

Climate Monitoring

Network Parks Where Climate is Monitored

- All Pacific Island Network national park units

Importance: Driver of Ecosystem Processes

Climate is widely recognized as a major driver for terrestrial and marine ecosystems, affecting biotic as well as abiotic ecosystem characteristics and processes. Island ecosystems are particularly vulnerable to the effects of climate variability and change. Some examples of concerns in the PACN are: effects of increasing solar radiation and temperatures on coral reefs, the effects of prolonged El Nino-related droughts on groundwater supplies, and the spread of vector borne diseases due to changes in precipitation patterns.

Long-Term Monitoring

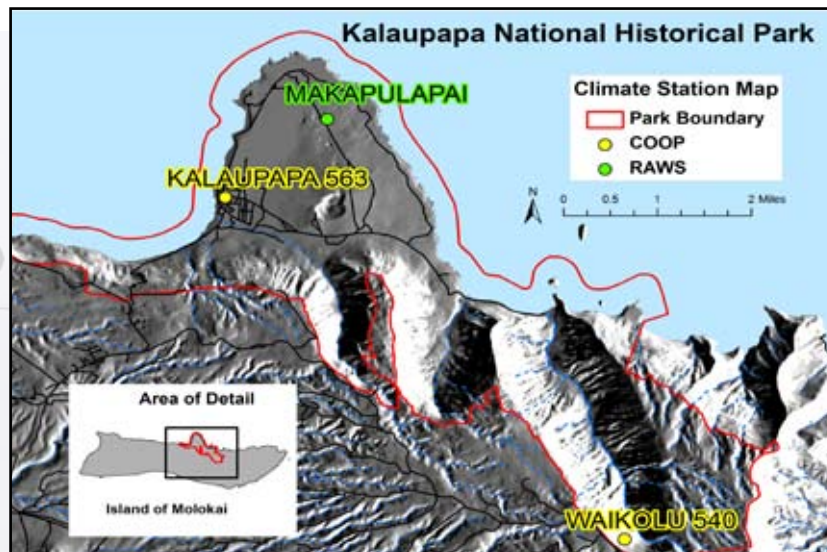
A number of different agencies and institutions have been operating weather stations in or near national park units and some have been collecting data for a long time. However, the data have not been available in a single location, and data analysis has not focused on the parks. This is where the PACN comes into the equation. I&M will add weather stations to some parks, as well as make use of existing weather stations belonging to a variety of climate monitoring organizations. The PACN will publish annual reports showing patterns of climate variables throughout the year. In addition, five year reports will include graphs and tables indicating long-term trends. Core weather parameters include: air temperature, precipitation, wind speed and direction, and relative humidity. Other variables measured may include solar radiation, soil moisture, soil temperature, and others.

Monitoring Objectives

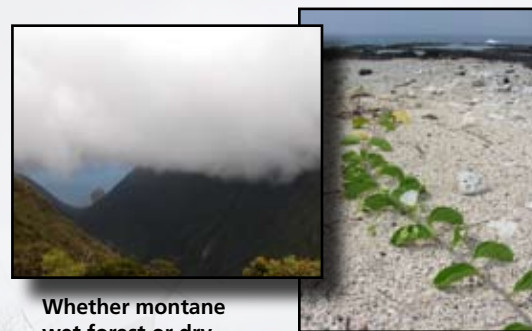
- Determine variability and long-term trends in climate for PACN parks through monthly and annual summaries of core weather parameters.
- Determine frequencies and patterns of extreme climatic conditions such as droughts, prolonged periods of unusual wind conditions, or tropical cyclones.

Management Applications

- Establishment of a climate monitoring network and database will enable the PACN to characterize an important physical component of park ecosystems. It will also provide valuable information on weather conditions for park managers.
- Long term monitoring will allow the PACN to generate reports on trends and patterns of climate parameters to aid in the analysis and interpretation of data from other resource monitoring efforts.



This map shows climate station locations in Kalaupapa National Historical Park. The stations belong to the National Weather Service Cooperative Observer Program (yellow) and the Remote Automated Weather Station network (green) that supports interagency fire management.



Whether montane wet forest or dry coastal habitat, climate profoundly influences species distribution and composition. Many special ecosystems which depend on vastly different climate conditions can be found in PACN parks. Long-term monitoring of climate is critically important to understanding changes in ecosystem characteristics.

