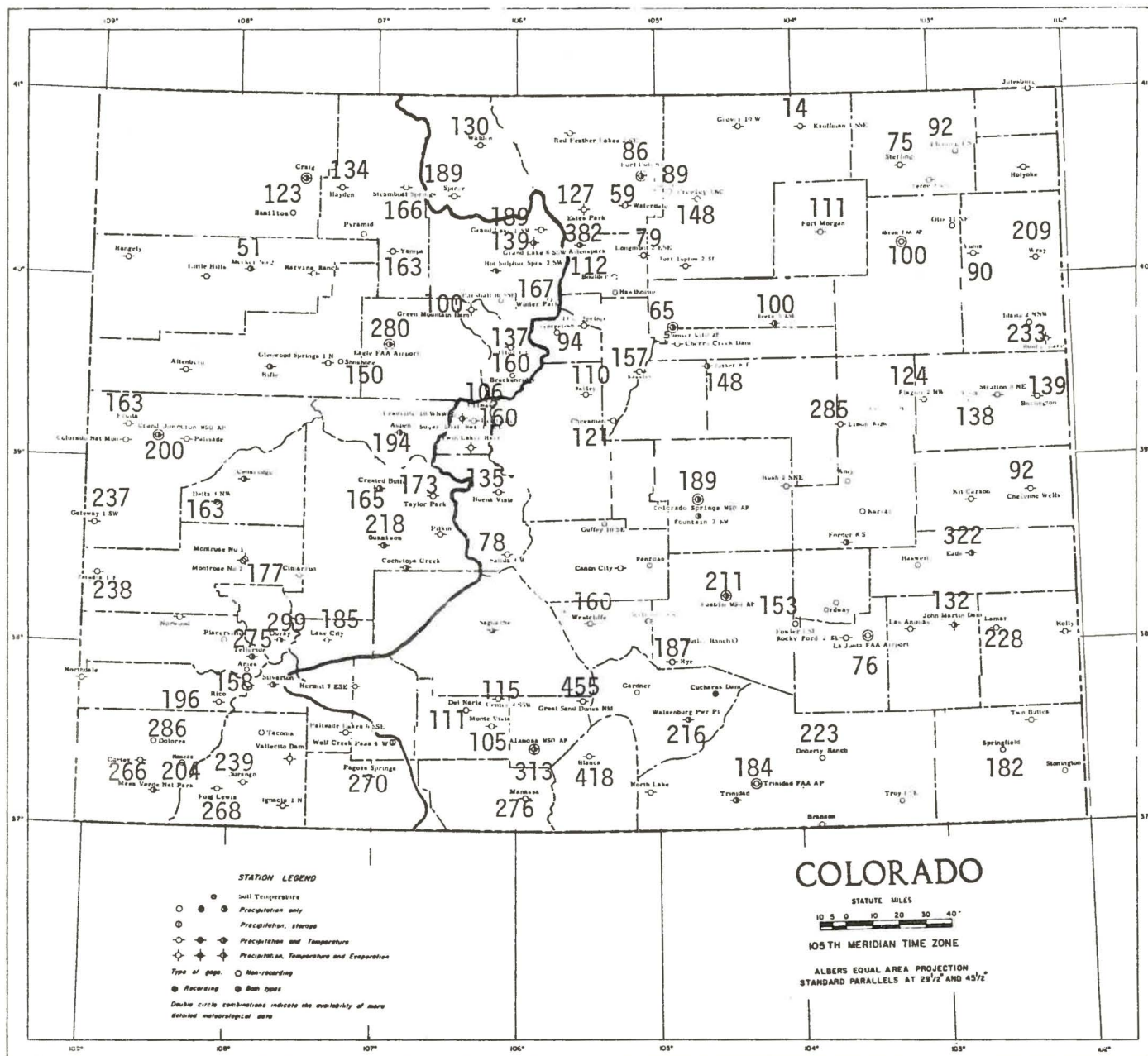


Figure 4. Precipitation for October 1978 through January 1979 as a percent of average (1951-1970).

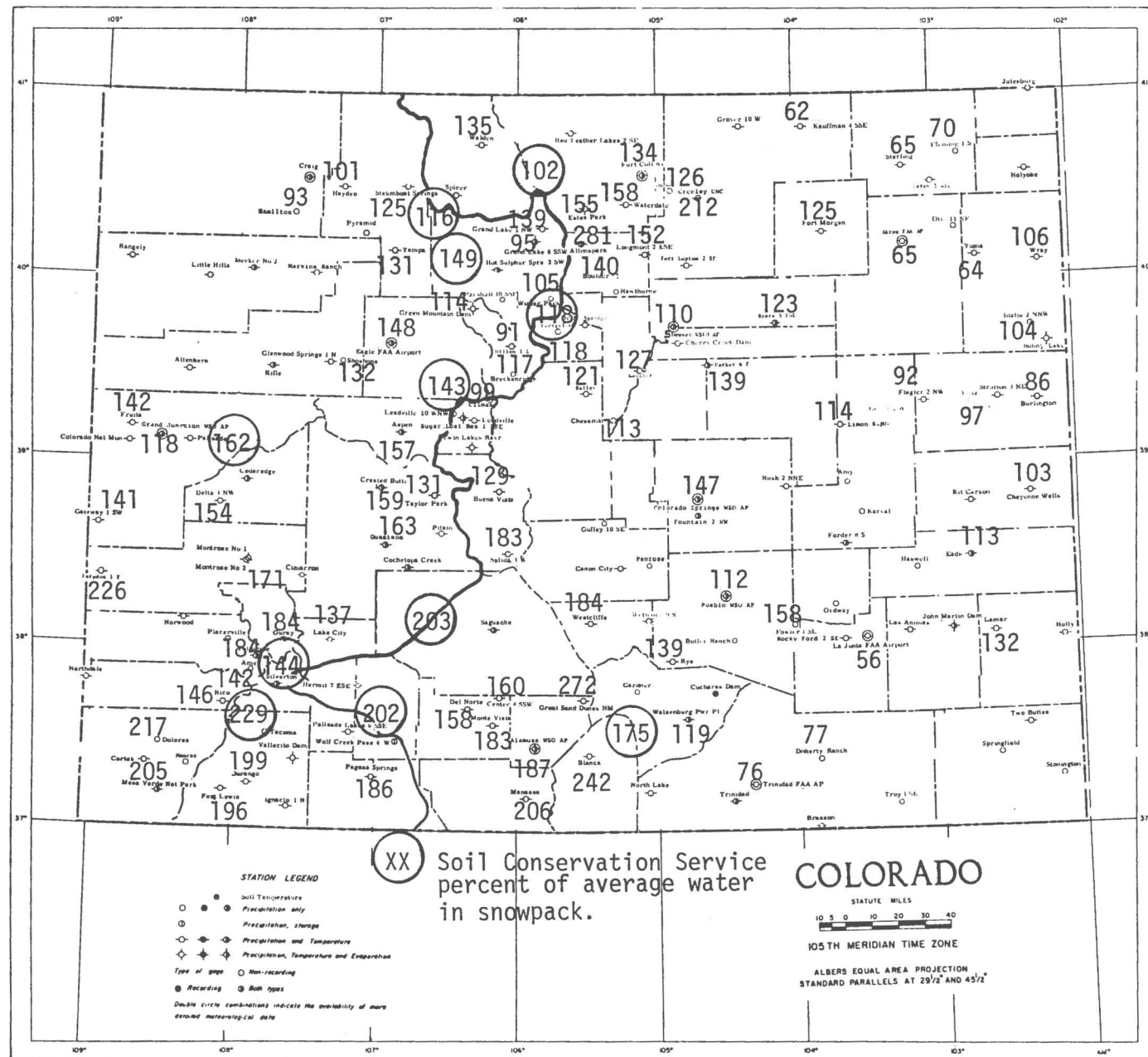


Figure 5. January 1979 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 averages.

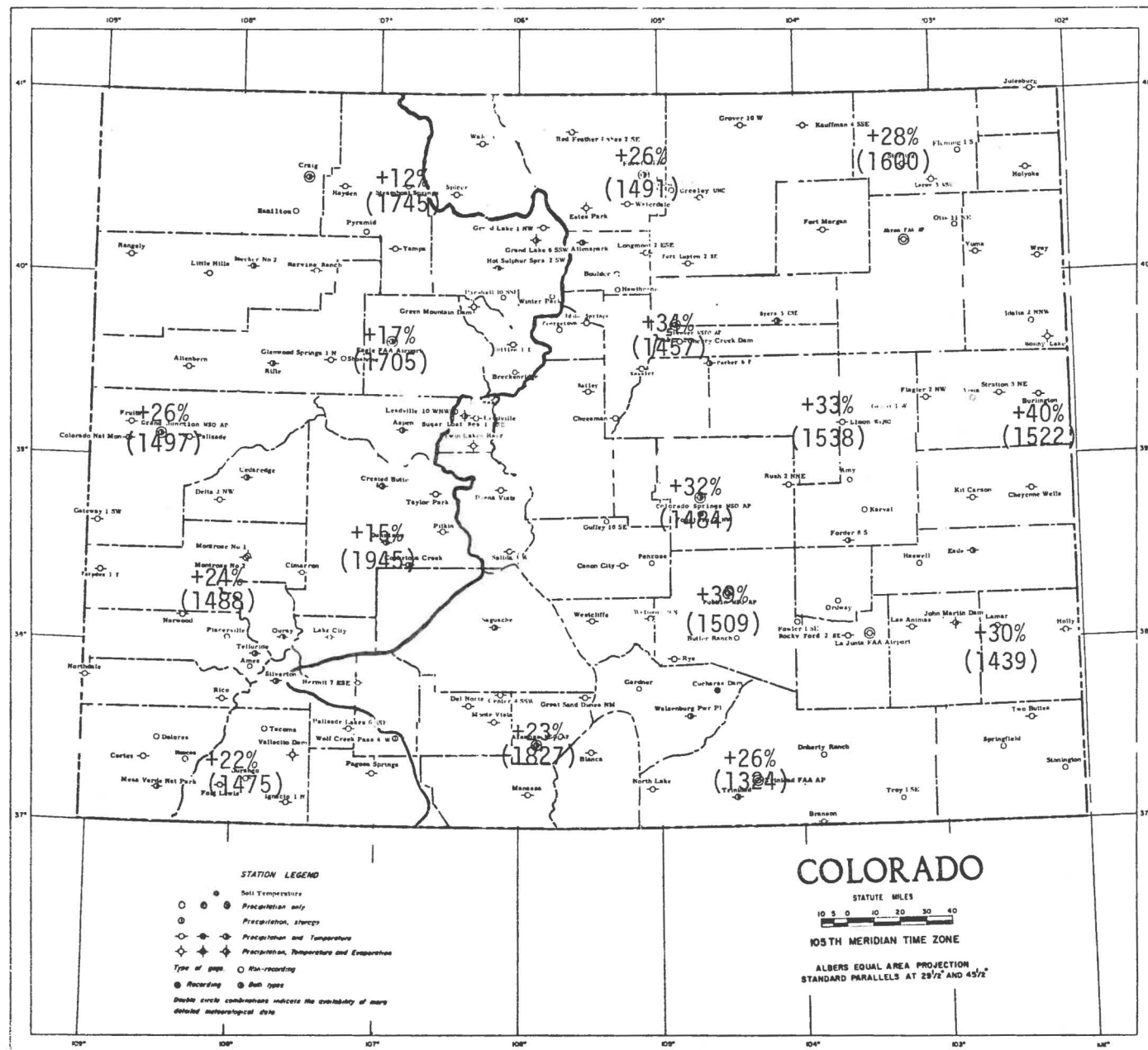
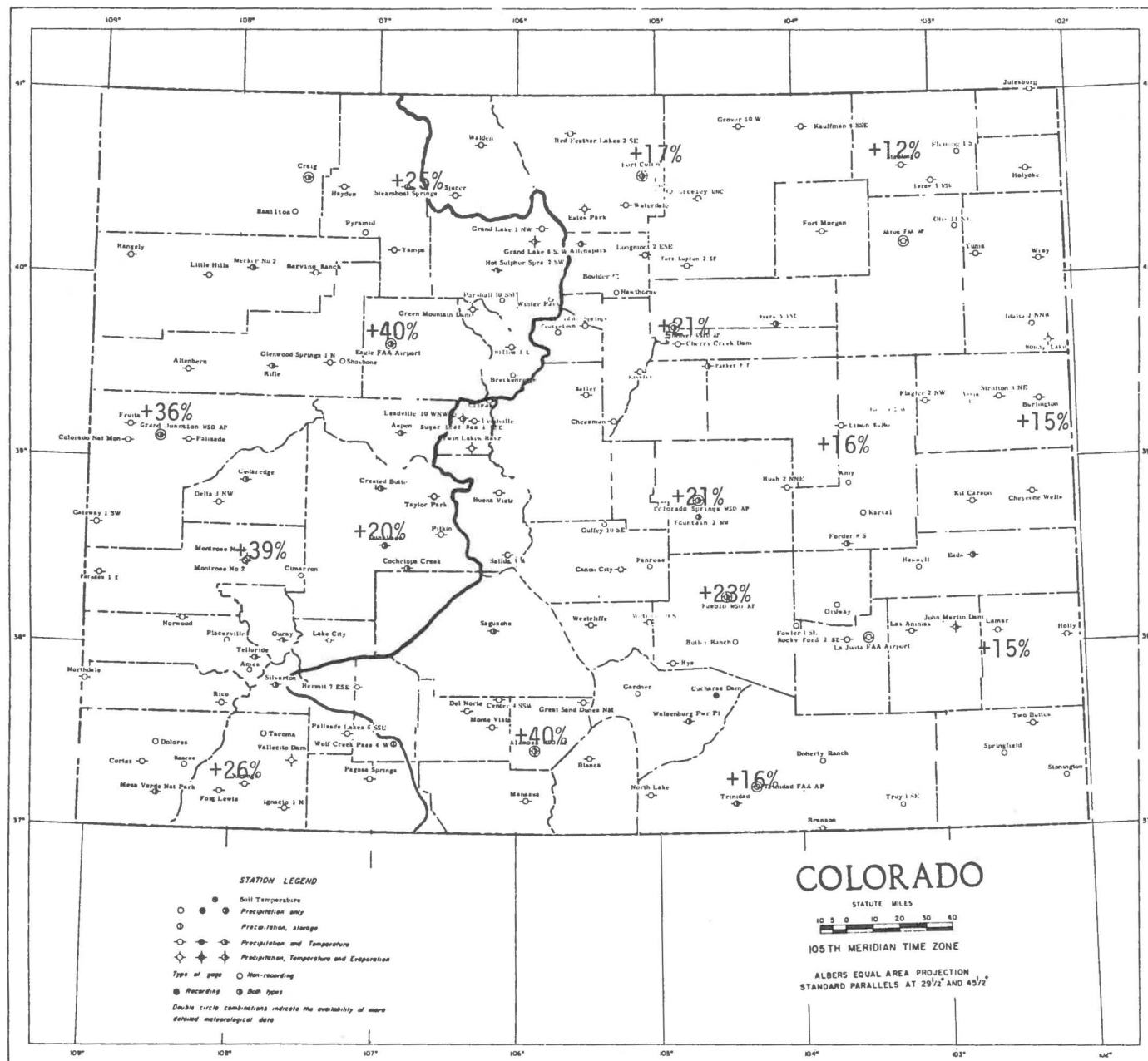


Figure 6. January 1979 Heating Degree Days as a percent above or below January 1978.





## COLORADO CLIMATE -- FEBRUARY 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

February brought a much welcomed change to warmer and drier weather across most of Colorado. Heavy snowfall still occurred in a few local areas along and west of the Continental Divide, and extreme cold still gripped the snow-covered valleys in the southwestern one-third of the state. However, compared to December and January, the weather conditions were quite pleasant.

February began as January had ended--with heavy snows in the mountains and western valleys on the 1st and 2nd followed by several days of bitter cold temperatures statewide. Taylor Park recorded  $-42^{\circ}$  Fahrenheit on the morning of February 5. A warming trend then set in which was particularly noticeable east of the mountains. By the 14th, temperatures climbed to  $80^{\circ}$  in parts of southeastern Colorado. Readings in the 70's were recorded as far north as Denver. February-like temperatures soon returned, but dry weather persisted until a moist air mass moved in from California on the 19th. Several days of intermittent snowfall produced as much as two feet of new snow in parts of the San Juans. However, precipitation amounts from this storm varied greatly. In five days, Vallecito Dam measured 1.47 inches of precipitation (snow melted to water), while Creede reported only .02 inches. As the month ended, a minor storm system spread light snow across parts of eastern Colorado. For much of the Eastern Plains, that was the only precipitation which fell during February.

Precipitation amounts and precipitation as a percent of average for February are shown in Figures 1 and 2, respectively. Precipitation was scarce east of the Continental Divide. Parts of northeast Colorado received no precipitation at all. West of the Divide, precipitation was more plentiful, but totals varied tremendously from place to place. Delta reported only .02 inches (5 percent of average) while 4.95 inches were measured at Marvine Ranch (286 percent of average). The southwest corner of the state experienced the fourth consecutive month with much more precipitation than average, but the heavy snows did not carry over to the northern and eastern slopes of the San Juans.

Precipitation from October 1978 through February 1979 as a percent of average is shown in Figure 3. Although the moisture situation on the Eastern Plains deteriorated somewhat, most of the state continued to show above average winter precipitation. Precipitation and water in the snowpack ranged from a little above average in the Northern Mountains to much above average in the San Juans. Most of the San Juans have already received more precipitation than what usually falls in an entire winter. In only five months, locations such as Durango and Pagosa Springs have recorded more than the average October through July total.

Temperatures for February are shown in Figure 4. After two consecutive cold months, wide areas of eastern and northern Colorado finally experienced a near-average month. However, the valley areas in the southwestern part of the state remained very cold. Monthly mean temperatures ranged from 36.7° at Trinidad to only 6.0° at Gunnison. Mean temperatures for December through February period were 9° below average at Gunnison, 11° below average at Grand Junction, and 11.4°

below average at Alamosa. In those areas, this has been the coldest winter ever recorded.

Heating degree day information for February is presented in Figures 5 and 6. East of the mountains, heating degree day totals (which are directly proportional to the amount of energy needed to heat homes and businesses) ranged from 9% above average (colder than average) at Burlington to 9% below average (warmer than average) at Trinidad. In southwest Colorado, heating degree day totals were considerably above average. Figure 6 compares heating degree days in February 1979 with totals from February 1978. This February was much warmer than last year across the eastern Plains. Degree day totals there were 10% to 20% below last February. That means that less energy for heating should have been required than a year ago. In the western half of the state, temperatures were colder than in February 1978 so degree day totals were greater. Steamboat Springs and Meeker recorded 4% more heating degree days than last year while the total at Alamosa was a remarkable 38% above last year.

