

CLIMATOLOGICAL DATA FOR MAY, 1913.

DISTRICT NO. 10, GREAT BASIN.

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GENERAL SUMMARY.

Favorable conditions prevailed generally throughout the whole month of May, 1913. There was a small excess in temperatures, which was beneficial, and a deficiency in precipitation, which, however, was not harmful. In the Utah area there were some frosts during the forepart of the month and ice occurred in the mountain districts. The frost did a great deal of damage, though several communities reported no losses.

The average number of rainy days was 3, clear days 14, partly cloudy days 10, and cloudy days 7.

TEMPERATURE.

For the district as a whole the temperature for the month of May averaged 55.9°, which is 1.3° below normal. The local mean temperatures ranged from 43.7° at Woodruff, Utah, to 71.° at Jean, Nev., but the means at the majority of stations averaged between 50° and 60°. Almost all stations reported averages above normal. The lowest means occurred in the Idaho and Wyoming areas, and the highest in the Utah and southern portion of the Nevada areas.

Deficiencies in temperature occurred at a few scattered stations both in the Utah and Nevada areas, while excesses which were not large were the rule. The greatest local deficiency was 3.9° at Woodruff, Utah, where the mean was 43.7°; and the greatest excess was 5.6° at Burns, Oreg., where the mean was 54.4°.

The forepart of the month was cool, while the latter part was warm. The lowest temperatures occurred on the 1st, 2d, and 3d, and on those days ranged from 5° at Tecoma, Nev., to 35° at Midlake, Utah, and Lahontan, Nev. After the 3d a change to warmer set in, but the temperature rose slowly until the beginning of the last decade, which was the warmest of the month, the temperatures averaging above normal.

The highest temperatures occurred on various dates from the 22d to the end of the month, but generally on the 24th, 25th, and 26th. The highest temperatures for the month in the respective States or parts of States were: 86° on the 28th at Cokeville, Wyo.; 92° on the 31st at Grace, Idaho; 107° on the 26th at Midvale, Utah; 98° on the 22d at Jean, Nev.; 89° on the 26th at Burns, Oreg., and 74° on the 16th at Bridgeport and on the 24th at Tahoe, Cal.

PRECIPITATION.

The precipitation for the district averaged 0.96 inch, which is 0.38 inch below normal. The precipitation chart shows quite heavy amounts in the northern portion of the Utah and western portion of the Nevada area, but in the former section all the amounts were below normal.

In the Nevada area the rainfall for the month was the heaviest May rainfall since 1906. In the Utah area only one-half the normal fell. While no droughty conditions developed, moisture was badly needed at the close of the month, the creeks having fallen rapidly despite the warm weather's effect on the mountain snow after the 15th.

Light showers fell on the 1st and 2d in the extreme northeastern portion of the district. Showers began again on the 6th in the Oregon and California areas, becoming somewhat general on the 13th in Utah, and again on the 18th with scattered showers on adjacent dates. In the Oregon, Nevada, and California areas, rain was heaviest during the last five days of the month, but light in other parts of the district. On the 27th thunderstorms occurred at many stations, and lightning struck the Government telephone and power line at Spanish Fork, Utah, doing damage to some electrical equipment, and a team was reported killed by lightning a mile distant from that place.

SNOW SURVEY OF BIG COTTONWOOD WATERSHED.

By H. K. BURTON, Assistant Engineer, assisted by W. A. RICHMOND.

During the month of April, 1913, a snow survey was made of Big Cottonwood Canyon. The party, consisting of five men and a team, with complete equipment for two parties, left the city April 23, returning May 3.

The objects of the survey were to determine the depth and density of the snow in the main forks of the canyon, the approximate surface supply at the beginning of the melting season, the physical condition of the snow, and the condition of the ground surface beneath the snow layer.

The information thus obtained will be of relative value for this year only, as we have but the survey of 1912 for comparison, and the conditions this year differ greatly from what were found then.

The observations should be continued for several years in order to get data for the reliable calculation of the available water supply.

From the first camp at Maxfield Lodge trips were made to the head of Broads Fork; Mill B, South Fork; and Mineral Fork. At frequent intervals soundings of depth were taken by means of a graduated steel-pointed rod.

At representative points measurements were made of the depth and density of the snow by the use of graduated galvanized-iron tubes, one set being 2 inches and the other 3 inches in diameter. The density determination consisted of weighing the tube and the inclosed core of snow on a spring balance so graduated that the equivalent in inches of water could be read off directly.

The second camp was made at the United States planting station, where trips were made to the head of Mill D, South Fork; Mill D, North Fork; Days Fork; Silver Fork; and Willow Patch Fork.

The third camp was made at Brighton, from which Mill F, East Fork; Brighton Basin; and the head of Mill F, South Fork, were thoroughly covered.

In addition to the numerous soundings of depth there were 120 density measurements made throughout the main canyon and various forks. The measurements were made at elevations ranging from 6,300 to 9,600 feet, and the depth of snow varied from 1 to 9 feet.

