CLIMATIC OBSERVATIONS DURING SPRING AND EARLY SUMMER 1959, LAKE PETERS, ALASKA

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Meteorological measurements and observations were recorded from 29 April to 27 August. From 29 April to 1 July observations were made three times daily, at 0800, 1400, and 2000 hours AST. After 1 July observations were made on a more frequent basis, e.g., sometimes as often as bi-hourly for a 24-hour period. Data gathered from 29 April to 30 June will be discussed here. Data taken after 30 June 1959 have not been fully analyzed, and only part of it will be used in this paper.

Without considering the meteorological data, it was quite obvious that the spring and summer of 1959 were colder than in 1958. This is based on personal observations of men who were in this area in both years. For example, in 1958 Lake Peters and Lake Schrader were entirely free of ice on the 28th of June. In 1959, however, it was not until 27 July, almost one month later, that both lakes were ice-free. Also, snow was visible on Mt. Mary, directly across Lake Peters from the camp, throughout the summer of 1959; whereas snow seldom appeared on this peak in 1958. Finally, no snowfall was recorded at the meteorological station of Lake Peters in July or August 1958, while snow fell many times at the camp during these months in 1959.

It is presumptuous to state that one of these years was warmer than normal, while the other was colder than normal, when so little data for this area are available. Comparisons can be made with a Weather Bureau coastal station at Barter Island on the Arctic Ocean about 60 miles away. However, even these comparisons must be weighed carefully since meteorological data from a mountain and a coastal location can vary greatly within much shorter distances.

Temperature extremes recorded between 29 April and 26 August 1959 at Lake Peters were a high of 63.8°F on the 21st of June and a low of -12.8°F on the 2nd of May. The highest temperature recorded in the previous year was 65°F on 12 August, while no temperature below freezing was observed. During the 4-month period in 1959 the greatest amount of precipitation recorded for a 24-hour period was 0.60" on the 2nd of July. This compares with 0.45" from 0800 hours, 16 July to 0800 hours, 17 July in 1958. Gusts of wind as high as 40 mph from the south were recorded on the 17th of July in 1959. This was considerably higher than any winds recorded in 1958.

The mean temperature for May 1959 at the Lake Peters site was 21.9°F. The mean of the maximum temperatures for each day was 33.0°F, while the mean of the minimum was 10.8°F. The last day a below zero temperature was recorded was on 9 May when -2.8°F was observed. The mean temperature recorded at 0800 hours was 21.2°F. The means for the 1400 and 2000 observations were 28.3°F respectively.

Analyses of half-month periods yield interesting results. The means of the three daily observations for the first half of the month, May 1 - 15, are 11.7°F, 24.4°F, and 15.7°F. While all three means increase for the second half of May, they do not do so evenly. The means for the second half of the month, May 16 - 31, are 30.2°F, 31.8°F, and 29.5° F. Thus the mean temperature for the 0800 observation increased by 158 percent from the first half of the month to the last half. This compares with an increase of only 30 percent for the 1400 observation and 88 percent at 2000 hours.

This phenomenon can be partially explained by the longer period of sunshine which increases early morning and evening temperatures. However, this also means that the sun is higher at 1400 hours and should correspondingly increase the temperature at this observation. The prevailing cool winds off the ice of Lake Peters which frequently occur at mid-day are the most logical explanation for the slow temperature rise at 1400 hours.

The mean temperature for June 1959 at the Lake Peters station was 41.3°F. The mean of the maximum temperatures for each day was 51.8°F, while the mean of the minimums was 30.8°F. The first day that no below freezing temperature was recorded was on June 11th. Freezing temperatures, however, were recorded all through the summer months. For example, a minimum temperature of 25°F occurred on 13 July.

The highest temperature of the year, 63.8°F, was observed on the 21st of June. The 22nd and 23rd also had a maximum temperature slightly above 63°F. The mean temperature recorded at 0800 hours for the month of June was higher than the means for either of the two later observations. This reflects the trend that was shown in the May figures. On many days in June the temperature would rise in the morning as though a temperature of at least 70°F would be reached, only to drop five to ten degrees when the northerly wind started blowing over the ice of the lake in mid-morning. The mean temperatures for the three observations during the month of June were 45.2°F, 44.8°F and 43.2°F. With the small amount of precipitation and many clear days, June was by far the most pleasant month in the summer of 1959 at Lake Peters.

The wind direction at the Lake Peters camp site is very strongly controlled by the orientation of the valley, which is nearly north-south along the major axis. During the day, with the valley breeze established, a relatively strong wind blows from the north. This valley wind generally starts in the morning near 0900 hours and gradually diminishes, stopping about 2000 hours.

The nights were usually calm, although on some clear nights a light, downslope katabatic wind came from the mountains to the south. On a few occasions in the month of May a strong wind blew from the south in the middle of the night. These winds raised nighttime temperatures often as much as 15 to 20 degrees. At 2400 hours on 15 May, temperatures were from 18°F to 38°F in less than a half hour.

Mean wind speeds for the 0800, 1400, and 2000 observations during the month of May were 3.6, 6.9, and 3.8 mph respectively. The table on the next page shows the frequency of calms and winds from the northern quadrant and southern quadrant, as recorded at the three observation times during the months of May and June. The

June figures are in parentheses.

	North	South	Calm
0800	15 (4)	3 (3)	13 (23)
1400	26 (27)	1 (1)	4 (2)
2000	12 (12)	5 (2)	14 (16)

Wind directions and speeds changed very little from May to June. The mean wind speeds for the three observations in June were 1.5, 9.2, and 3.1 mph respectively. The wind again prevailed from the north for the 1400 observations. At 2000 hours, half of the time there was a northerly wind and most of the remainder a calm was observed. Calms were recorded for the 0800 observation on most of the days in June. In the months of July and August southerly winds with gusts of up to 40 mph blew from the south for periods of more than 2 days at a time. Nothing approaching this occurred in May or June.

All of the precipitation in May fell in the form of light snow, on 13 days. On only five of these days was the precipitation heavy enough and of a sufficiently long period to be measurable. The largest amount to fall in a 24-hour period was 1 inch of snow on the 22nd. This was equivalent to 0.08 inches of precipitation. The total for the entire month was only 0.12 inches.

In direct contrast, all of the precipitation that fell in the month of June was light rain or drizzle. In some cases thunder accompanied the rain storms, and once during July lightning was observed. There were ten days with precipitation in June and on seven of these the total was measurable. The greatest amount of rain for a 24-hour period in June was 0.38 inches on the 12th. The total rainfall for the entire month of June was 1.12 inches.

Although all the data for July are not as yet available there is a precipitation record through the middle of the month. July, unlike both May and June, had both rain and snow. The first half of July was extremely wet and cold when compared to the last half of June. Measurable precipitation fell on each of the first twelve days of July. There was no precipitation on the 13th, but rain and snow again fell on the 14th and 15th. Thus up to the 15th of the month a total of 1.98 inches of precipitation had fallen with only one day in that period being without some form of measurable precipitation. The heaviest total recorded was on the 2nd of July when 0.60 inches fell. This rain came when several storms moved north down the valley, one of them accompanied by high winds and hail.