Identifying the Water Source of the Accumulation Zones for the Juneau Icefield.

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Currently the evaporative origin of precipitation in the accumulation zones on the Juneau Icefield is unknown. The Juneau Icefield is a network of glaciers located in the Coast Mountain Range north of Juneau, Alaska. The ratios of stable isotopes and in snow and ice record fractionation are useful proxies for the temperature of evaporation and condensation. The chemical makeup of the snow can also help identify atmospheric transport paths. During the 2018 summer season, we collected stable isotope and bulk chemistry samples from the Southwest, Northwest, and main branches of Taku Glacier, as well as the Matthes Glacier and the Llwellyn - Matthes Divide. Surface samples were taken over transects and vertical samples were taken from multiple snow pits at 50 cm depth intervals. Water isotope samples were analyzed with laser spectroscopy and bulk chemistry was measured with P-XRF. By using and ratios collected in 2018 as well as in 2012 and 2014-2017, together with isotope modeling, wind trajectory modeling, and climate reanalysis data, we identified the moisture source of the Juneau Icefield. This provides valuable insights into the relationships between the large-scale atmospheric circulation and the local climate of the Juneau Icefield.