Figure 1. February 1979 precipitation amounts (inches).

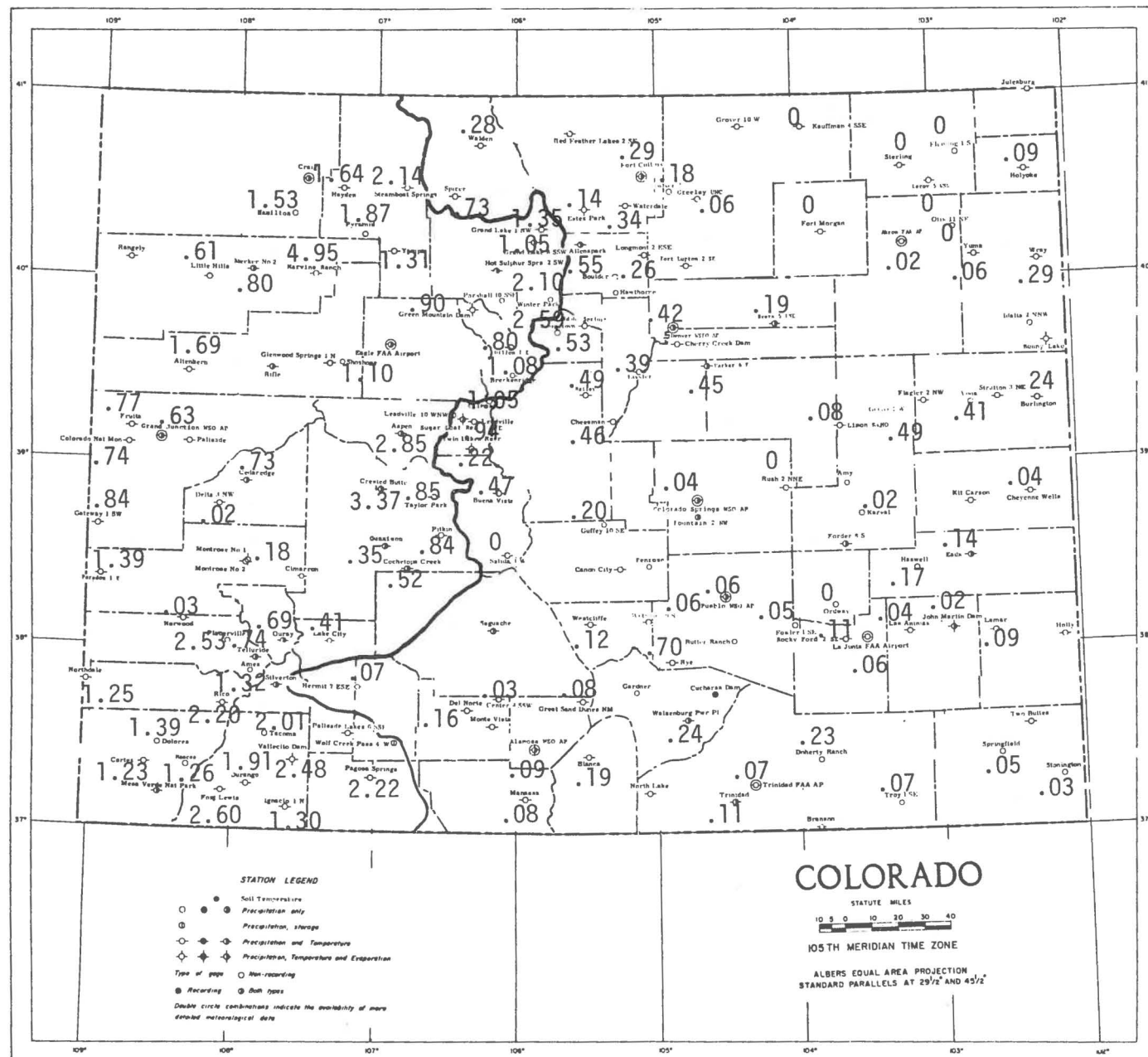


Figure 2. Precipitation for February 1979 as a percent of average (1951-1970).

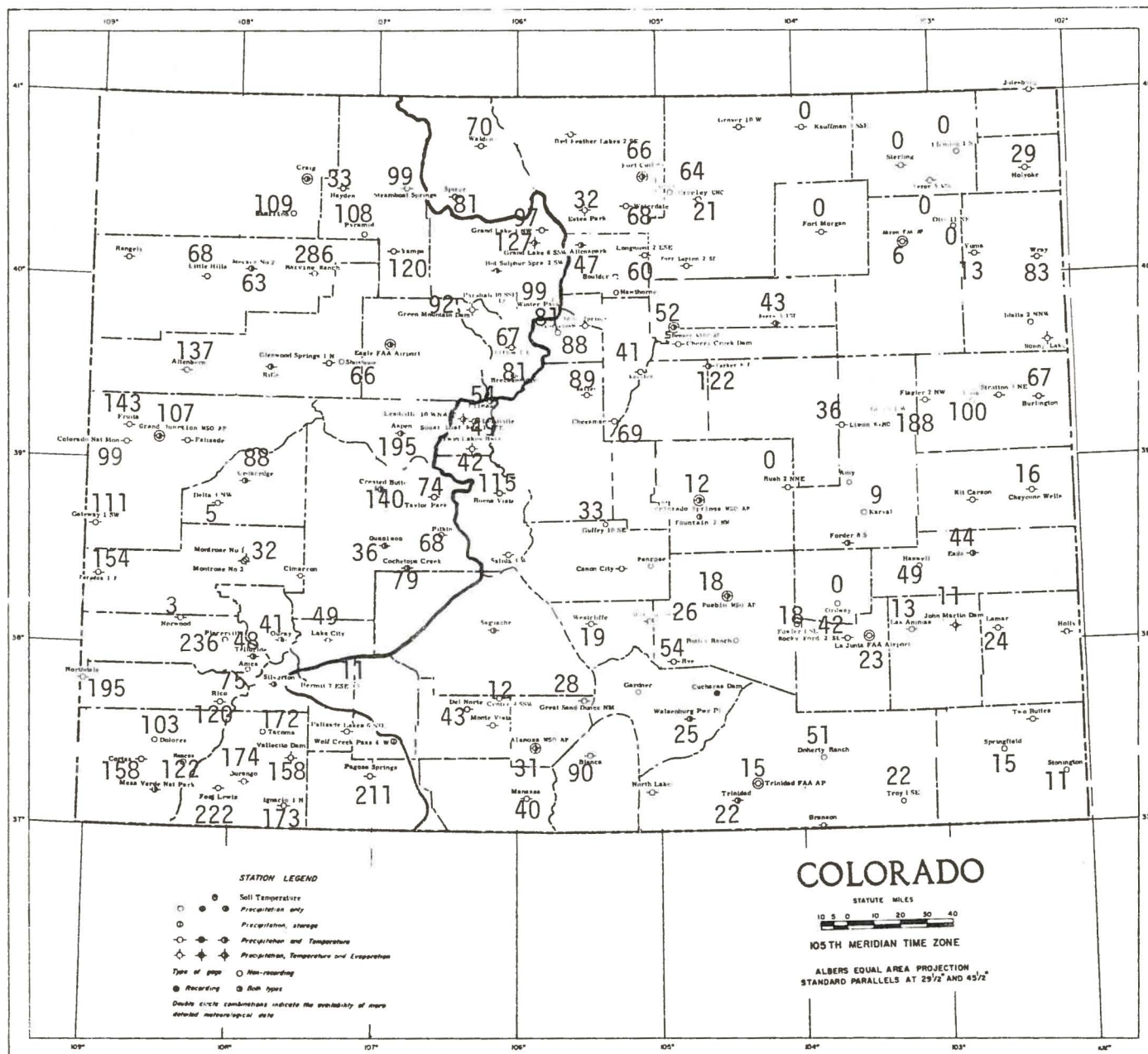




Figure 3. Precipitation for October 1978 through February 1979 as a percent of average (1951-1970).

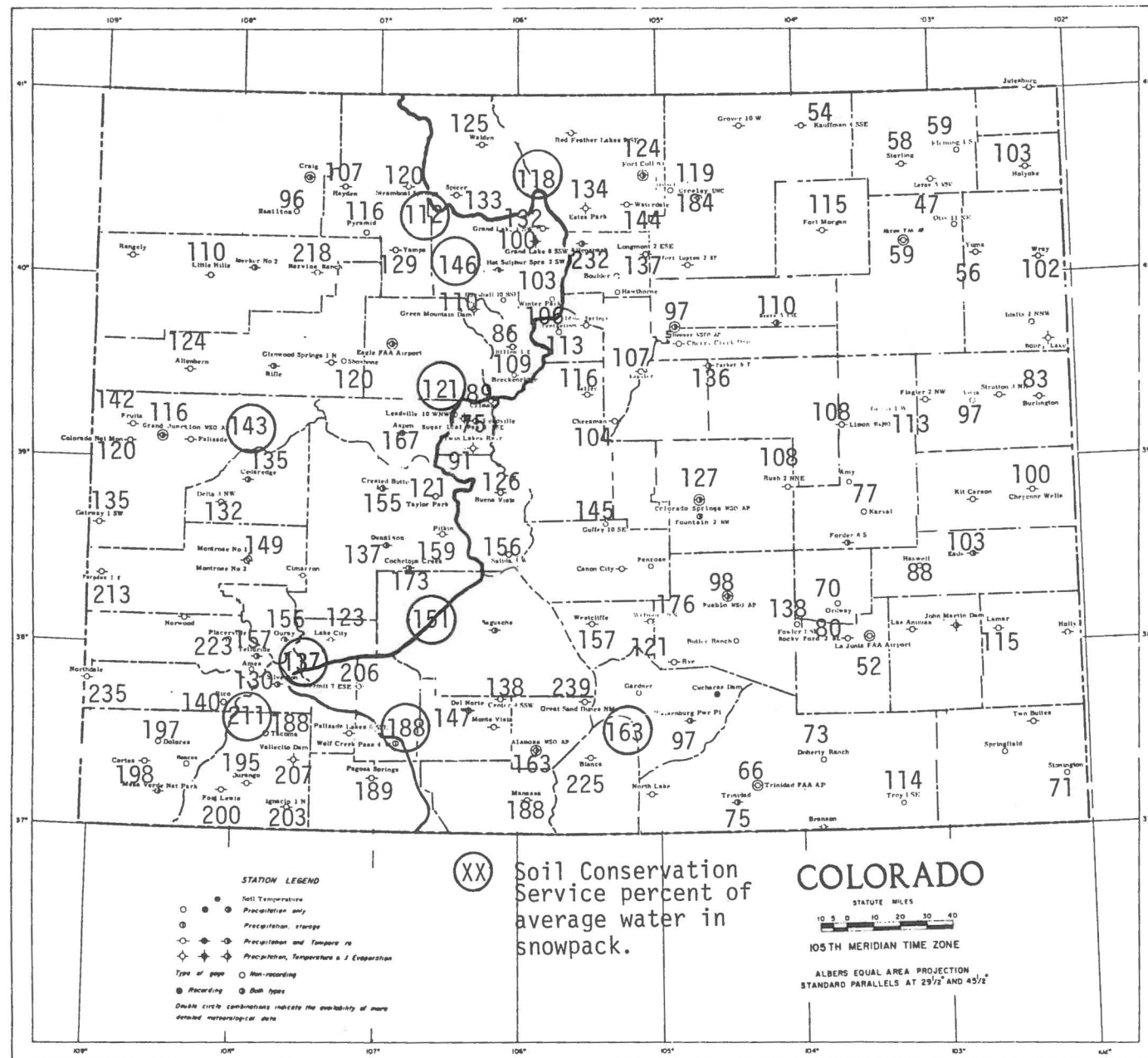
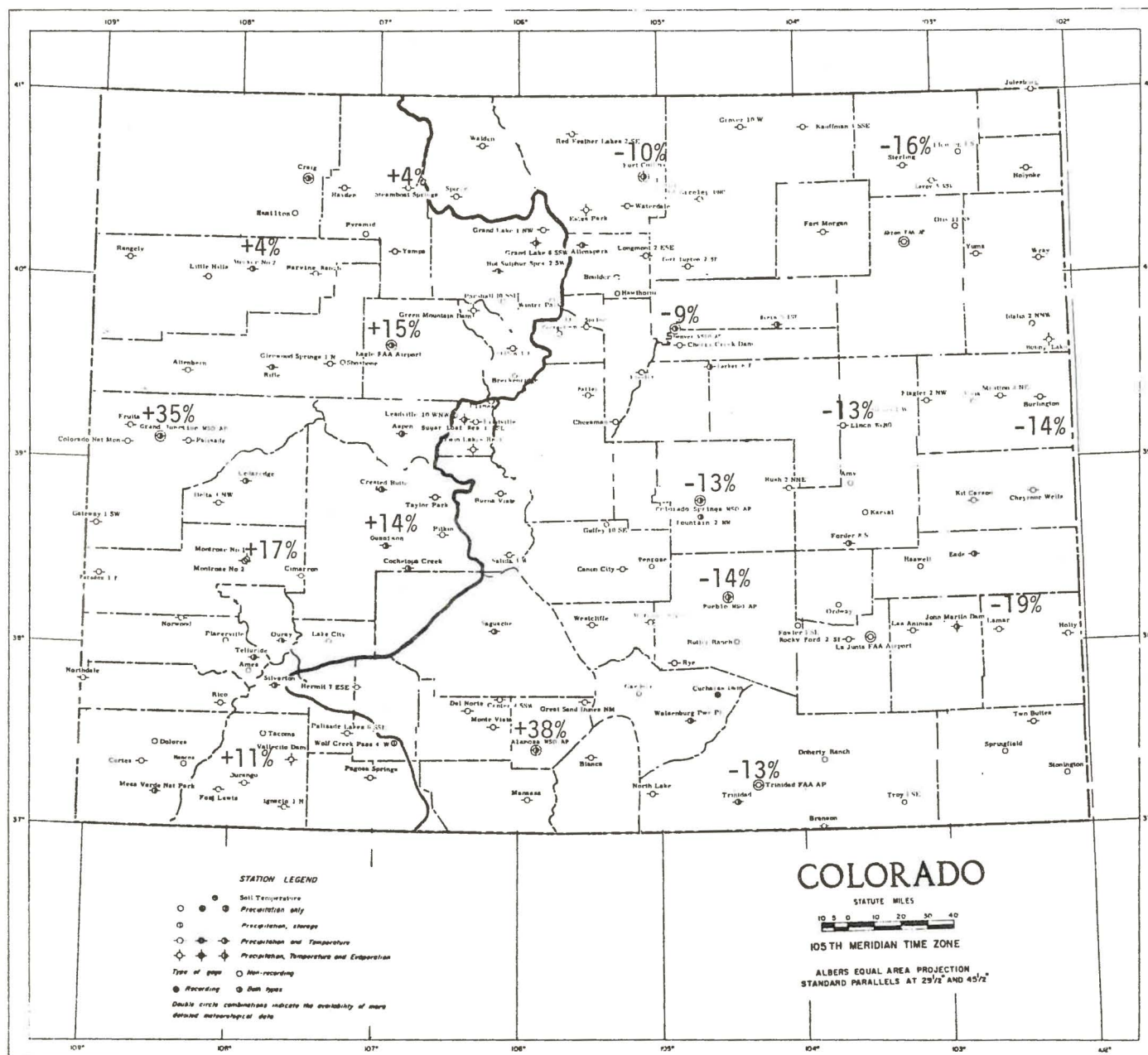






Figure 6 . February 1979 Heating Degree Days as a percent above or below February 1978.



## COLORADO CLIMATE -- MARCH 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Mild temperatures and heavy precipitation were widespread in Colorado in March. Several major storm systems crossed the state during the month and brought rain and snow to the Eastern Plains and the lower valleys of western Colorado. In the mountains, particularly the San Juans, heavy snows continued to add to the already substantial snowpack.

The first of a series of storms moved into the state early in the month. Snow fell across most of the southern three-quarters of Colorado on the 2nd and 3rd. A few days later, a small low pressure center developed on the Eastern Plains and produced some light snow from the Front Range eastward across the plains. Snowfall from these early storms ranged from a few inches on the Eastern Plains and the western valleys to two to three feet in the mountains.

The real onslaught began in the middle of the month when a cool, unstable air mass moved in from the Pacific Ocean and stalled over the western states. From the 14th to the 24th, snow accumulations at Independence Pass, Wolf Creek Pass, and Berthoud Pass were 76 inches, 65 inches, and 38 inches, respectively. Areas east of the Continental Divide were also affected. In one day (March 18), nearly 3 feet of snow fell in the foothills west of Fort Collins. From the 20th to the 22nd, snow accumulations in excess of one foot were common in the foothills from Denver to Walsenberg. Warmer and drier air eventually moved into the state, but as the month ended, another surge of moisture moved in from the west. Dinosaur National Monument received 2.26 inches of



precipitation on the 28th and 29th, and Wolf Creek Pass recorded another 4.70 inches of precipitation (49 inches of snow) on the final 4 days of the month.

Precipitation amounts and precipitation as a percent of average for March are shown in Figures 1 and 2, respectively. Practically the entire state was much wetter than average. More than one-third of the weather stations received 200 percent or more of their average March precipitation. At several locations, such as Wolf Creek Pass, Pueblo, Grand Junction, Greeley, and Walden, this was one of the wettest Marches ever recorded. In southwestern Colorado this was the fifth consecutive month with much above average precipitation. The only small areas with near or below average precipitation were the center of the San Luis Valley, scattered areas along the Continental Divide from near Leadville to Grand Lake, and the upper Gunnison River Valley. At Gunnison, the March precipitation total was only .20 inches, 23 percent of average.

Mild temperatures with few extremes of heat or cold accompanied the wet weather in March. Temperatures for the month were generally 3 to 5 degrees above average in the Northern Mountains and across the Eastern Plains (Figure 3). The only areas with below average temperatures were located in southwestern Colorado where snowcover was much more extensive than usual.

