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Lawrence R. Mayo, U.S. Geological Service

An improved precipitation map for Alaska

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Lawrence Mayo talked about revising the precipitation map for Alaska. He said there is a real need to understand Alaska's environment today to get at the water balance equation for the whole state. There is a lot of work going on with the water balance equation. Precipitation data has come mainly from the U.S. Weather Bureau at locations stationed at airfields and points of habitation in the state which are generally in low lying valleys or right next to the sea coast. A map based on that data would be biased and maps based on this data do state that precipitation can't be interpolated in mountainous areas. Alaska has a lot of mountainous areas and they must be dealt with. The easiest precipitation map is mean annual precipitation. Slideshow section of talk. He showed his work on the mean annual precipitation map for Alaska that he is currently creating. He described the instruments used for collecting data. Mountainous regions have a great deal of wind driven snow. Average precipitation of mountainous areas must be over large areas. The U.S.G.S. has been collecting data on snowpack. He talked about the importance and functions of windscreens to collect precipitation. Snow pit data is also collected. Evaporation and stream runoff data is also collected. He said the mountainous environment is much more active hydrologically than lower areas such as Fairbanks. All of this water balance information is all leading to a revised picture of the total precipitation for the state. Storm tracks, vegetation distribution, glaciers and other information can lead to patterning information so precipitation contours can be created that does not overlook important principles. He talked about climatic zones roughly shaped to reflect the gross vegetation patterns and discusses different habitats found in the state. He discusses the pattern that large snowdrifts make which reflect the direction of air mass movement. They have been mapped for several different areas in the state. The final result is a precipitation map that reflects information from 250 annual precipitation measurements at points with reliable gauges. Other gauges have been operated by other agencies. 117 stream gauging stations have been used. Evaporation data has been used in coastal areas. He talks about the distribution of precipitation in the state. The state has four meters of precipitation in the coastal mountains, two meters in the Alaska Range and one meter in the Brooks Range with lesser amounts in the precipitation shadow areas. Question from the audience about precipitation at higher mountain peaks. Mr. Brewer asked about snow data on the North Slope.

The rest of the papers in the Section: Physical aspects of Arctic development can be found in the Proceedings of the Twentieth Alaska Science Conference (Q 180 U5 A66a 20th 1969).