The following table gives the number of soundings, average depth, water equivalent, density, acre-feet, and square miles for each of the forks, and from these data the conditions in Bear Trap Fork and the north side of the canyon from Mill B, North Fork, to Willow Patch, where the snow lay in patches, were estimated:

Location.	Elevation.	Number of soundings.	Average depth.		Water equivalent.	Per cent density.	Acre-feet.	Square miles.
			Feet.	Inches.				
Broads Fork.....	6,300-9,600	10	3	8	17.41	37.0	1,952.7	2.1
Mill B, South Fork.....	6,640-9,050	13	4	1	14.05	35.9	2,158.1	2.4
Mineral Fork.....	6,880-8,530	8	3	4	14.70	36.1	1,489.8	1.9
Mill D, South Fork.....	7,075-9,400	20	3	9	18.78	38.8	5,178.3	5.17
Mill D, North Fork.....	7,320-8,600	9	3	4	12.44	34.0	1,679.1	2.53
Days Fork.....	7,470-8,940	10	4	8	22.05	38.9	2,658.4	2.26
Silver Fork.....	7,700-9,500	9	4	1	18.46	38.9	2,086.8	2.12
Willow Patch Fork.....	7,750-8,850	6	3	6	14.80	38.4	1,081.1	1.37
Mill F, East Fork.....	8,150-9,250	8	5	1	23.11	38.2	1,472.2	1.6
Main Canyon and Brighton Basin.....	8,700-9,540	27	5	4	23.42	37.5	8,486.3	6.8
Bear Trap Fork.....	7,550-8,750	0	3	5	15.33	37.4	1,528.7	2.16
North side, Mill B to Willow Patch.....	6,700-9,000	0	3	0	13.46	37.4	1,433.6	2.0
Total.....		120	..	..	..	..	31,705.1	32.41
Average.....		..	3	11	18.34	37.4	..	..
Over total watershed.....		..	..	..	12.26	..	31,705.1	48.5
Over total watershed for 1912.....		..	..	..	21.5	..	..	..

The water equivalent is 12.26 inches for the total watershed of 48.5 square miles.

The water equivalent for the entire watershed for 1912 was 21.5 inches.

From information gathered from residents of the canyon, the snowfall was unusually light this year, most of it coming in February and March. This late snow is already going very fast in the lower portions of the canyon. At the head of the various forks and around the higher lakes the difference in the snowfall was not so great, being about 80 per cent of what was found there last year. The snow was well packed and the ground in good condition to receive the water.

The north face of the main canyon from the mouth of Mill D, North Fork, was practically bare. Above Mill D north the snow increased in depth to 3 feet 4 inches at the Brighton Hotel.

Along the bottom of the canyon six slides had come down across the road between Mill B, South Fork, and the Maxfield mine, but the first snow in place was found at Argenta, where it appeared in patches, increasing to the forestry station, at which point the snow was about 1 foot deep.

In all of the south forks the usual conditions of snowslides were found, where the snow had slid off the precipitous sides of the canyons, packing solidly in the bottom of the gulches.

The general conditions would indicate that there will be no high water this spring.

The snow in the higher portions of the watershed, being well packed, should come off more slowly, and the ground being in good condition to receive and hold the water, it will help our late summer supply to some extent, but the general conditions would indicate a lower flow during the late summer than we had last year.

SNOW SURVEY ON POLE CREEK WATERSHED, SANPETE COUNTY, UTAH.

By B. F. ELIASON, Cooperative Observer, Moroni, Utah.

The area covered by the Pole Canyon snow survey was more limited than last year, but the survey was more thoroughly done, because last season only a measuring stick was used, while this year a snow density tube, Weather Bureau pattern, was used in addition.

The work was done April 14, this year, and last year on April 29. Where the snow measured 18 inches last year, this year it measured 15 inches, equaling 4.1 inches of water, or a density of 27 per cent. This was due to the very saturated condition of the snow, the day being clear and abnormally warm. The snow was solidly crusted last year, but this year it was soft, breaking under the weight of my dog, or even smaller animals.

Following the old road up the wash or canyon from here, the conditions were practically the same as last year. The snow increased with elevation, and the layer was heavier on the shady slopes than elsewhere. The outfit was heavier and more cumbersome than last year, so I did not deploy from Pole Creek. The course this year from the left-hand fork of Pole Creek was due north to Jack's Springs, across the bare side, which last year was covered with snow.

The snow in the vicinity of Jack's Springs averaged 33.6 inches from a series of 12 measurements, and contained 10.4 inches of water, whereas last year there was only 5.2 inches of snow. From this point to the head of right-hand fork of Pole the snow was practically the same as that at Jack's Springs, averaging 33.8 inches, with a water equivalent of 10.7 inches. Last year there was about 40 inches of snow in this region. Monument Peak and the Birch Creek drainage area were not visited, but on the return trip the flat below the lake at the junction of the lake water with that from the west and Jack's Springs was visited, and I found the snow 28 inches deep, carrying 8.7 inches of water, while last year there was 40 inches of snow there.

The snow on Dutchman's Flat measured 26 inches and contained 7.8 inches of water. Last year it was 28 inches deep and quite solid as it faced the sun. This snow gives us our earliest water, and is therefore important, as the later snow is lost by seepage and evaporation.

Dry Lake Flat, 500 yards west of here, carried snow to the depth of 31.5 inches, and contained 9.5 inches of water. The lake, which is dry during the summer, was partly full at the time of the visit. The route then took a course west up the left-hand fork of Pole Creek. Here the snow was 28 inches deep, with 9 inches of water, while last year it was 32 inches deep.

The trip was a success as a help in the future, standardizing of our farm operations as governed by the water supply. The snow tube and balance were much superior to the measuring stick alone as used last year. This year the actual water equivalent of the snow layer was obtained.