The mild March temperatures resulted in below average heating degree day totals across most of Colorado (Figure 4). However, totals were considerably greater than March 1978 (Figure 5) when the state enjoyed unusually warm temperatures. Heating degree day totals east of the mountains ranged from 5% below last year at Burlington to 13% above last year at Trinidad and Denver. In the western half of the state, totals

varied from 9% more than last year at Steamboat Springs to 30% more at Grand Junction. This means that more fuel was probably needed this March than in March 1978 to heat homes and businesses, particularly in western and southwestern Colorado.

Precipitation from October 1978 through March 1979 as a percent of average is shown in Figure 6. The above average precipitation in March greatly improved the moisture conditions across the Eastern Plains. Precipitation totals since October are now above average across most of Colorado, and above average mountain snowpack continues. Based on the current situation, water supplies for the coming irrigation season should be excellent. However, a note of caution must accompany this good news. Record-breaking precipitation and snowpack have occurred in the San Juans this winter. Durango and Pagosa Springs have already received more than their average annual precipitation, and the snowfall total of 731 inches at Wolf Creek Pass through the end of March is nearing Colorado's all-time seasonal snowfall record of 812 inches set in 1936-37. Some low-land flooding has already occurred, and the flood potential will increase as temperatures warm and snow melt accelerates. Prolonged warm weather and additional heavy precipitation could produce a serious flood situation.



Figure 2. Precipitation for March 1979 as a percent of average (1951-1970).

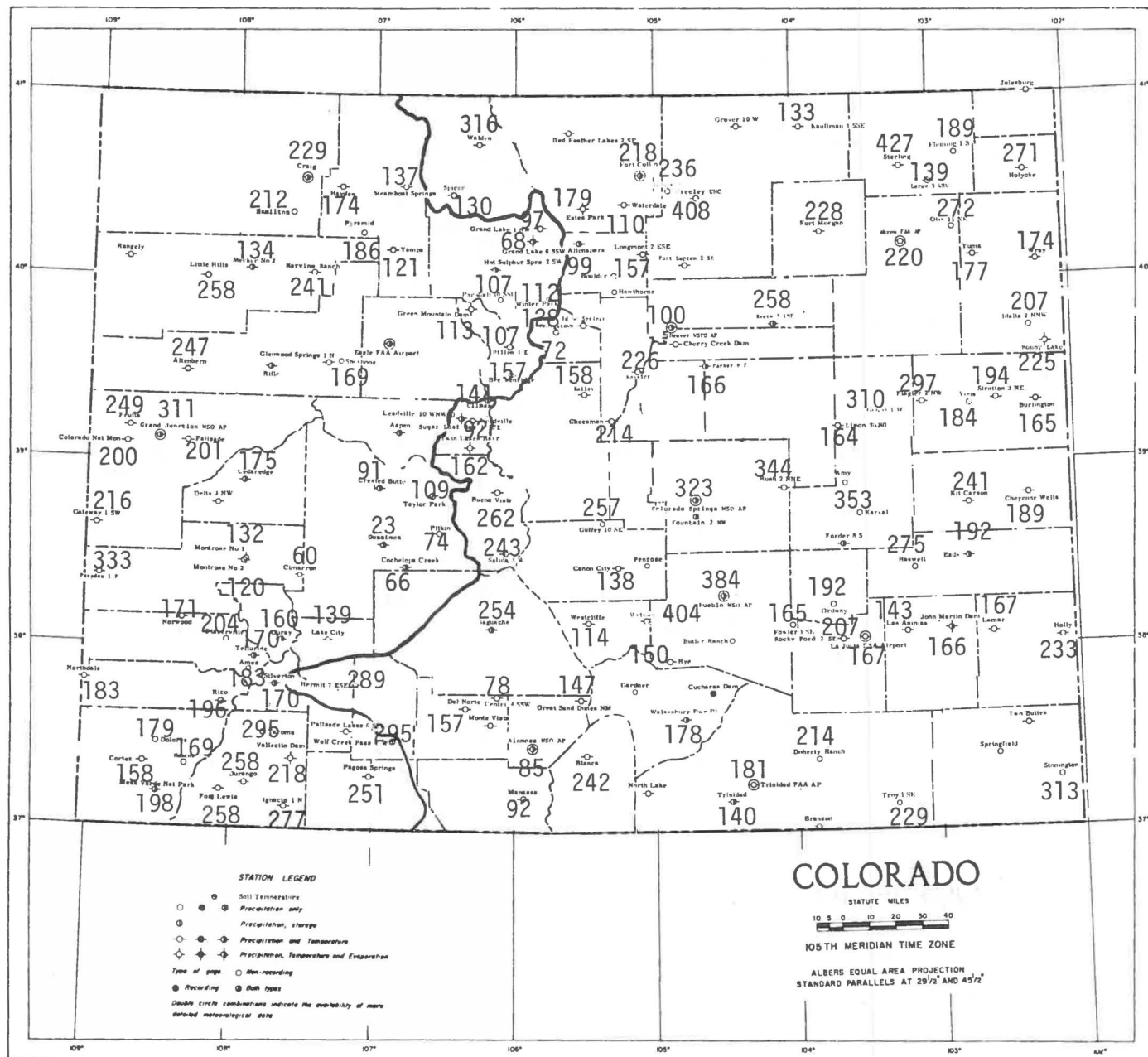
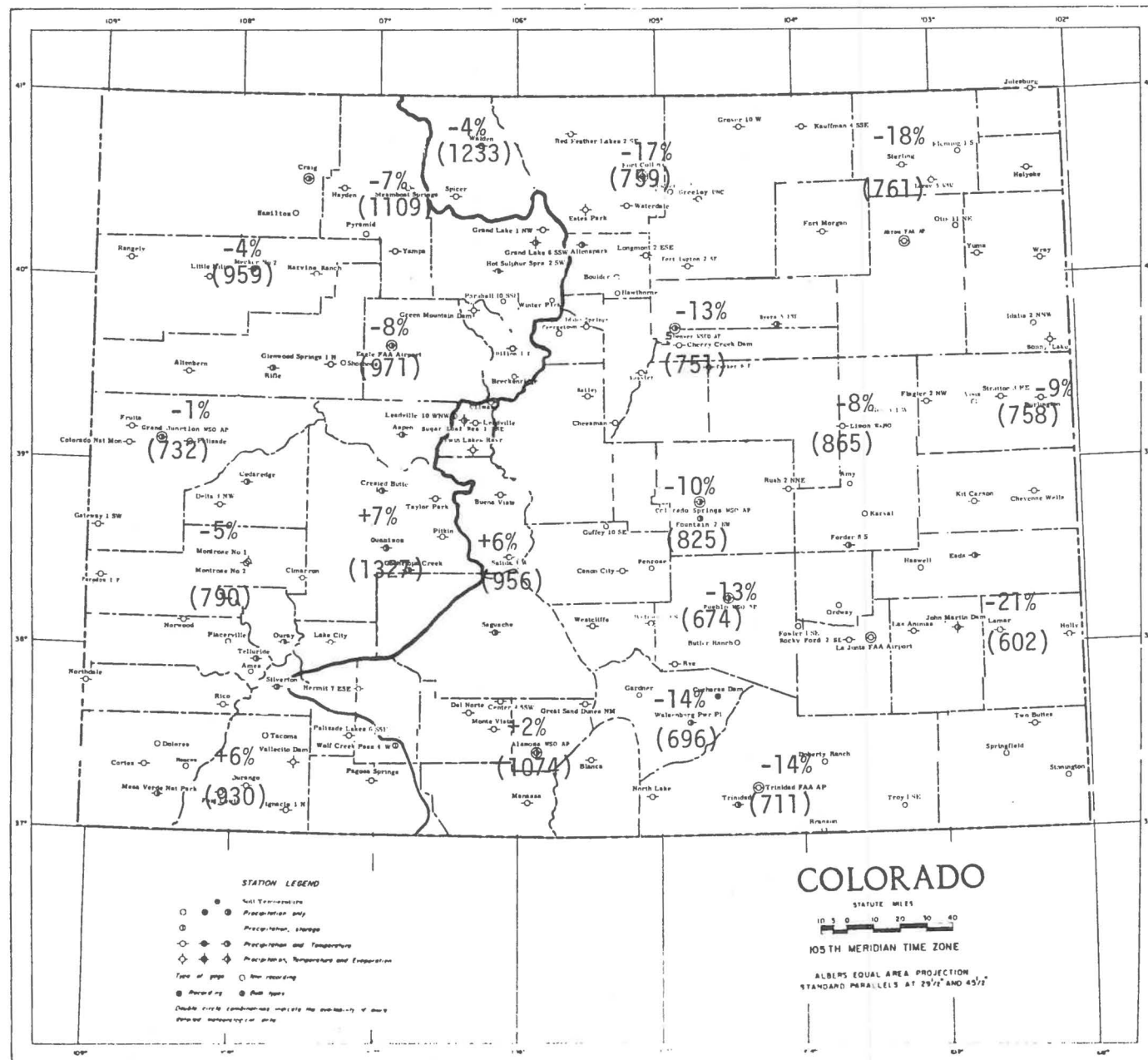








Figure 4. March 1979 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 averages.



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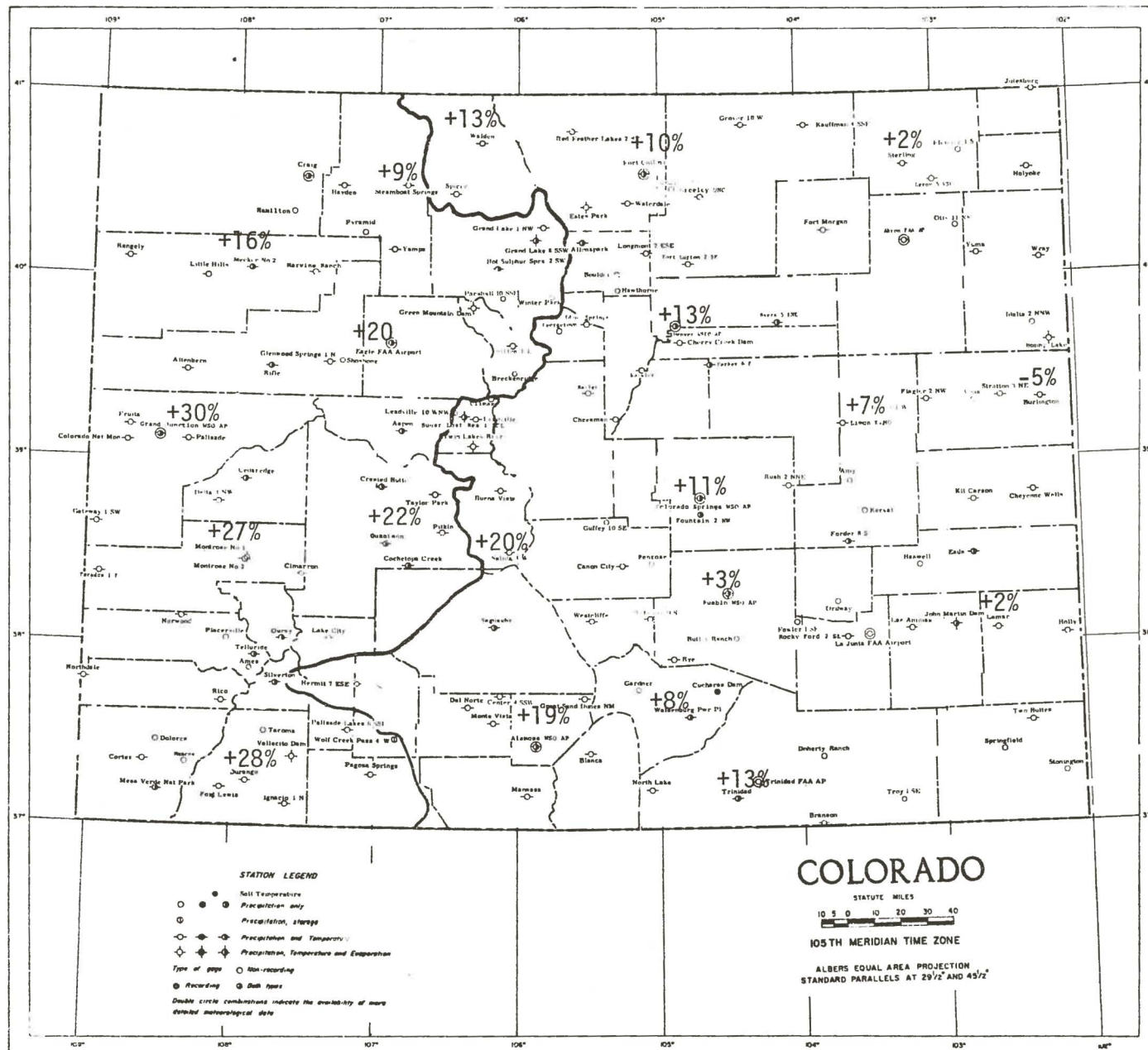
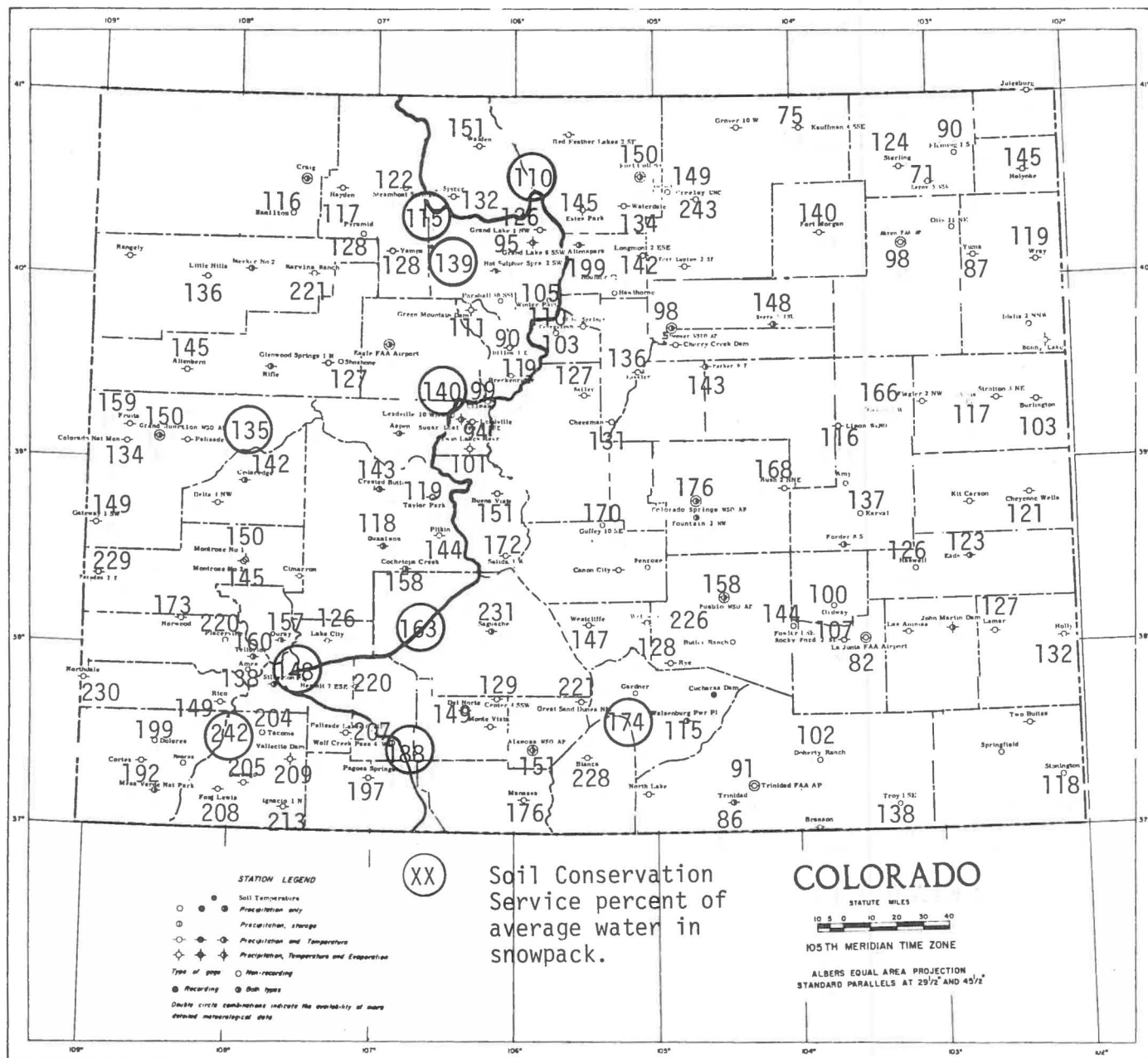


Figure 6. Precipitation for October 1978 through March 1979 as a percent of average (1951-1970).



## COLORADO CLIMATE -- APRIL 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Temperatures were mild and precipitation was fairly light across Colorado in April. The month got off to a cold and snowy start. However, warmer weather moved into the state in mid-month, and by the end of the month the snowmelt in the mountains and the agricultural activities on the plains were both underway.

Spring-like weather came reluctantly to Colorado. During the first 4 days of April practically the entire state received some snowfall, and temperatures stayed unseasonably cold. In three days Colorado Springs measured one foot of snow. At the same time Ruxton Park, in the mountains west of Colorado Springs, recorded 35 inches of new snow. Lamar, which averages only 24 inches of snow all winter and only 2.4 inches in April, received 6.4 inches of new snow in one day on April 3. Meanwhile, temperatures in the mountains dropped below zero (Fahrenheit) in many areas. Taylor Park, near Gunnison, recorded a  $-13^{\circ}$  F on April 2.

A brief warming trend on the 6th, 7th, and 8th quickly gave way to another major winter storm. Heavy snow fell in most of the Colorado Rockies from the 9th through the 11th. In three days, Wolf Creek Pass added another 38 inches of snow to their near-record winter total. The storm moved on across the Eastern Plains where it dropped a mixture of rain and snow. Several inches of snow and near blizzard conditions were reported on April 11 across parts of northeastern Colorado.

The weather finally began to moderate by the middle of the month. Except for a few scattered light showers and thundershowers, the remainder of April was dry and quite warm across the state. Temperatures in the 70's and 80's were common across the Eastern Plains from the 14th to the 24th. The temperature soared to  $89^{\circ}$  on three separate days at Lamar, while at Colorado Springs readings of  $77^{\circ}$  on the 18th and  $79^{\circ}$  on the 23rd tied the records for those dates.

Temperatures for the month of April as a whole are shown in Figure 1. Across the plains temperatures were warmer than usual and ranged from

0.5 degrees above average at La Junta to 2.7 degrees above average at Akron. In the mountains and western valleys of the state, temperatures were near average and ranged from 1.2 degrees below average at Salida to 1.2 degrees above average at Grand Lake.

