



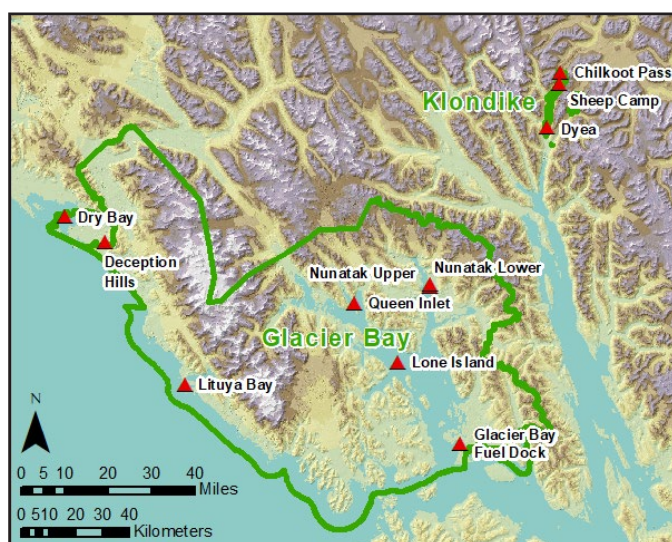
Weather and Climate Monitoring 2020

Weather and climate (long-term averages and variations of weather) are important for a wide variety of organisms, including people. Beyond helping us decide what to wear, knowing about the weather aids in planning trips to remote backcountry sites in our national parks by boat or airplane. Weather and climate are also crucially important to glaciers in parks. Winter snowfall adds mass to glaciers while warm summer temperatures melt glacial ice, leading to glacier mass loss. Most of the glaciers in parks have been retreating since the Little Ice Age ended about 150 years ago, but the retreat is expected to continue well into the future as human-caused climate change continues.

Methods

Operating weather stations allows us to simultaneously aid operations of the parks and provide baseline measurements of climate change.

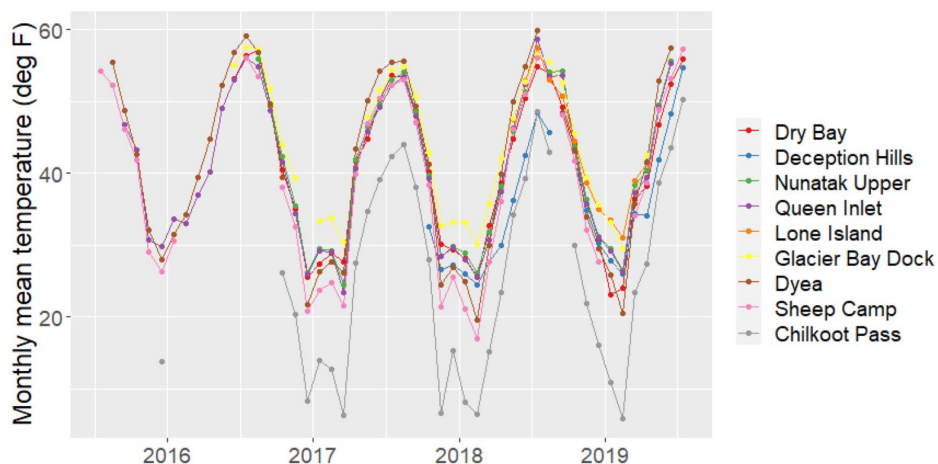
We maintain 8 weather stations in strategic locations across Glacier Bay National Park and Preserve and 3 in Klondike Gold Rush National Historical Park. Each weather station records air temperature, relative humidity, wind speed, wind direction, rainfall, snow depth, solar radiation, and soil temperature. Data are uploaded via satellite so that measurements can be viewed in near real-time by the public and park staff. Data are also stored on board the climate station and later downloaded and archived for quality control and analysis of long-term trends in weather and climate.



Weather station locations in Southeast Alaska.

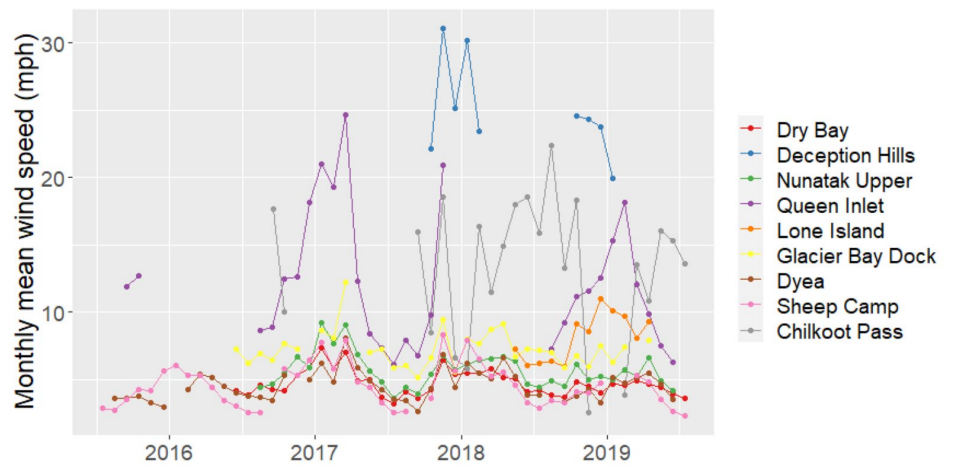
Key Results

- The summer of 2017 was cooler than either 2016 or 2018. For example, the Glacier Bay Dock station mean temperature for June, July, and August 2016 was 56.7 degrees Fahrenheit, 2017 was 53.7, and 2018 was 55.0.
- High-elevation stations (especially Chilkoot Pass at 4,200 feet) have cooler temperatures than low-elevation stations, as expected. Winter temperatures are usually in the 20s and summer temperatures are in the 50s.



Monthly average temperatures by weather station, 2015-2019.

- Deception Hills, Queen Inlet, and Chilkoot Pass are the windiest sites—so windy that multiple wind sensors have been destroyed. Low-elevation, forested sites have the lowest winds but show faster winds in winter and calmer conditions in summer.
- These stations do not have long enough records to assess climate trends at this point. Through comparisons with long-term stations in Juneau and Yakutat, we hope to be able to estimate recent climate in Southeast Alaska parks. Other researchers have been working on longer-term climate changes too, for example, by looking at variations in tree rings.



Monthly average wind speeds by weather station, 2015-2019.

Did you Know?

- The fastest wind speeds measured in 2019 were over 70 mph at the Deception Hills weather station.
- Our weather stations fill a gap in observations that would otherwise span roughly 200 miles from Juneau to Yakutat.

Reports and Data Access

The data from these stations and detailed descriptions of station installation and data processing are available from the NPS Data Store.

<https://irma.nps.gov/Datastore/Reference/Profile/2271988>

<https://irma.nps.gov/Datastore/Reference/Profile/2238818>

Near real-time data are available from NOAA at:

<https://www.weather.gov/ajk/LatestObsSEAK>

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The weather station at Deception Hills, Glacier Bay National Park and Preserve.