



Weather & Climate

Glacier Bay National Park and Preserve
Klondike Gold Rush National Historical Park
Sitka National Historical Park

Importance

Weather and climate differ in their time scales. Weather is the current condition while climate refers to the long-term patterns of precipitation, temperature, and other atmospheric variables. Climate is widely recognized as one of the most fundamental drivers of ecological condition, and climate data are critical to our understanding of ecological trends and variation. Alaska's climate is highly complex and varied, yet few weather monitoring stations exist outside of low elevation or populated areas. The Southeast Alaska Network (SEAN) weather and climate monitoring program collects, analyzes, and distributes data from weather monitoring stations that are representative of diverse altitudes and local conditions. In many cases, it will provide the only source of weather data in several remote locations. The data collected through this program will be applied to climate models and will help researchers understand trends observed through other monitoring efforts. Changes in climate are already resulting in local ecological shifts in Alaska (documented increases of 1.5 to 3°F in the last 60 years), and a thorough understanding of local climate trends will help scientists and park managers understand and better respond to the shifts.

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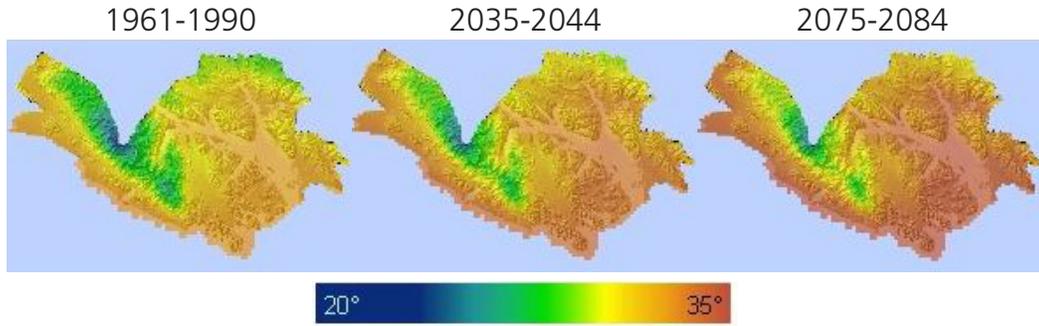
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Southeast Alaska is expected to continue warming over the next century. Precipitation is also likely to increase, but projections are less clear. Data from this monitoring effort will contribute to and strengthen predictive models, thus adding to overall understanding of effects and ecosystem responses to climate change. The figure at left shows the projected average annual temperature for Glacier Bay National Park and Preserve (GLBA). Annual temperatures across much of southeast Alaska are expected to transition from near freezing (~35°F) to well above freezing (~42°F).

Data and map courtesy of SNAP,
University of Alaska Fairbanks



Program Design

The specific objectives of this monitoring effort are to track the status and long-term trends of weather conditions at representative weather station locations, provide reliable climate data to other researchers, and contribute to larger scale climate monitoring and modeling efforts. Monitoring sites in SEAN parks have been selected to provide information from a variety of ecoregions and from higher elevations relative to the existing weather networks. Ease of access and minimal impact to visitor experience were also considered during site selections. Each weather monitoring unit records temperature, relative humidity, precipitation, wind speed and direction, and solar radiation. Weather and climate is a vital sign for all four Inventory and Monitoring Networks in Alaska, and the sampling design for the SEAN program is closely aligned with those of the other three networks (protocol and standard operating procedures currently in review). By aligning sampling design, including instrumentation and measurement intervals, data can be compared across the state. In addition to providing valuable scientific data, near real-time reporting of weather conditions is a valuable tool for safety planning and environmental awareness.



The Sheep Camp (above) and Chilkoot Pass weather stations in Klondike Gold Rush National Historical Park (KLGO) were installed in 2010. In 2011, Klondike Highway Summit and Taiya River stations in KLGO were upgraded and a station was field tested in GLBA. Stations for GLBA will be proposed and evaluated in 2012. A station at Goat Lake in KLGO is also planned for 2012. At Sitka, excellent coverage is offered by existing stations near park boundaries.