Precipitation amounts and precipitation as a percent of average for April are shown in Figures 2 and 3, respectively. Most of the state received less than the average April precipitation. The upper Rio Grande Valley, the upper Arkansas Valley, and the Gunnison Valley were particularly dry. The weather stations at Salida and on Cochetopa Creek near Gunnison both received no measureable precipitation in April, and Del Norte and Gunnison recorded only .01 inches, 1% of average. There were still scattered areas across the state that were wetter than average. These included some areas near the Continental Divide such as Berthoud Pass, Ouray, and Wolf Creek Pass. The eastern edge of the San Luis Valley and several areas extending eastward from the Front Range out onto the plains also received above average precipitation.

Precipitation from October 1978 through April 1979 as a percent of average is shown in Figure 4. There have been no significant changes since last month, and precipitation totals for the winter season are near average to above average across the entire state. The precipitation and snowpack information continue to indicate that water supplies from runoff will be good to excellent this summer. However, the extremely great snowpack in the San Juans continues to be a cause for concern. Should heavy rains occur when the rivers are already high from melting snow, the threat of major flooding increases substantially.

April heating degree day information is shown in Figures 5 and 6. Heating degree day totals were lower than average across much of Colorado due to the mild temperatures in April. Totals east of the mountains were about 10% below average. In the western half of the state, totals were near average but varied from 10% above average at Salida to 7% below average at Grand Junction. Heating degree day totals were higher than in April 1978 (Figure 6). That means that once again more energy may have been needed for heating purposes than last year. The differences varied across the state from 1% more than last April at Grand Junction to 21% more at Lamar.



Warmer than average temperatures last autumn and this spring have helped to partially offset the effects of the record-breaking cold of December, January, and February. However, the heating degree day totals for the winter season are still above average (temperatures colder than averages), ranging from 1% above average at Trinidad to 7% above average at Denver and 18% above average at Grand Junction. Compared to a year ago, when Colorado experienced an unusually warm winter, the differences were more striking. East of the mountains heating degree day totals this winter were 8% to 14% greater than last year. In the western half of the state the totals ranged from 13% more at Walden to 26% more at Alamosa and 33% more at Grand Junction. Again that means that more energy was needed this winter to heat our homes and businesses.

Note: Heating degree day information will not be included in these climate reports during the summer months.

Figure 1. Temperature for April 1979 in degrees Fahrenheit (in parentheses) and the departure from average (1951-1970).

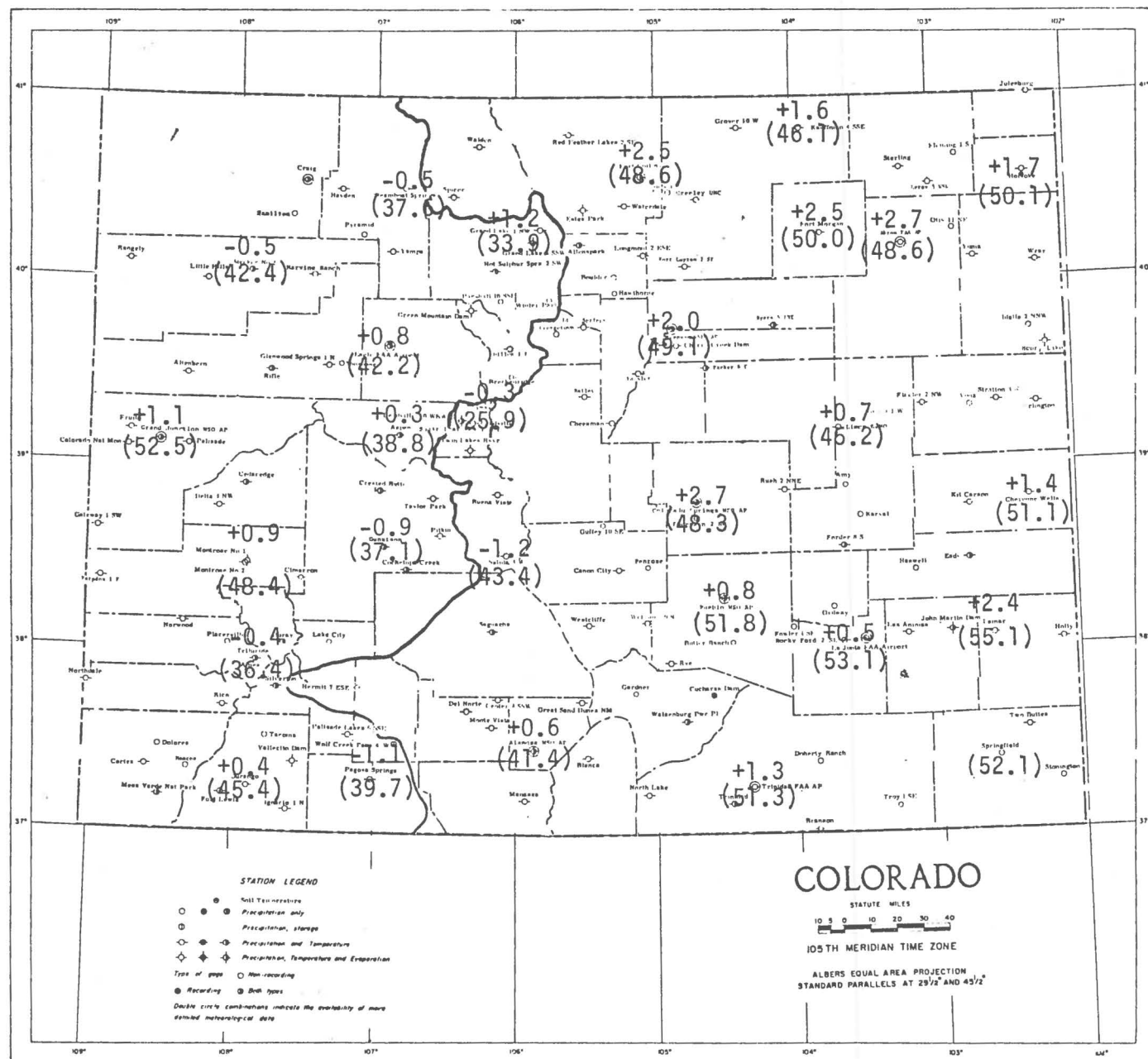




Figure 3. Precipitation for April 1979 as a percent of average (1951-1970).

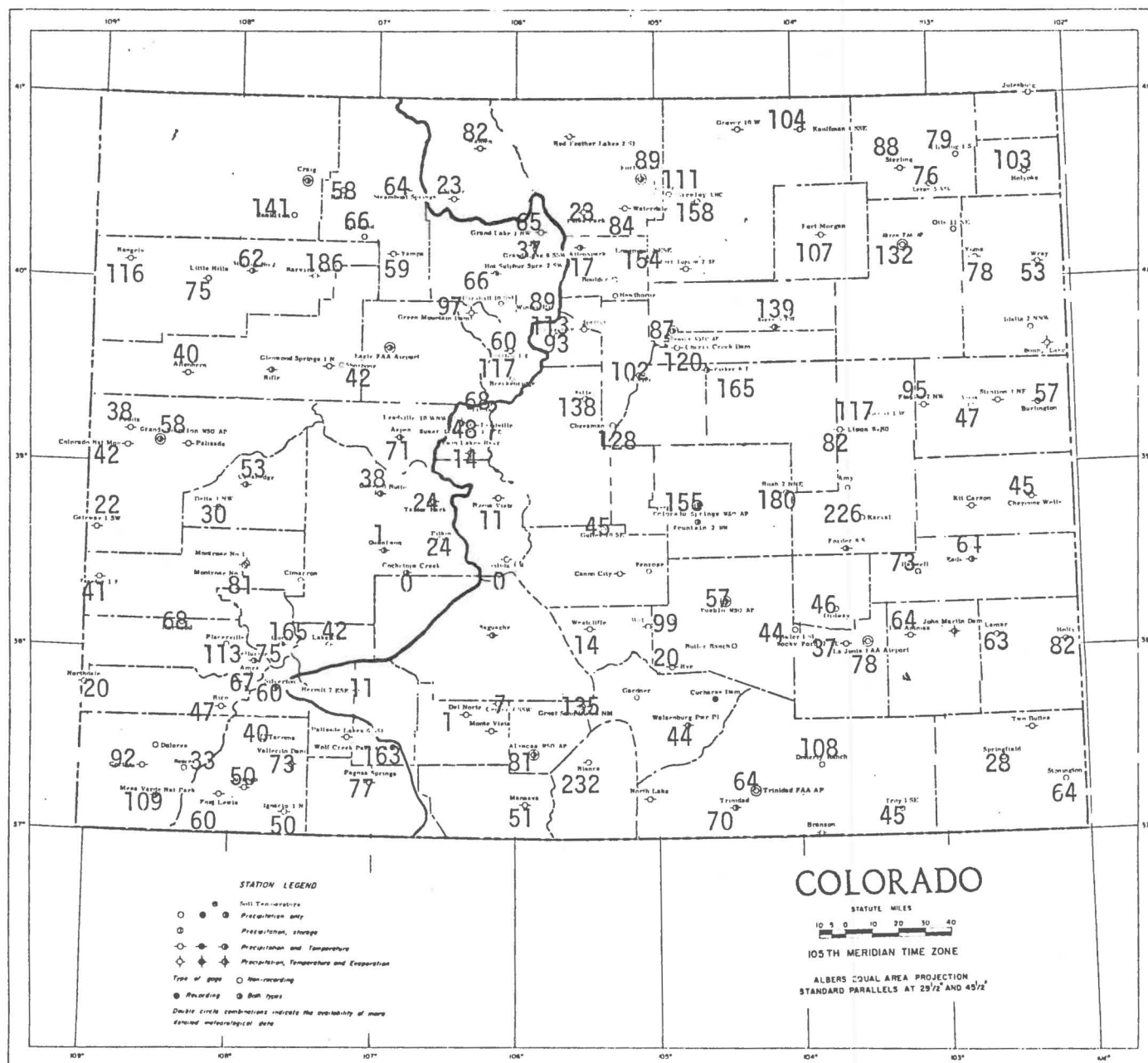




Figure 4. Precipitation for October 1978 through April 1979  
as a percent of average (1951-1970).

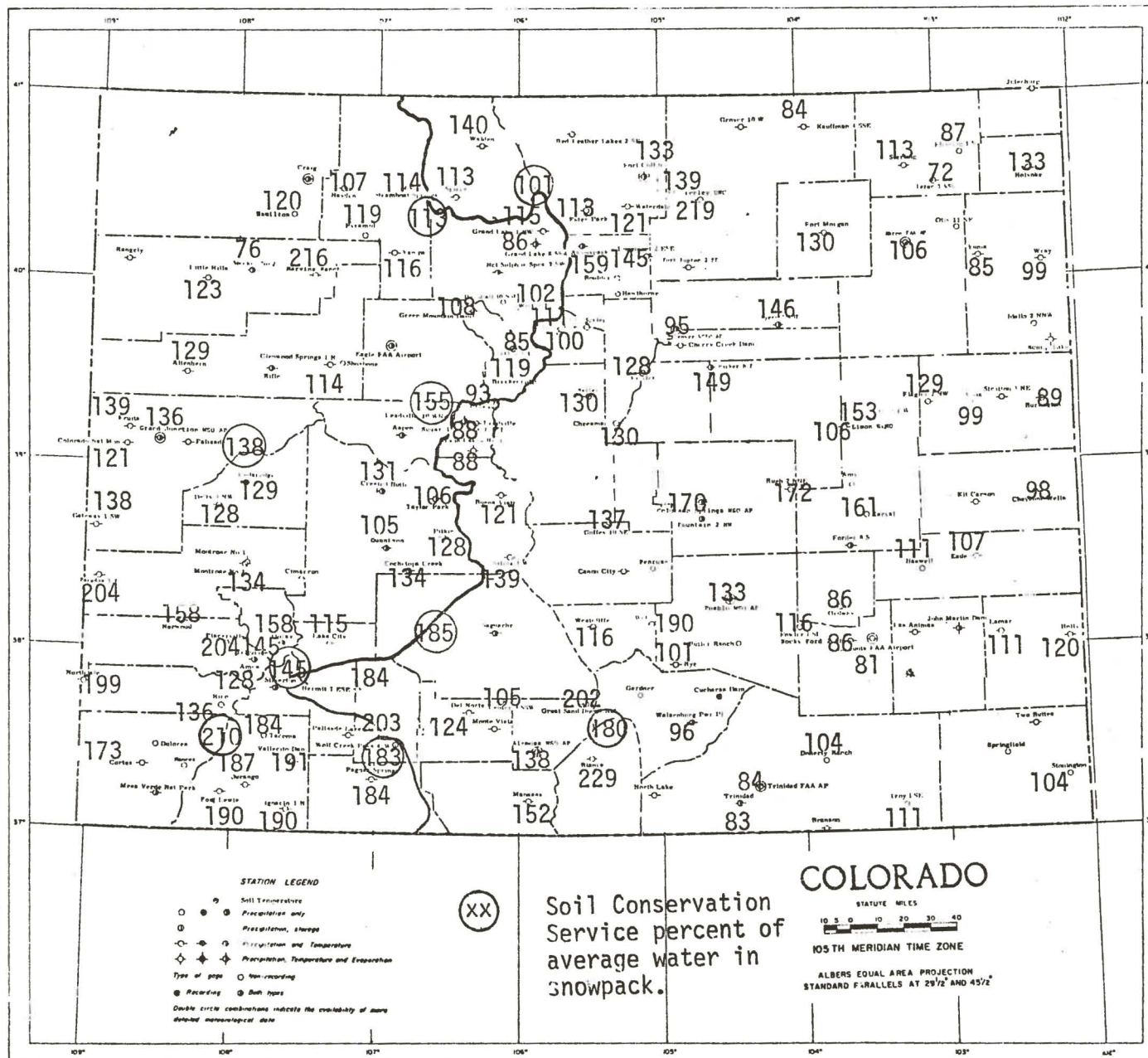
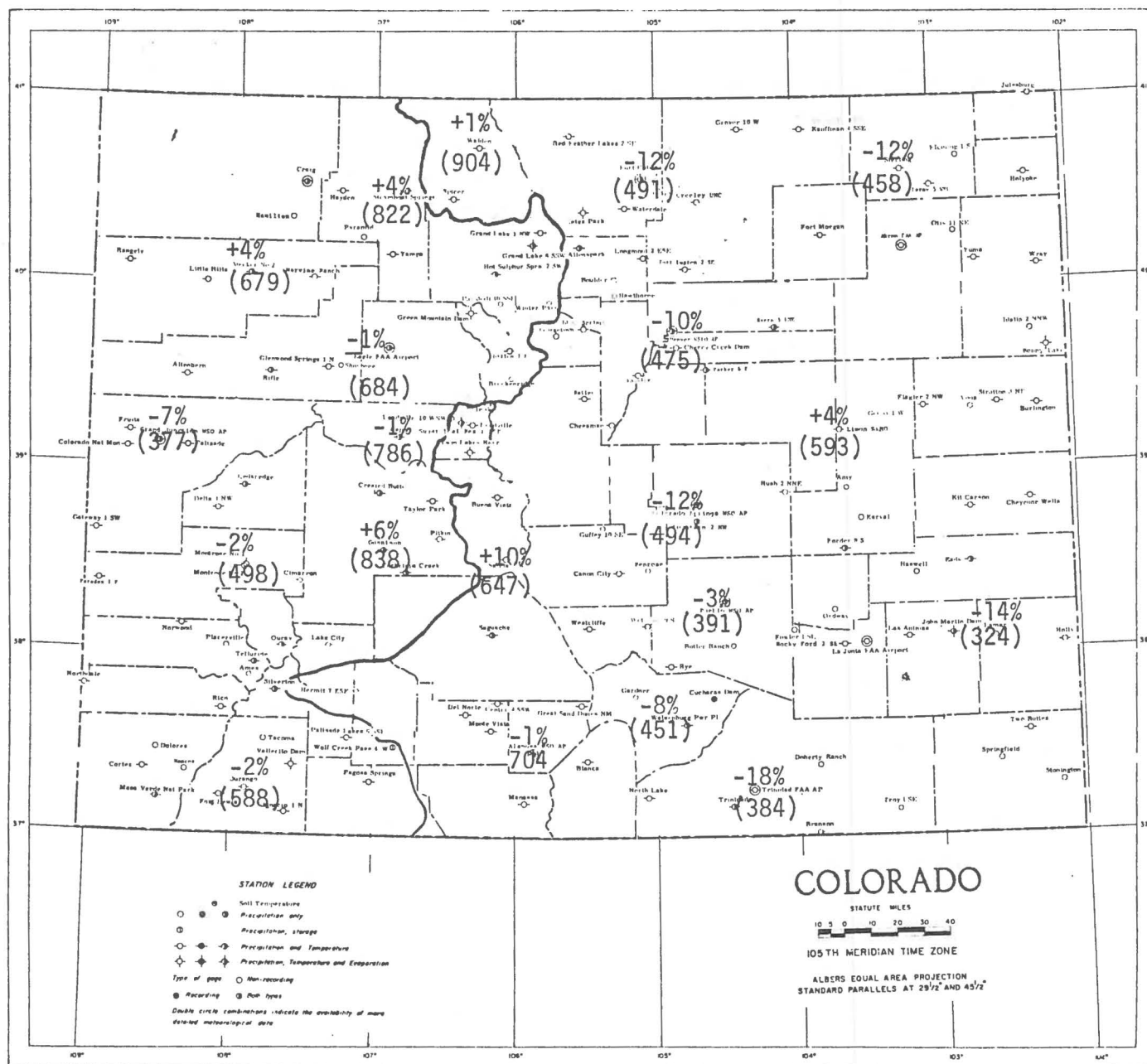
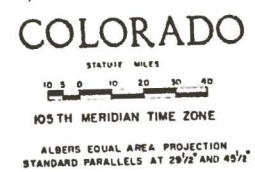




Figure 5. April 1979 Heating Degree Days (in parentheses) and percents above or below the 1941-1970 averages.



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## COLORADO CLIMATE--MAY 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Colorado experienced cool but stormy weather conditions in May. Many locations received measurable precipitation on 10 or more days during the month. Placerville, in the Southwestern part of the state, totalled 21 days with rain. To make matters worse, snow fell in many areas early in the month, and Independence Pass measured 81 inches of new snow in May.

The month began with cool temperatures and widespread precipitation. The heaviest rains and snows occurred along the Front Range. More than 2.50 inches of precipitation fell in the Loveland area, while up in the mountains, Allenspark measured 22 inches of snow and Squaw Mountain totalled 27 inches of snow from the 1st through the 4th. The skies then cleared and temperatures soared into the 70's and 80's across the state on May 5 and 6. Lamar recorded 94° Fahrenheit on the 6th, the warmest temperature in the state. After this brief taste of summer, winter weather returned to Colorado. From the 7th to the 12th temperatures were unseasonable cold and snow fell in many areas both in the mountains and at lower elevations. Grand Junction, where measurable snows in May have occurred only 3 times in the past 50 years, received 5 inches of wet snow on the 8th. Forty inches of new snow at Wolf Creek Pass lifted their season total to 822 inches, a new record for Colorado. For the remainder of the month, temperatures were near average, but frequent showers and thunderstorms dropped plenty of additional moisture on the state. A local severe storm dumped 4.85 inches of rain at the Lamar weather station on May 29.

The cool May temperatures are shown in Figure 1. In much of the state, particularly the western and southeastern portions, daytime temperatures were much cooler than usual while nighttime readings were actually warmer than average. This was due to the above average cloud cover and humidity which accompanied the plentiful precipitation. For the month as a whole, temperatures on the Eastern Plains were 1.8 degrees to 4.4 degrees cooler than average. In the mountains and western valleys,

temperatures ranged from 0.1 degrees below average at Alamosa to 2 degrees cooler than usual at Grand Junction.

Precipitation amounts and precipitation as a percent of average are shown in Figure 2 and 3, respectively. Practically the entire state was wetter than usual. Placerville totalled 5.29 inches of precipitation, almost 500 percent of average. On the Eastern Plains, conditions were quite variable. For example, Lamar received 6.44 inches of precipitation in May (259 percent of average), while Holly just a few miles to the east recorded only 1.33 inches (52 percent of average). But in general, most areas on the plains received adequate moisture to help the wheat crop.

Precipitation since October 1978 as a percent of average is shown in Figure 4. The abundant May precipitation helped to maintain the above average totals across Colorado. West central and southwest portions of the state and areas along the Front Range from Colorado Springs northward have been particularly wet. Greeley, Fruita, and many areas in southwestern Colorado have already received more precipitation than what usually falls in the entire year. Since October, 65.11 inches of water-equivalent precipitation has fallen at Wolf Creek Pass. That total is 24.30 inches more than the annual average. For the entire state in general, the past few months have been the wettest winter-spring period in recent years.

Figure 1. Temperatures for May 1979 in degrees Fahrenheit (in parentheses) and the departure from average (1951-1970).

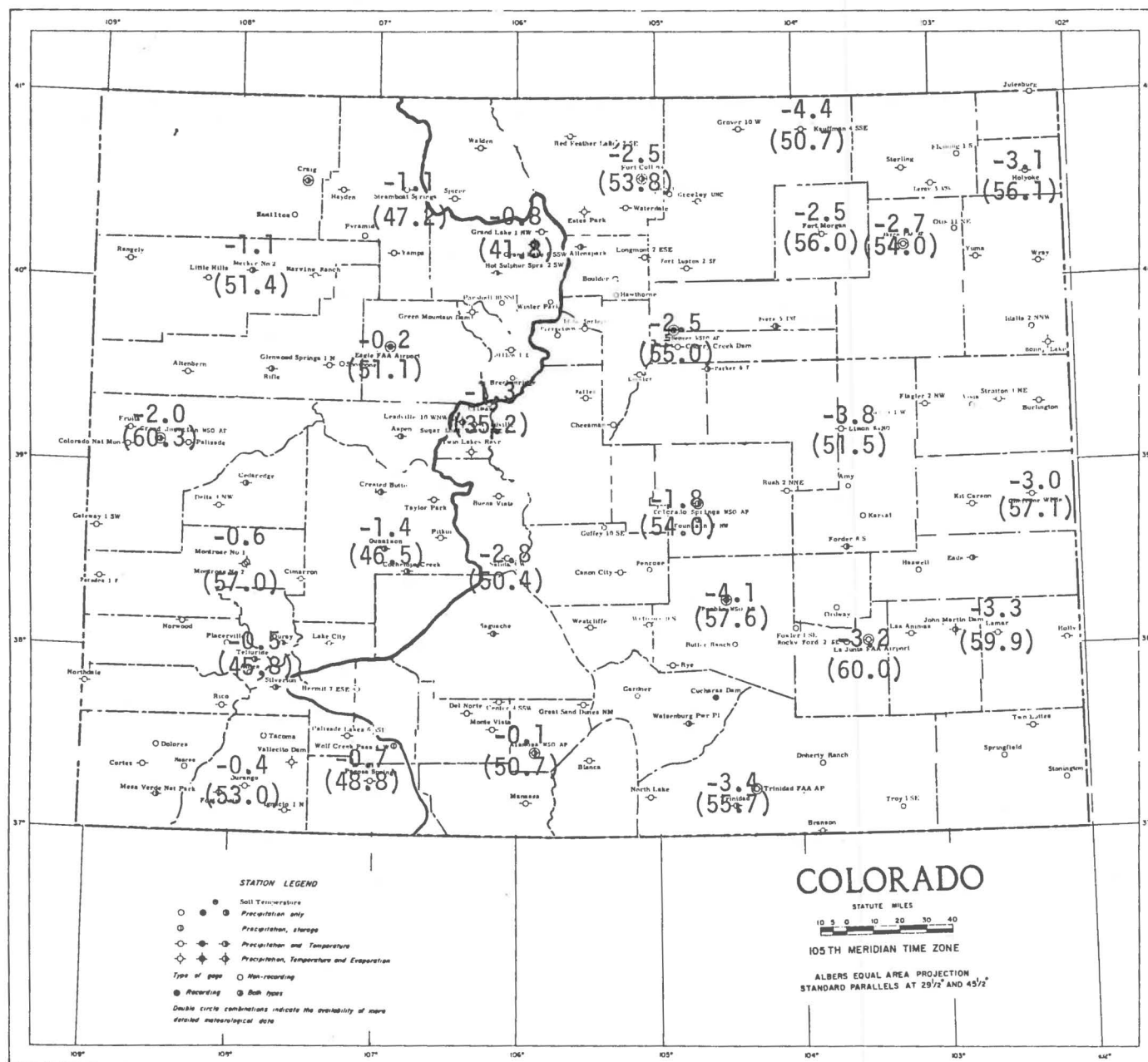




Figure 2. May 1979 precipitation amounts (inches).

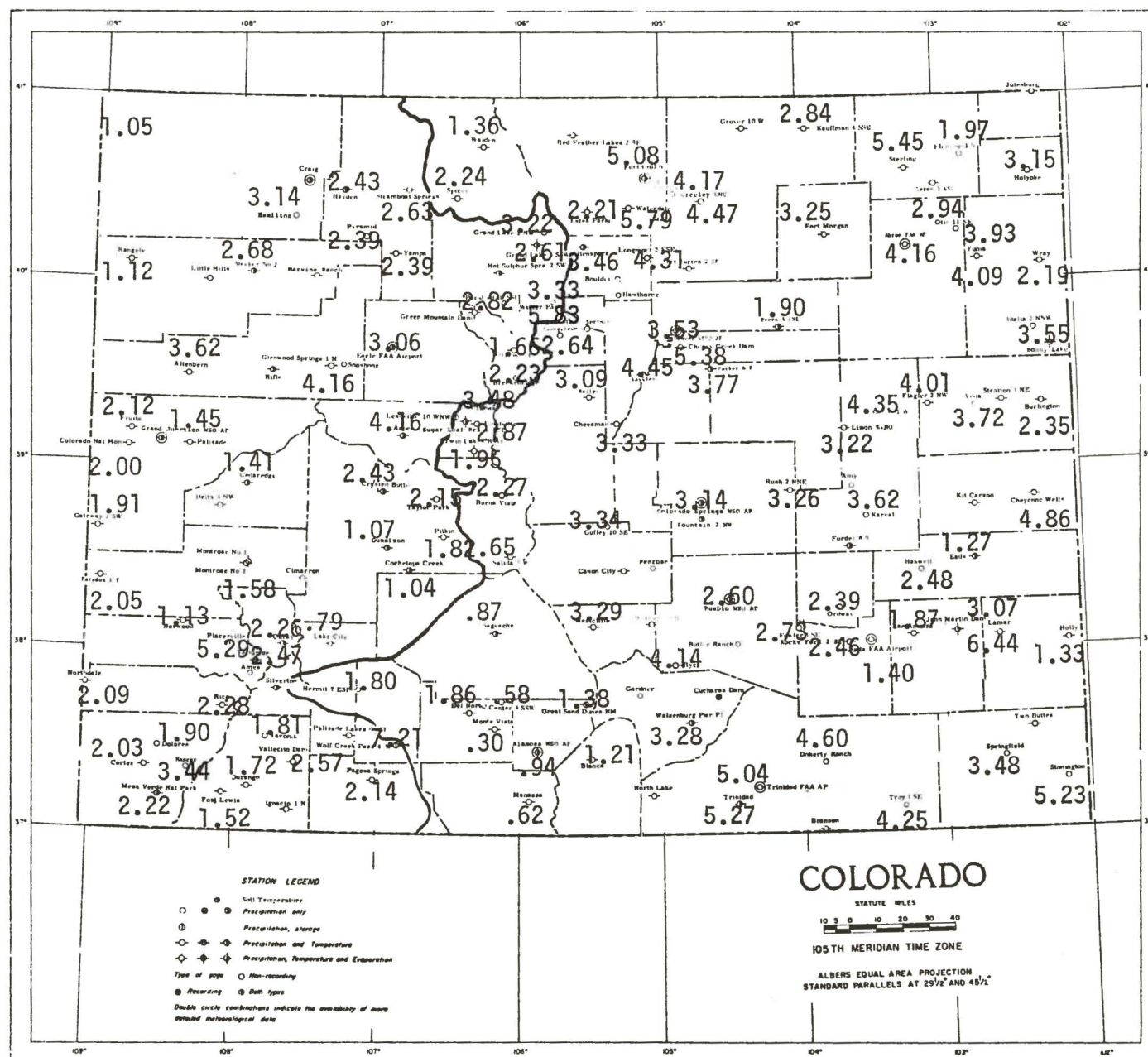
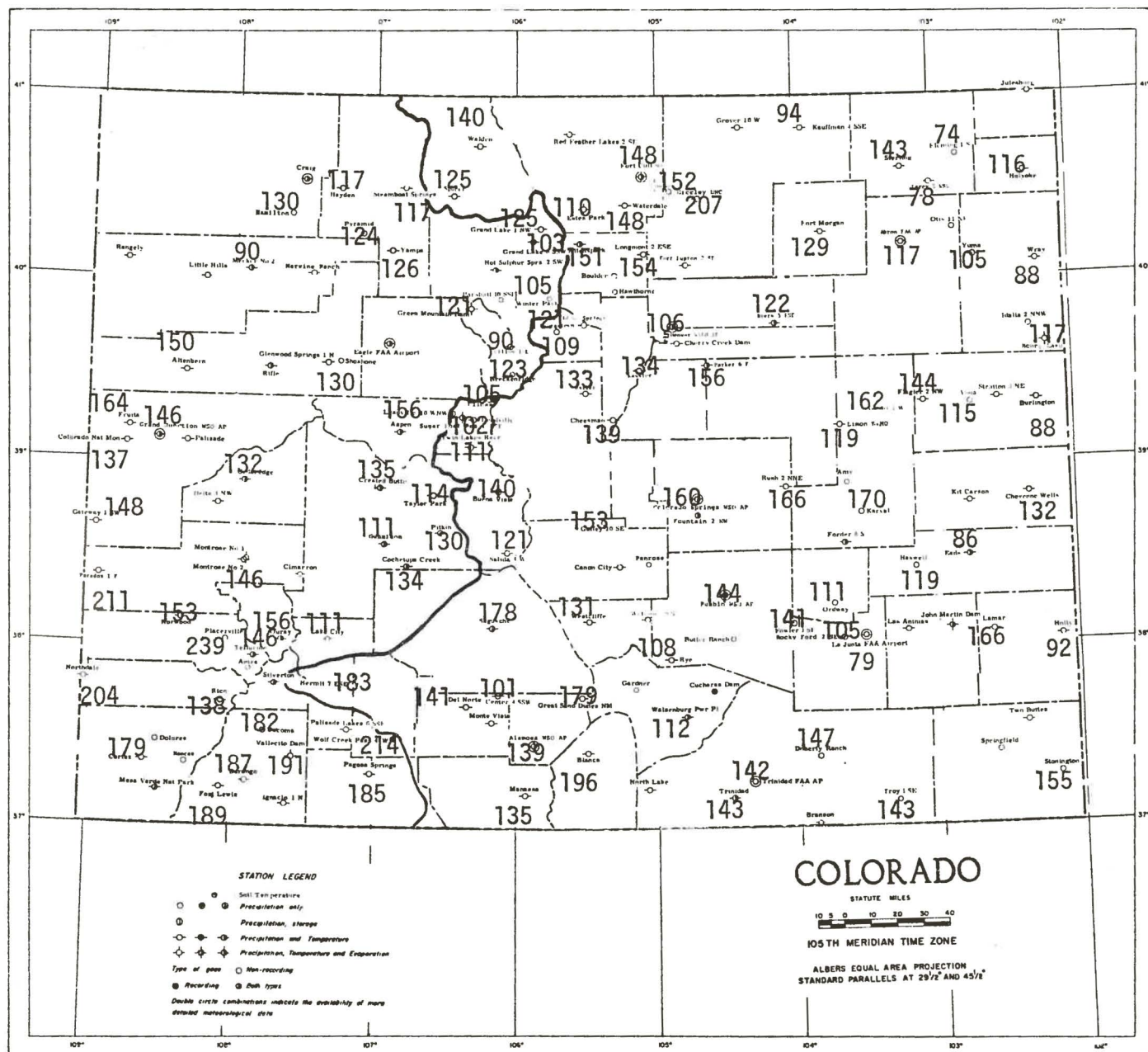




Figure 4. Precipitation for October 1978 through May 1979  
as a percent of average (1951-1970).



## COLORADO CLIMATE -- JUNE 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

An interesting variety of weather conditions were observed during June in Colorado. Several periods of pleasant summer weather occurred during the month, but they were separated by sieges of snow, cold rains, downslope wind storms, thunderstorms, damaging hail, and even a few tornadoes.

Cool temperatures were common early in the month. A winter-like storm system moved slowly across the Rockies on June 7, 8, and 9 and dropped significant amounts of precipitation over much of Colorado. June is generally a dry month in the mountains and western valleys of the state, but at Montrose 1.28 inches of rain fell on the 8th and 9th, more than double the average for the entire month. During that same period Aspen recorded well over 2 inches of water-equivalent precipitation including several inches of snow. The same storm produced 1.40 inches of precipitation in 24 hours at Center in the San Luis Valley. This was a new record for the heaviest 24-hour rainfall ever measured at that station. The storm system also dumped heavy precipitation along the Front Range and on across portions of the Eastern Plains. Evergreen totalled 2.81 inches for the 3-day period and Allenspark reported 16 inches of snowfall. On June 8 the high temperature at Akron only reached 46° Fahrenheit.

The cold weather quickly was overtaken by the first real heat wave of the summer. Temperatures at or above 100° occurred in southeastern Colorado on the 13th and 14th. Even in the mountains daytime temperatures approached 80°, and rapid snowmelt turned the rivers and streams into



rushing torrents. With the heat came the typical summer afternoon thunderstorms, and, as is often the case in eastern Colorado, hail accompanied many of these storms. On the 16th a tornado did minor damage in the vicinity of Cheyenne Wells.

One final brief blast of cold weather struck the state on the 18th with some snows in the mountains and a surprisingly strong downslope wind storm along the Front Range. Wind gusts above 60 mph were reported at Fort Collins and Boulder.

The remainder of the month was warm across the state with dry conditions in the mountains and frequent and sometimes severe storms over the plains. The worst storms were reported on June 24. A tornado, almost unheard of in the mountains, touched down in Manitou Springs damaging several buildings. That same afternoon Pueblo officially recorded 2.24 inches of rain in just 1 hour and 39 minutes.

Temperatures for June are shown in Figure 1. All across the state temperatures averaged slightly cooler than usual. Compared to long-term averages, temperatures ranged from 0.9 degrees warmer than usual at Telluride to 2 degrees cooler than usual at Pueblo.

Precipitation amounts and precipitation as a percent of average for June are shown in Figures 2 and 3, respectively. The heavy precipitation amounts recorded from the 7th through the 9th accounted for the majority of the state's total precipitation. The additional storms that rumbled across the Eastern Plains helped to raise rainfall totals above the June average at most locations. The greatest precipitation total was 4.49 inches at Julesburg in northeastern Colorado which is typically the wettest portion of the state in June. Despite the abundant precipitation in many areas there were two specific regions that were much drier than



average. Northwest of the Colorado River less than half the average precipitation fell. Rainfall was also scarce on the southern slopes of the San Juan Mountains. Durango recorded only .13 inches of rain for the month, 18% of average. The dry weather was a pleasant change of pace after their exceptionally wet winter.

Precipitation as a percent of average for the first 9 months of the 1978-79 water year is shown in Figure 4. Even more stations than last month are now above average for the year. Only one of the reporting stations, Leroy in northeastern Colorado, is indicating less than 80% of average October through June precipitation, and only 4 sites have received less than 90% of average. Many locations continue to be more than 50% above average. For example, Greeley has now received 16.21 inches since October, 207 percent of average.

Figure 1. Temperature for June 1979 in degrees Fahrenheit (in parentheses) and the departure from average (1951-1970).

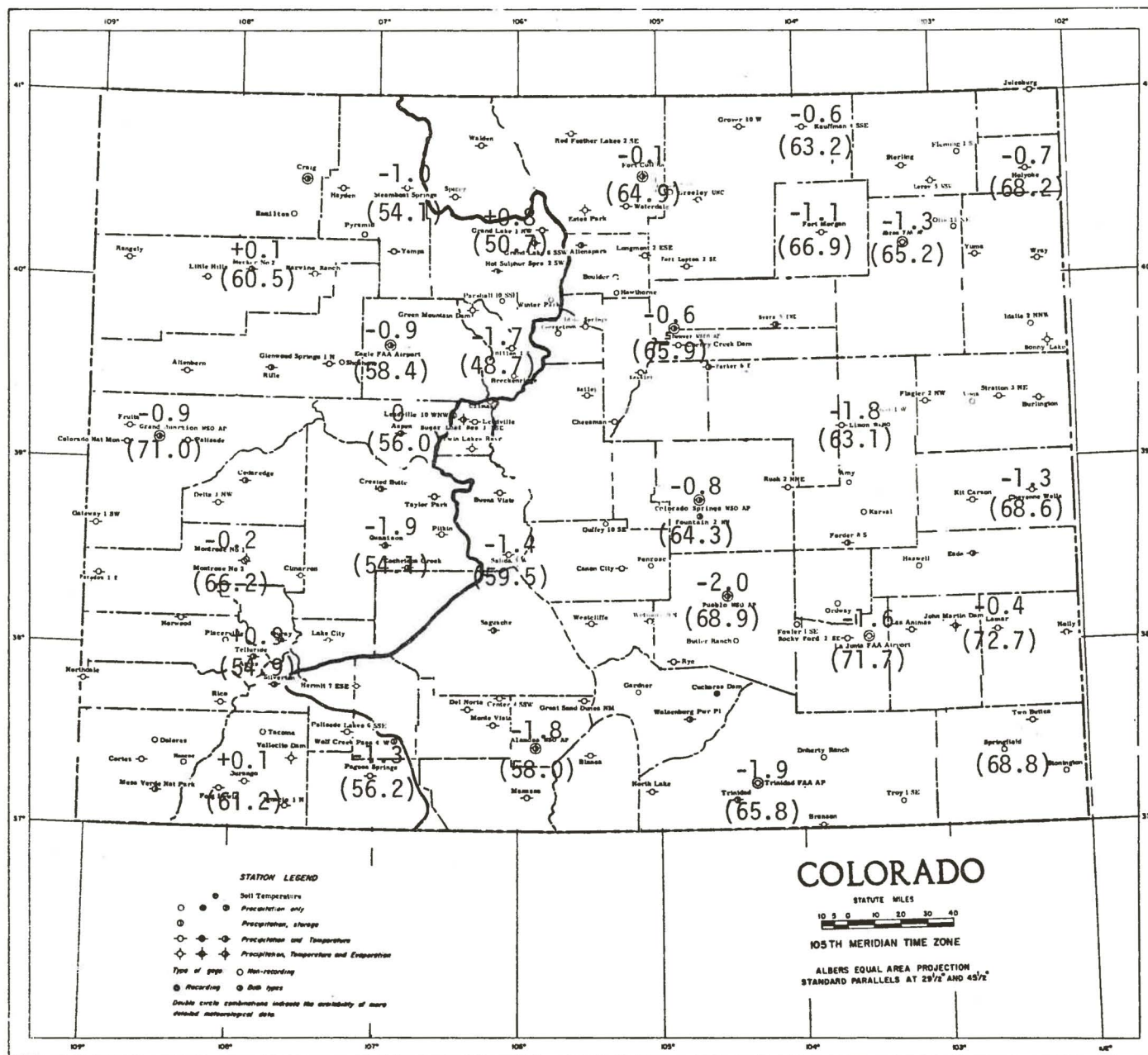


Figure 2. June 1979 precipitation amounts (inches).

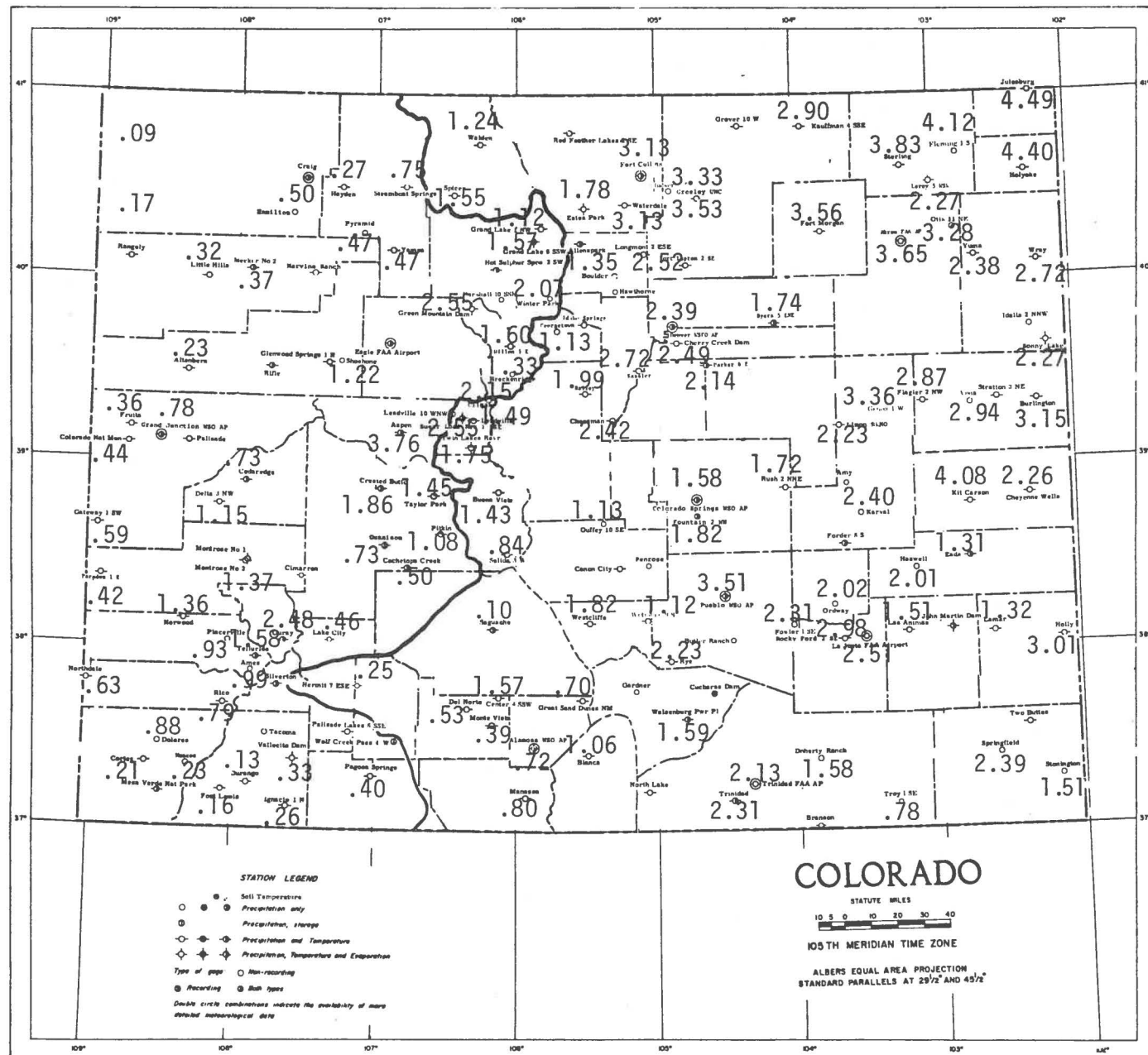
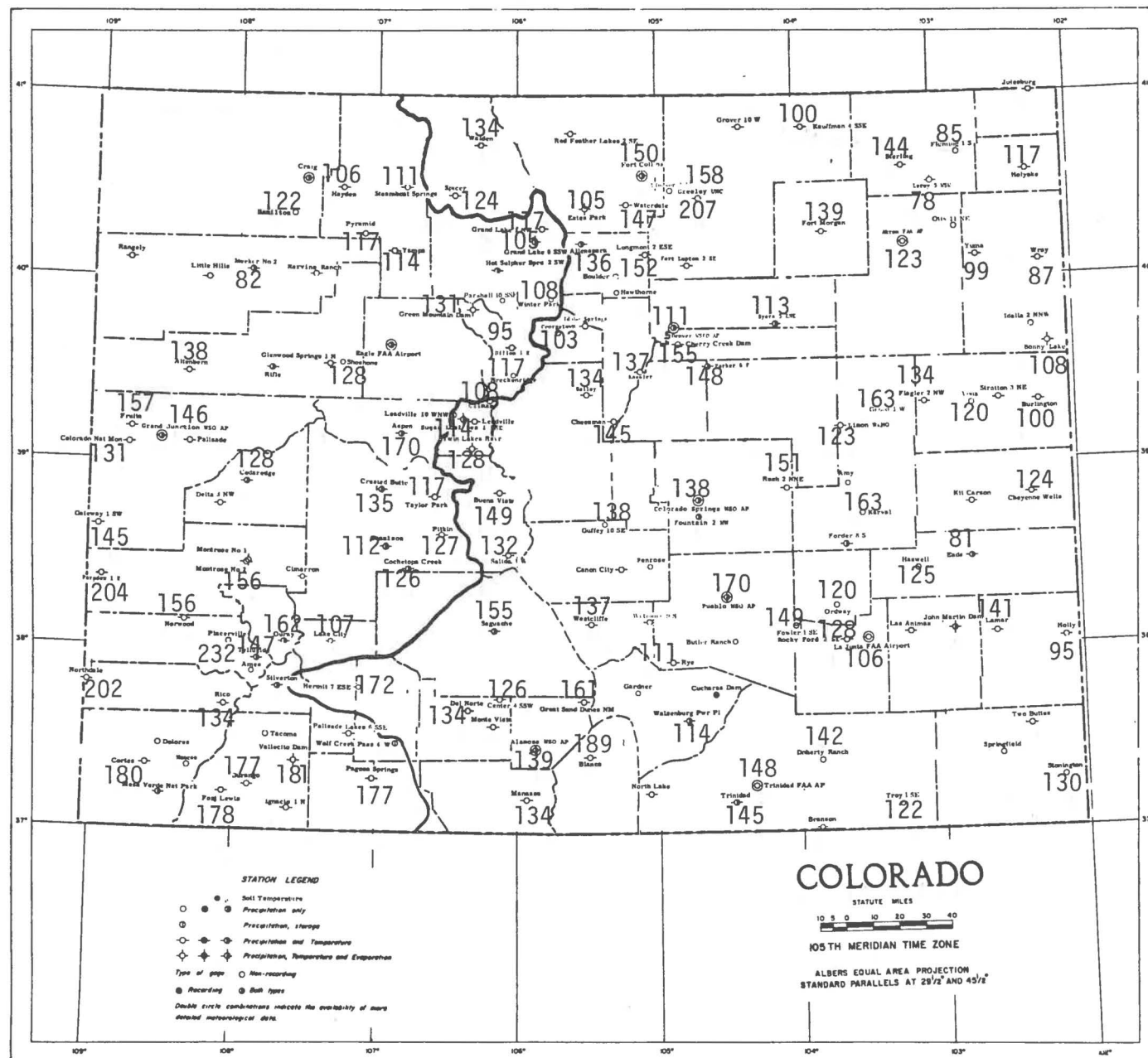




Figure 4. Precipitation for October 1978 through June 1979 as a percent of average (1951-1970).





## COLORADO CLIMATE -- JULY 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

Frequent thunderstorms across the Eastern Plains and dry weather in the mountains were the major features of July's weather in Colorado.

During the first week of July, afternoon thundershowers were common in and near the mountains. Precipitation was quite light from these showers except in parts of eastern Colorado where some of the thunderstorms continued on into the night. The showery weather was gradually replaced by several days of hot and dry conditions across the entire state. Temperatures in the 90's and lower 100's were common at lower elevations from the 8th through the 14th. Even in the mountains daytime temperatures rose into the 80's. Palisade reported 8 days in a row with high temperatures of at least 100°, and Las Animas recorded the warmest temperature, 104° on July 12.

Cooler but moister air moved into the state from the east on the 15th and triggered an increase in thunderstorm activity across the state. Rainfall amounts continued to be quite light in and near the mountains, but across the Eastern Plains frequent and locally severe afternoon and evening thunderstorms produced heavy rains in many areas. For example, New Raymer measured 1.91 inches on July 26, Troy reported 2.05 inches on the 27th, and Burlington received 1.92 inches on the 30th.

Tornadoes were sighted on several different days in eastern Colorado, but Cheyenne, Wyoming was the only populated area hit by the twisters (July 16). In Colorado, hail was a more serious problem.

Many of the storms on the plains produced hail. The worst damage occurred on July 30 when a huge hailstorm moved across Fort Collins. A surprisingly large area was bombarded with hailstones from one to 3½ inches in diameter which dented automobiles, damaged and in some cases punctured roofs of hundreds of buildings, destroyed cropland, injured several people, and even killed a 3-month old infant.

Precipitation amounts and precipitation as a percent of average for July are shown in Figures 1 and 2, respectively. Above average rainfall was limited to the eastern third of the state. The weather stations near Fleming, Leroy, and Troy all totalled more than 5 inches of rain for the month, nearly 200 percent of average. With a few exceptions, the remainder of the state was drier than usual. Precipitation west of the Continental Divide ranged from just a trace at Palisade to nearly 2 inches at Cimarron and Yampa. In general, all of the Colorado mountains were dry. Climax measured only 0.41 inches of rainfall in July, 17 percent of average.

Precipitation totals as a percent of average for the first 10 months of the 1978-79 water year are shown in Figure 3. Wetter than average conditions still prevail across practically all of Colorado. Two months in a row of dry weather in parts of western Colorado have reduced the departures from average in those regions. At the same time, percentages have continued to increase on the Eastern Plains.

July temperatures (Figure 4) were fairly close to average. Temperatures ranged from about 2 degrees above average at Climax and Aspen to nearly 2 degrees cooler than normal at Gunnison and Alamosa. The majority of stations in the state were slightly cooler than average

making this the third month in a row and the sixth month since last December with below normal temperatures.

82

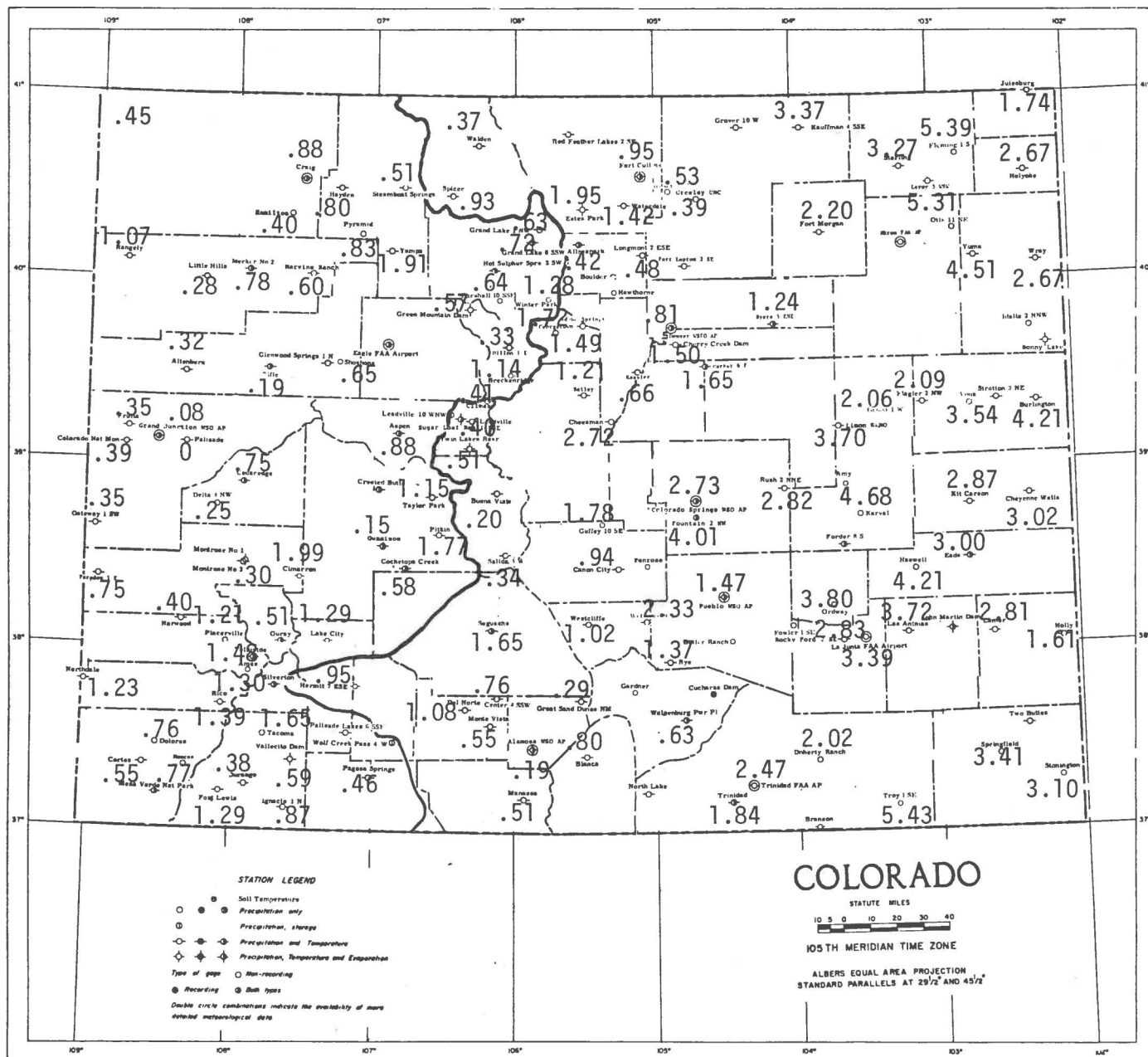
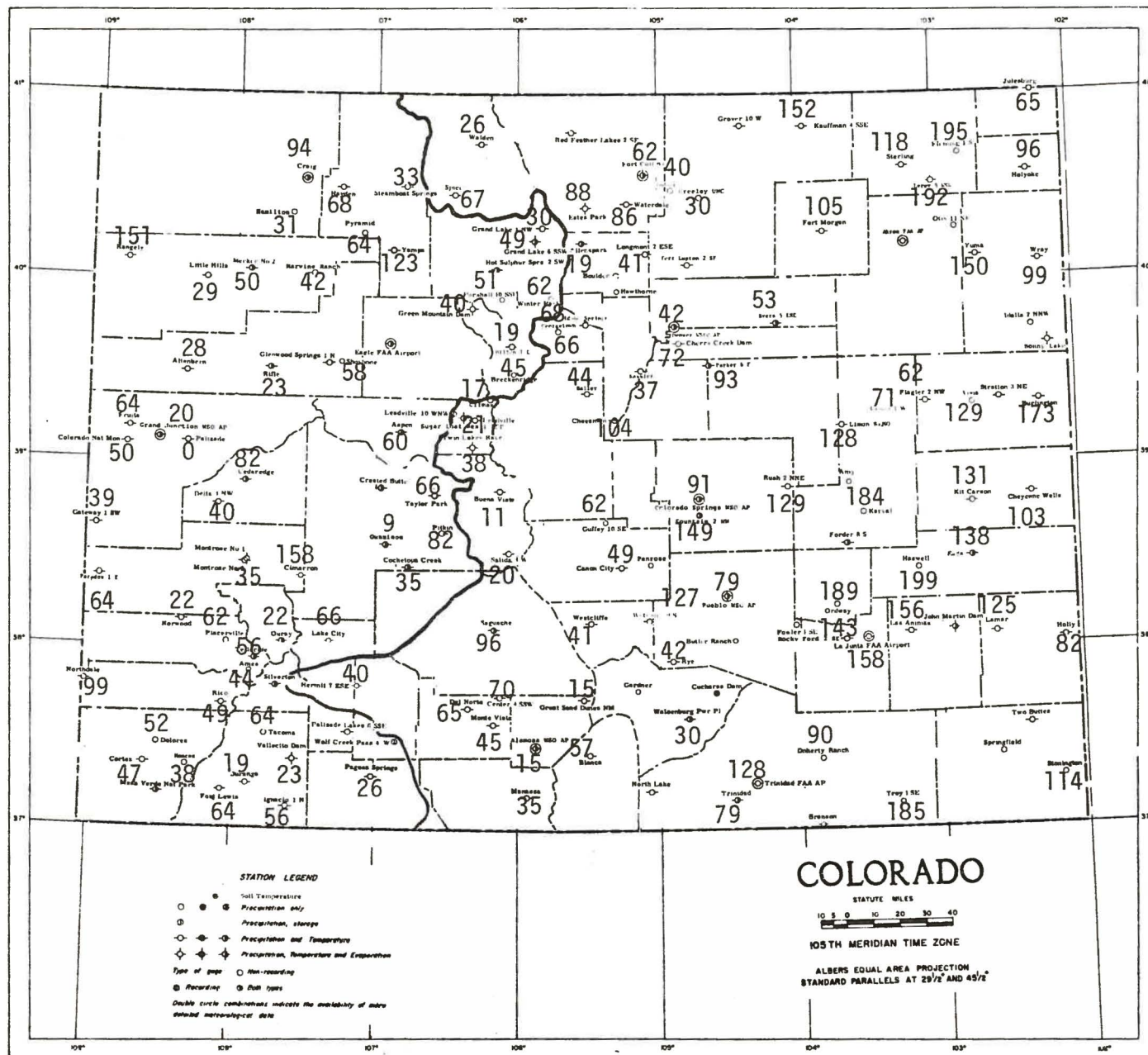
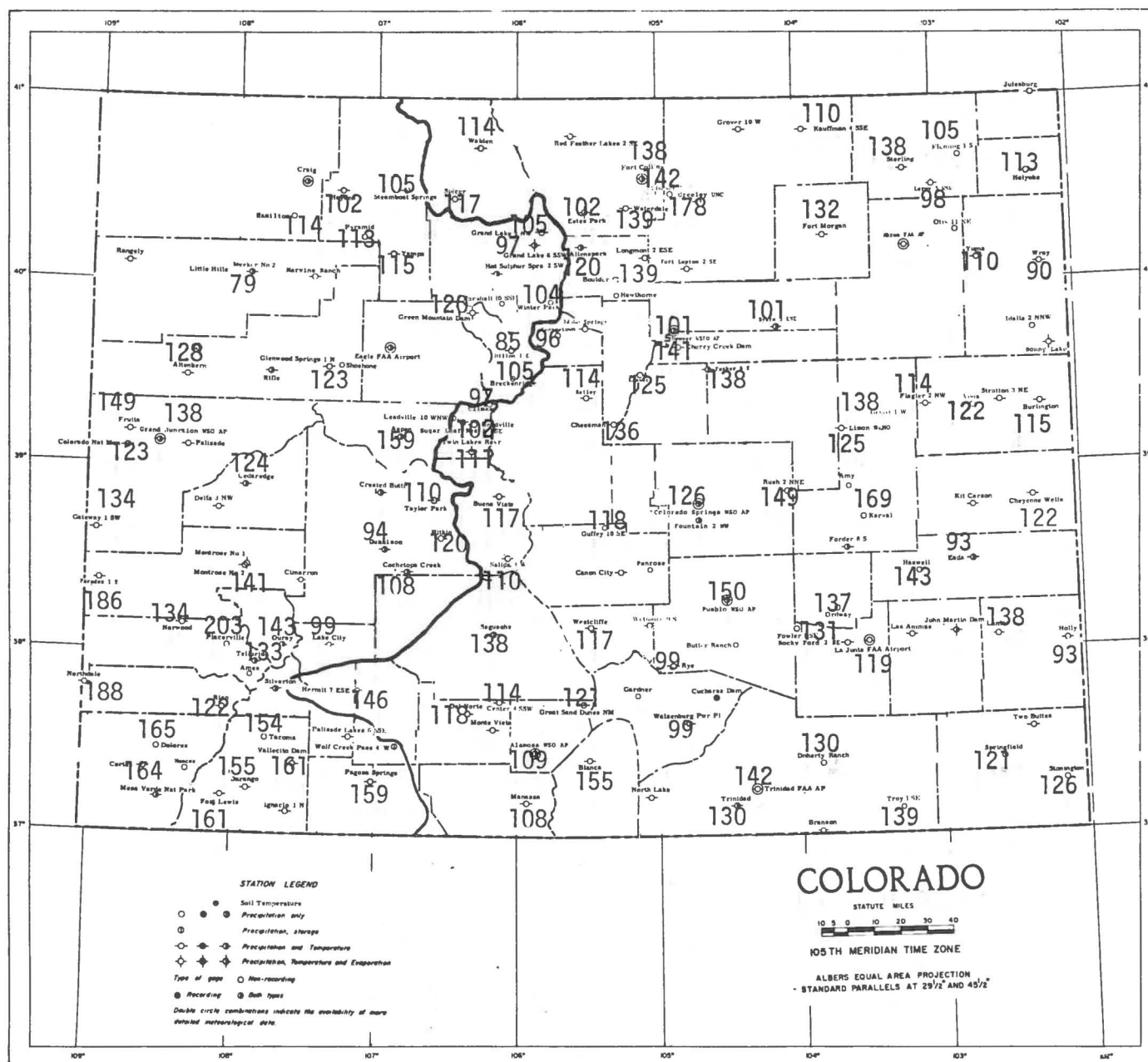


Figure 2. Precipitation for July 1979 as a percent of average (1951-1970).





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## COLORADO CLIMATE--AUGUST 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

August began hot and dry, but cool temperatures and plenty of rainfall, particularly east of the mountains, eventually dominated weather conditions.

The first week of August was sunny and extremely hot across all of Colorado. Lower elevations, both east and west of the Continental Divide, suffered through some of the hottest weather that has occurred in the last five years. On August 4th, Julesburg reported a high of 106° Fahrenheit. The following day Palisade also hit 106°. New records were set at several locations in the state including Denver and Alamosa. Even in the mountains, very warm temperatures were noted. Climax (11,300 feet above sea level) rarely experiences temperatures above 75°, but on August 5th the temperature reached 78°, and on 4 consecutive days the mercury climbed to at least 75°.

A prolonged period of cool, showery weather followed the sizzling heat wave. Beginning on August 7, and continuing for more than two weeks, a slow moving, moist, unstable air mass spread northward from Mexico across New Mexico and into Colorado and Wyoming. Showers and thunderstorms developed almost every day across the state, but heavy precipitation was limited to the eastern half of the state. Several storms were quite intense and produced hail and local flooding in some of the larger cities. From the 7th to the 24th, measurable rainfall occurred on 15 days in the Loveland-Fort Collins area. Denver received more than 0.50 inches of rain on 7 separate days. The monthly total of 5.85 inches made this the wettest August on record in Denver.

Temperatures were unseasonably cool throughout the middle of the month. Thick and surprisingly persistent cloud cover helped to hold the day time temperatures below 70° for several days in many areas. On August 14, the high temperature at Longmont only reached 57°. Along with the cool weather came the first snowfall in the Central and Northern Mountains. New snow on the 19th and 20th temporarily closed Trail Ridge Road. The first taste of winter was short lived, and the month ended with a week of warm and dry weather.

Temperatures for August are shown in Figure 1. The hot weather early in the month was offset by the long cool spell, and the resulting monthly temperatures were below average across practically the entire state. The greatest departures from average occurred east of the Divide where most locations were 2 to 3 degrees cooler than average. Since December 1978, there have only been two warmer than average months.

August precipitation totals and percents of average are shown in Figures 2 and 3, respectively. Heavy precipitation amounts were common from the Front Range eastward across the plains. Denver's 5.85 inch total was 424 percent of average. Sterling, with 5.50 inches, received more than 3 times the average August rainfall. The San Luis valley, the upper Colorado River drainage, and the upper Yampa valley all received about average precipitation for the month. However, the rest of the mountains and western valleys were drier than usual. Fruita recorded only 0.17 inches of rain, 14 percent of average.

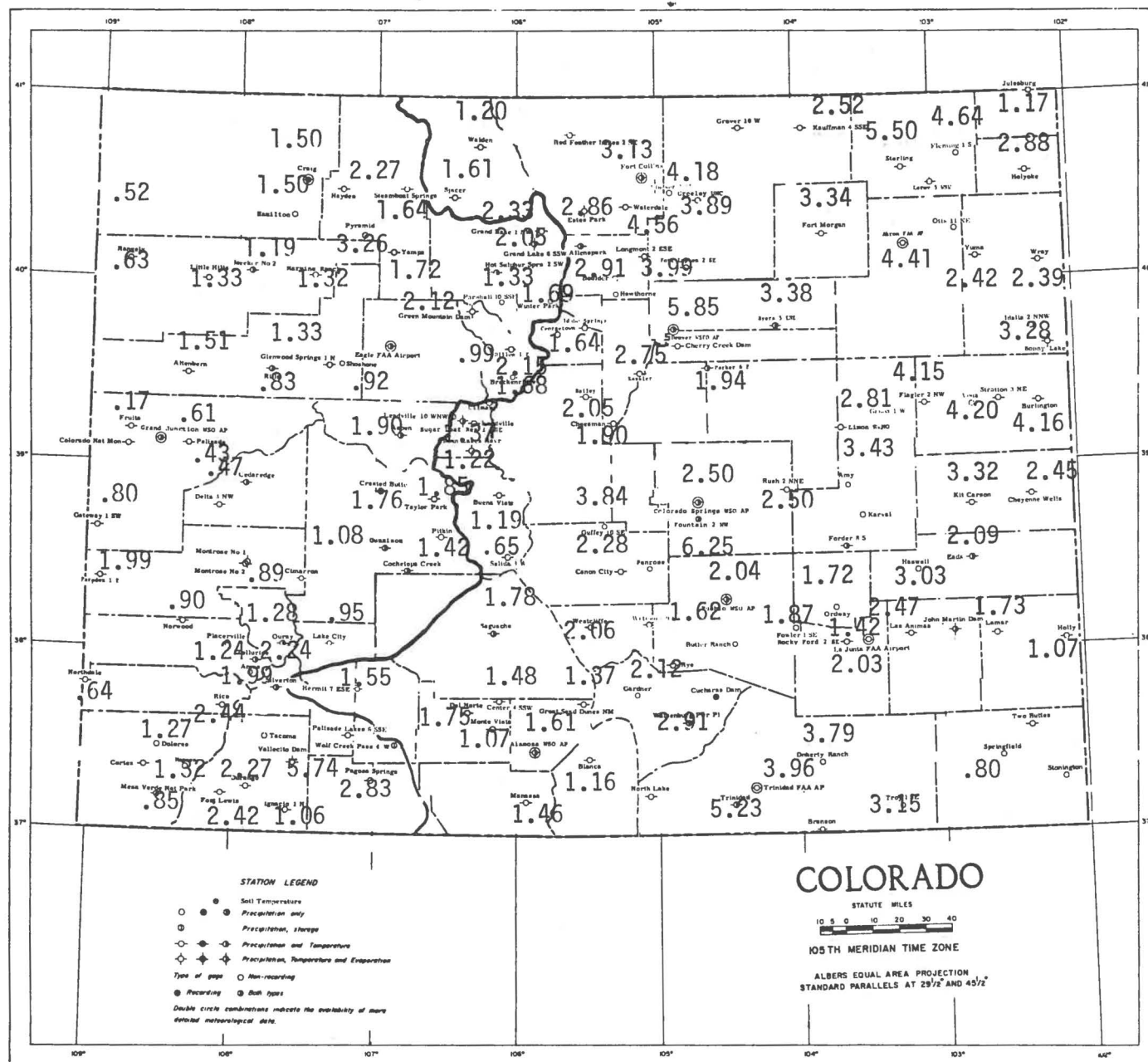
There is only one month remaining in the 1979 water year, and precipitation totals since last October continue to be near or above average nearly everywhere in the state (Figure 4). A relatively dry summer in the mountains and western valleys has reduced the percentages substantially but has had little effect on available water supplies.

Most areas east of the mountains are now considerably wetter than average. Greeley has been especially wet. More than 20 inches of precipitation has fallen there since October 1978, 196 percent of average.





Figure 2. August 1979 precipitation amounts (inches)



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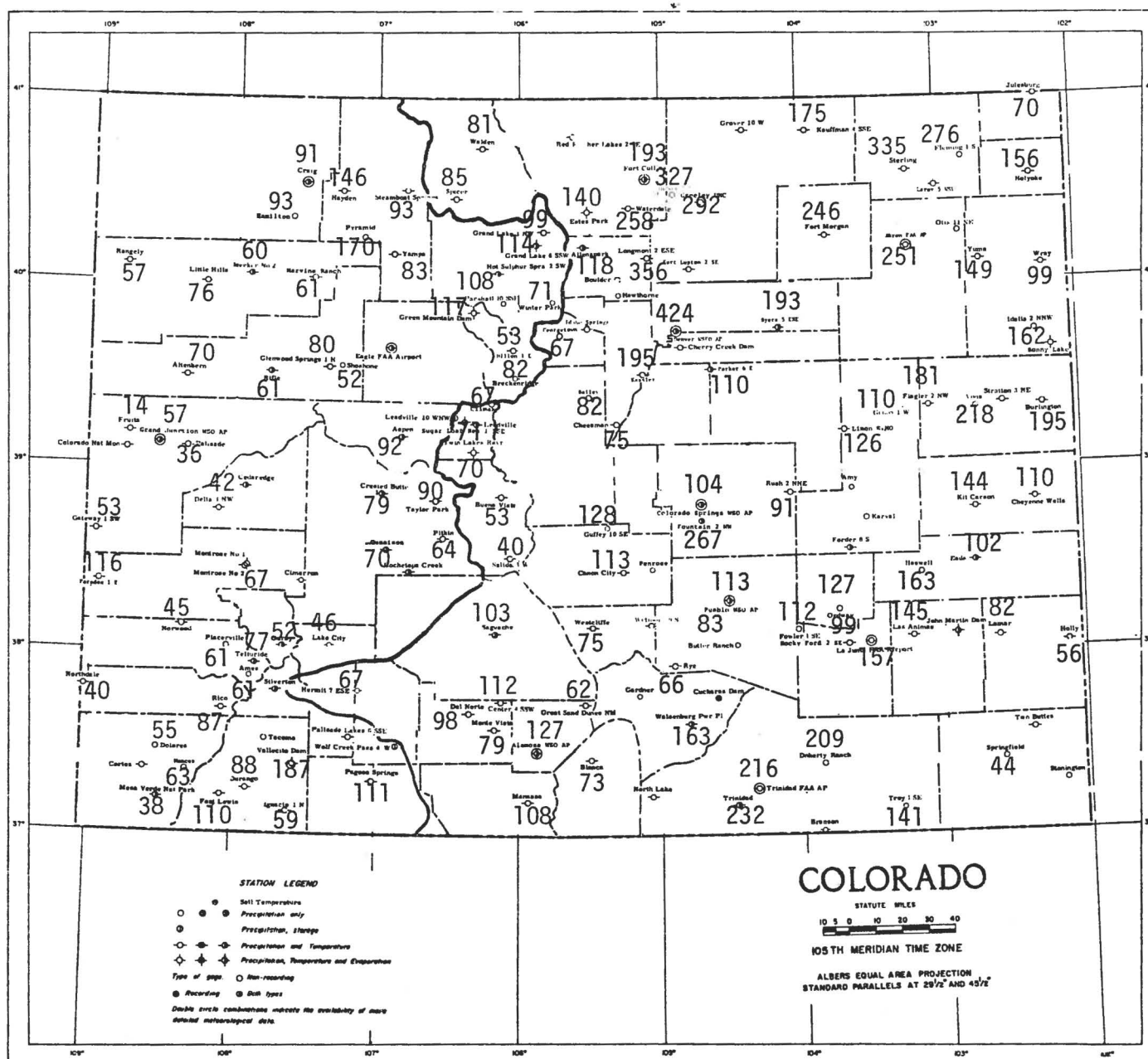
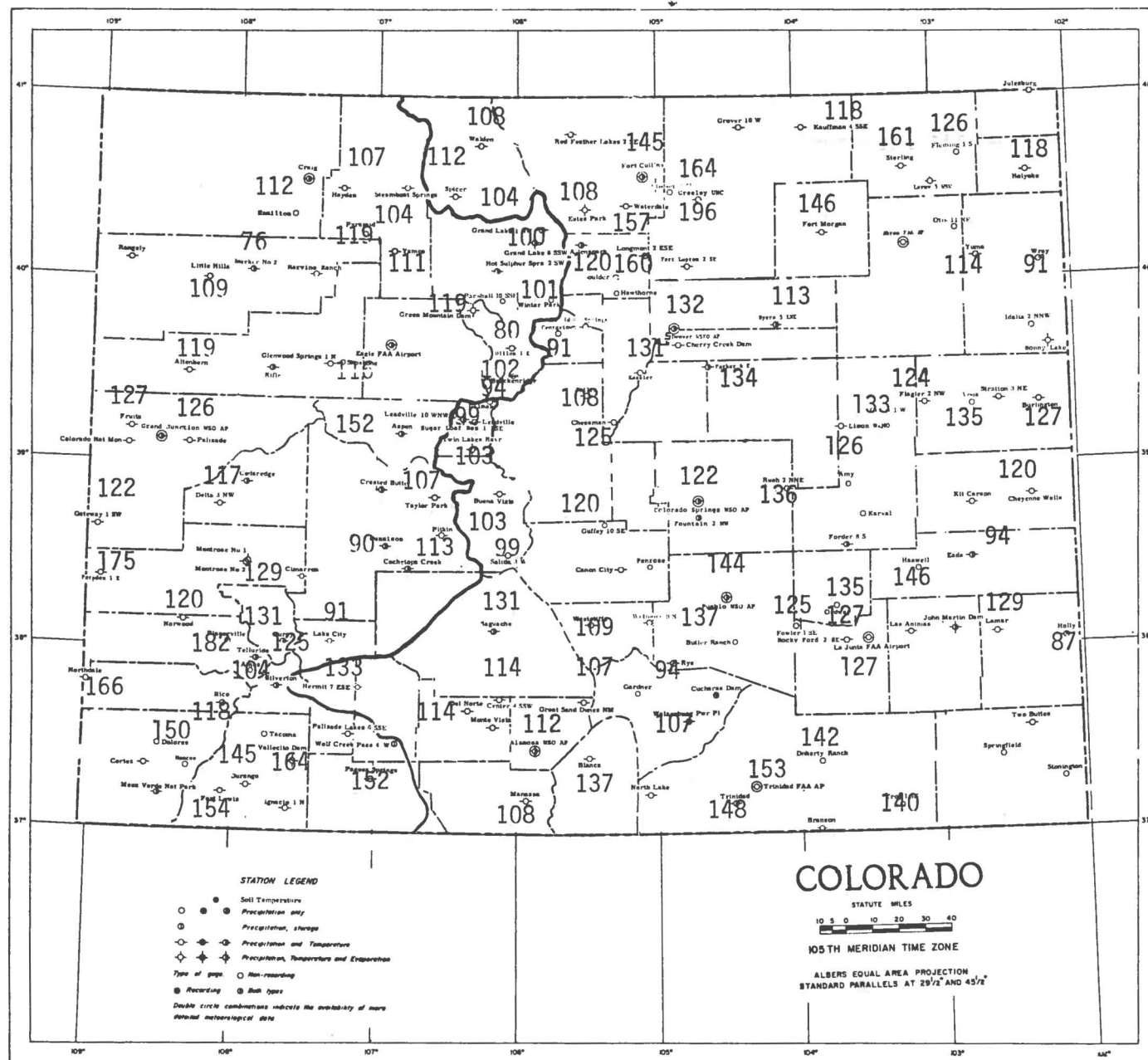


Figure 4. Precipitation for October 1978 through August 1979  
as a percent of average (1951-1970).



## COLORADO CLIMATE -- SEPTEMBER 1979

Colorado Climatology Office  
Department of Atmospheric Science  
Colorado State University

A persistent dry weather pattern over much of the center of the nation was responsible for the dry and delightfully warm September weather in Colorado. Conditions were perfect for most outdoor activities, but in the mountains the above average temperatures, abundant sunshine, and scanty precipitation worked together to increase the forest fire potential. The dry weather also caused some concern on the Eastern Plains as the new winter wheat crop began to emerge.

The first 10 days of the month brought sunshine and hot temperatures to all of the state. Temperatures in the 80's and 90's (Fahrenheit) were common, and several new record high temperatures were set. For example, on September 9 Alamosa, Colorado Springs, and Pueblo all set new records with high temperatures of 84°, 92°, and 98°, respectively. Julesburg, in northeastern Colorado, experienced the hottest reading in the state with 103° on both the 9th and 10th.

Cooler air slipped into northeastern Colorado on September 11 dropping daytime temperatures by more than 30 degrees in some areas. With the cooler air came scattered but rather light thundershower activity, particularly on the Eastern Plains. Late on the 13th, a disturbance in the upper atmosphere moved into Colorado from the northwest and set off widespread precipitation east of the Continental Divide--the only significant precipitation of the month. Steady cold rains developed along the Front Range and gradually spread southward. Some snow was reported at elevations above 8,000 feet. The heaviest precipitation was reported in the vicinity of Trinidad where as much as 1.75 inches of precipitation fell in 24 hours.



Following the rains, skies cleared and low temperatures dropped into the 30's on the plains and into the low 20's in the mountains on the 14th and 15th. Despite these chilly temperatures, most agricultural areas escaped without a killing frost. The remainder of the month was warm and dry across the state except for a few very light showers on the 20th and 21st and again on the 25th and 26th.

Temperatures for the month of September are shown in Figure 1. The week of cool weather in the middle of the month was unable to offset all of the very warm days. As a result, average temperatures for the month as a whole were considerably warmer than usual everywhere in the state. Monthly temperatures at Pueblo, Alamosa, Buena Vista, Gunnison, and Cortez were only about one degree warmer than average, but at several locations including Fort Morgan, Montrose, Meeker, and Grand Junction the monthly temperature was more than four degrees warmer than average. At Grand Junction this was the warmest September ever recorded. The clear skies and dry air resulted in very large day-to-night (diurnal) temperature differences, especially in the mountains. For example, daily high temperatures averaged 77.7° at Gunnison while the low temperatures at night averaged 29.2°, a difference of 48.5 degrees.

September precipitation amounts and precipitation as a percent of average are shown in Figures 2 and 3, respectively. All of Colorado was very dry with the exception of some Front Range areas and a few locations on the Eastern Plains. Practically the entire area west of the Divide received less than 20 percent of the average September precipitation. Several locations including Hot Sulphur Springs, Montrose, and Cortez recorded no measurable precipitation. Rainfall amounts east of the Divide were quite variable ranging from just 0.02 inches at Georgetown (one

percent of average) to 0.36 inches at Denver (29 percent of average) and up to 1.83 inches at the Trinidad airport (265 percent of average).

Precipitation as a percent of average for the summer of 1979 (June through September) is presented in Figure 4. The Front Range cities except for Colorado Springs were all much wetter than average, and most areas on the Eastern Plains also enjoyed an unusually wet summer. However, the western half of the state was dry. Only about 50 percent of the average summer precipitation fell in most areas, and at Colorado National Monument, near Grand Junction, only 1.02 inches of rain fell since June 1, 25 percent of average.

Precipitation for the 1979 water year as a percent of average is summarized in Figure 5. Despite the dry summer in western Colorado the state enjoyed a good year. The northwest quarter of the state ended up near average for the year while the southwest was well above average. The Eastern Plains and Front Range areas were quite wet. Greeley received a total of 21.43 inches of precipitation for the year, nearly 10 inches more than average. Wolf Creek Pass gained the distinction of being the wettest recording station in the state. More than 70 inches of water-equivalent precipitation was measured, 30 inches more than average. The driest location was Brown's Park Wildlife Refuge in extreme northwest Colorado where only 7.02 inches of precipitation were recorded.



Figure 2. September 1979 precipitation amounts (inches).

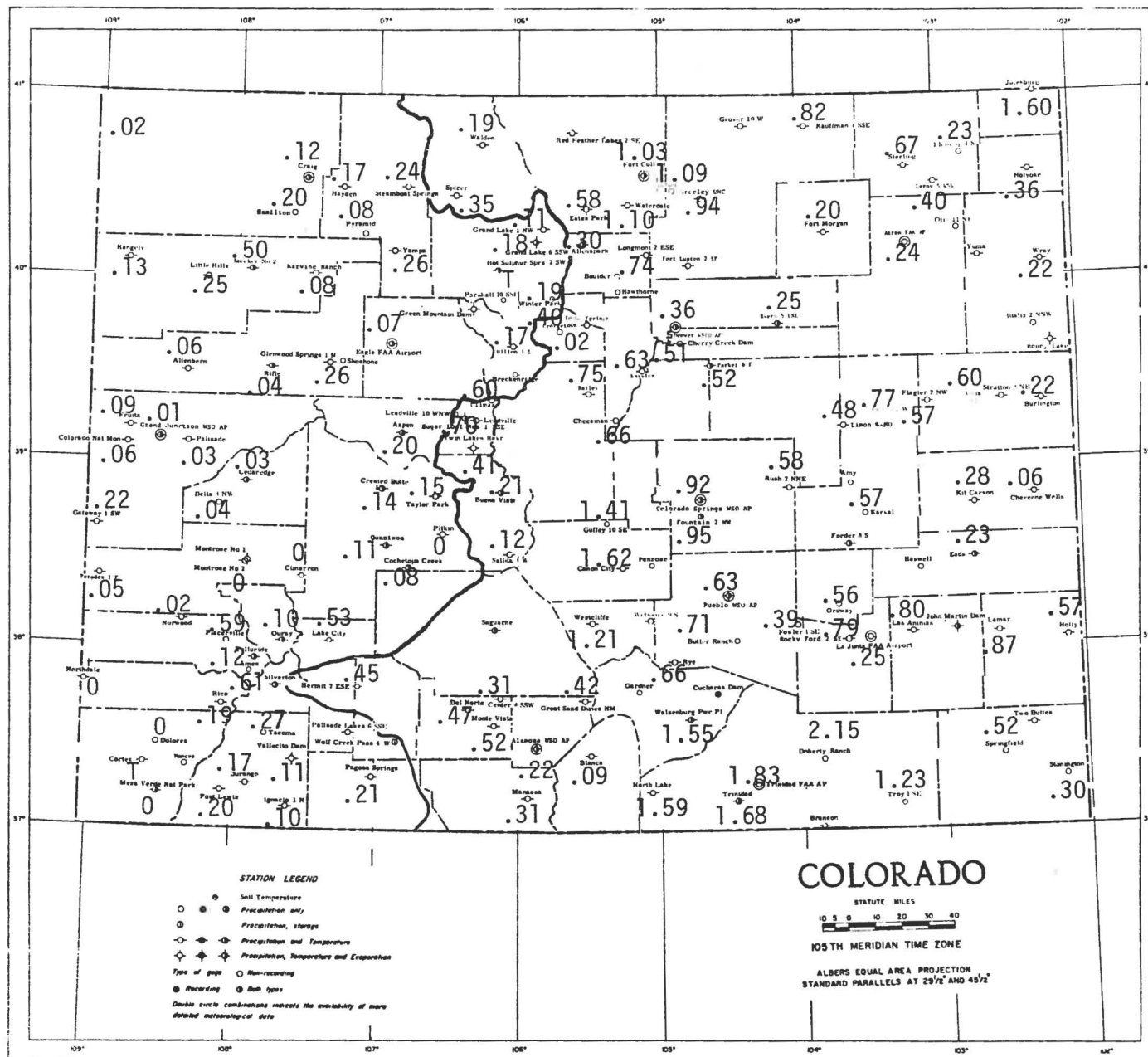


Figure 3. Precipitation for September 1979 as a percent of the 1951-1970 average.

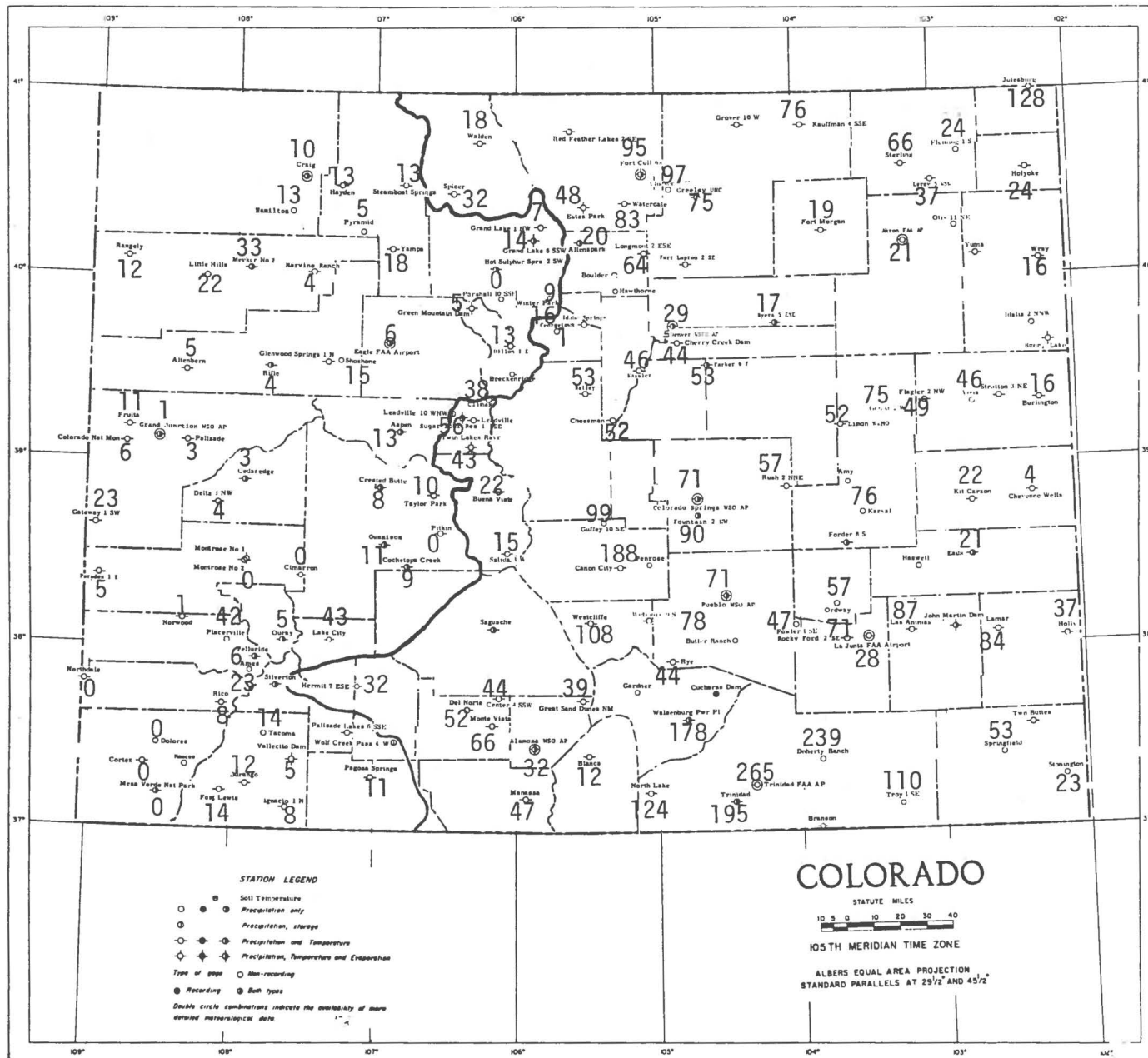




Figure 4. 1979 summer precipitation (June through September) as a percent of the 1951-1970 average.

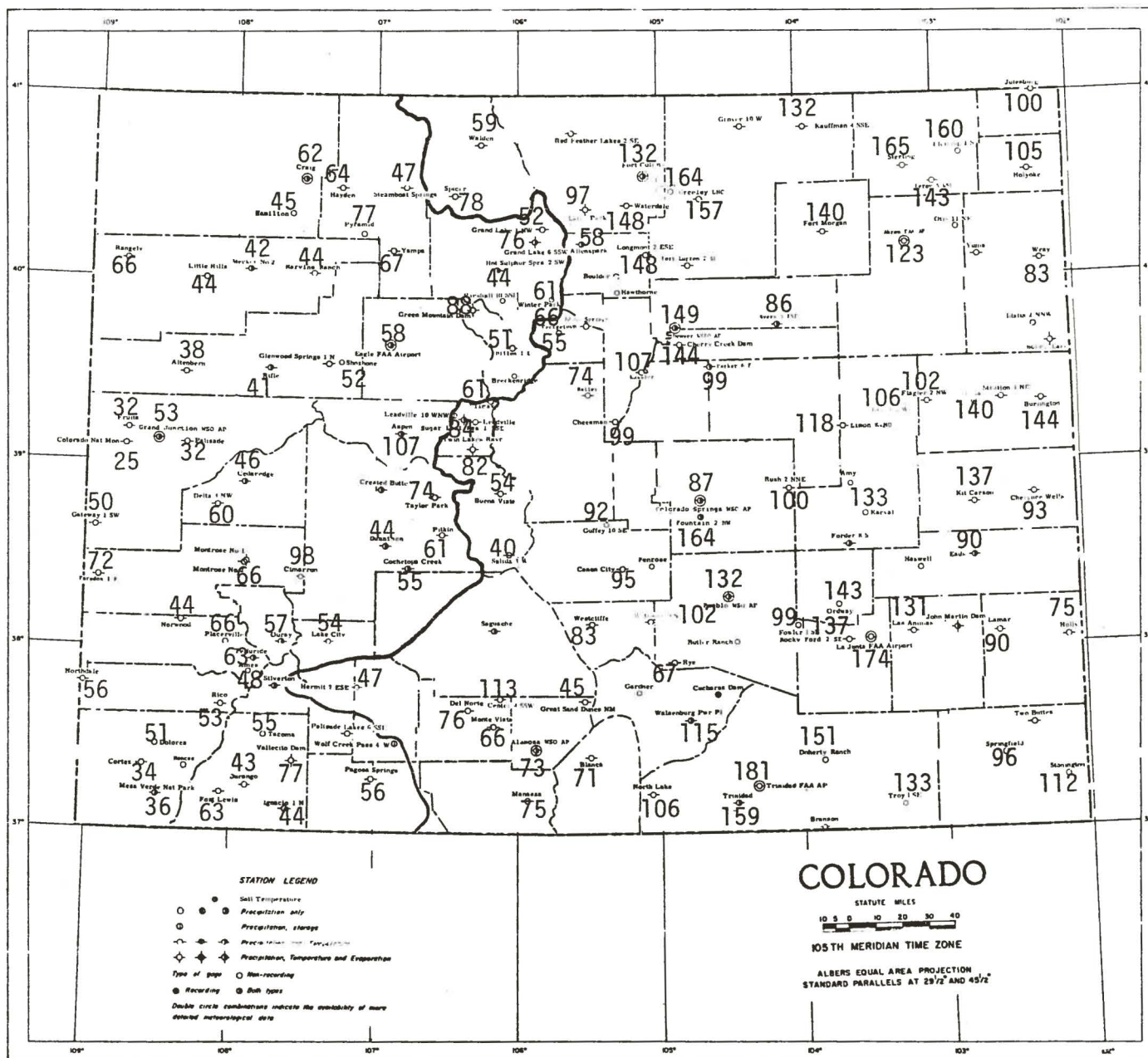


Figure 5. Precipitation for the 1979 Water Year (October 1978 through September 1979) as a percent of the 1951-1970 average.

