Pacific Storms Climatology Products

NOAA Integrated Data and Environmental Applications (IDEA) Center • Pacific Storms Climatology Products
1601 East– West Road, Honolulu, Hawaii 96848-1601 Phone: 808-944-7453 Fax: 808-944-7499

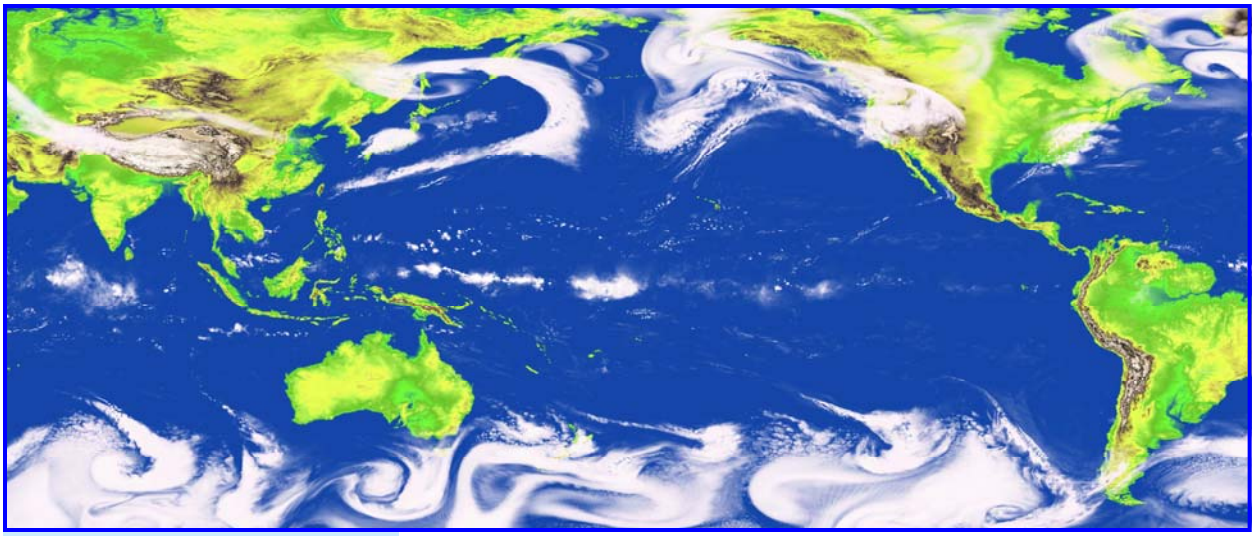


Image courtesy of NOAA's Geophysical Fluid Dynamics Laboratory

Pacific Storm Facts:

- In 1992 the island of Kauai in Hawaii was hit by Hurricane Iniki. The estimate of the physical damage was $2.5 billion.
- SuperTyphoon Pongsona struck the island of Guam on December 8, 2002. With over $700 million in damages, the typhoon was reportedly the most costly disaster in the entire U.S. during the year 2002.

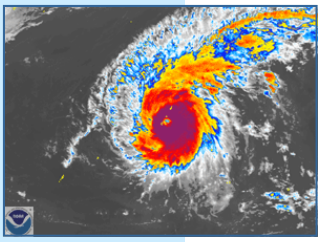


Photo courtesy of NOAA

- In October 2004, a powerful "explosively deepening" storm moved up the entire Alaska west coast, causing $30 million in damages in an area with only 50,000 people. A 10.5-foot water level surge went right over the sea wall at Nome and catastrophic erosion at many villages sent buildings into the sea, damaged airports, and contaminated drinking water. A "once in a hundred year" event, Nome was again flooded by a 10-foot surge in September 2005.

The same view during flooding in 2004, courtesy of Jerry Steiger, WSO Nome

Coastal storms, and the strong winds, heavy rains, and high seas that accompany them, pose a threat to the lives and livelihoods of the peoples of the Pacific.

Photo courtesy of the American Samoa Coastal Management Program

Communities and businesses, as well as government agencies and the scientific community need timely access to accurate information to manage coastal storm-related risks. The Pacific Storms Climatology Products project – Pacific Storms – under the direction of the NOAA National Climatic Data Center (NCDC) Integrated Data and Environmental Applications (IDEA) Center is addressing this need.

Pacific Storms is focused on improving our understanding of patterns and trends of storm frequency and intensity - "storminess" - within the Pacific region. Pacific Storms is exploring how the climate-related processes that govern extreme storm events are expressed within and between three thematic areas: *heavy rains*, *strong winds*, and *high seas*. Pacific Storms is developing a suite of extremes climatology-related data and information products that can be used by emergency managers, mitigation planners, government agencies and decision-makers in key sectors including transportation and communication, water and natural resource management, agriculture and fisheries, and recreation and tourism.

Nome boat harbor during a normal day, courtesy of John Lingaas, WFO Fairbanks NOAA's National Weather Service

Photo courtesy of NOAA

Go to:
http://www.pacificstormsclimatology.org/
to explore how extreme events have been expressed historically and may be expected to be expressed in a changing climate.

Last updated 5/14/10

Pacific Storms Climatology Products

NOAA Integrated Data and Environmental Applications (IDEA) Center • Pacific Storms Climatology Products
1601 East- West Road, Honolulu, Hawaii 96848-1601 Phone: 808-944-7453 Fax: 808-944-7499

More Pacific Storm Facts:

- March 2006 brought heavy rains to the main Hawaiian Islands, which led to flooding and landslides: a deadly dam break in northern Kauai, and a major sewage spill in Honolulu's Waikiki district. Record rainfall totals were reached in many areas of the state including Mount Waialeale on Kauai (one of the wettest places on earth), recorded its second wettest March on record with 93.71 inches of rain.

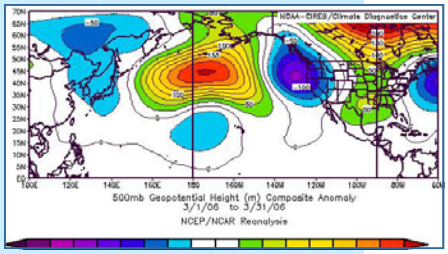


Image of the March 2006 low pressure system in the Pacific courtesy of NOAA's National Weather Service

- In American Samoa, the heaviest rainfall in nearly 20 years occurred during May 18–20, 2003. The territory had 10–15 inches of rainfall, most of it in 2–3 hours. Four people were killed by mudslides, one person was seriously injured, and three people were rescued from two homes buried by a mudslide.

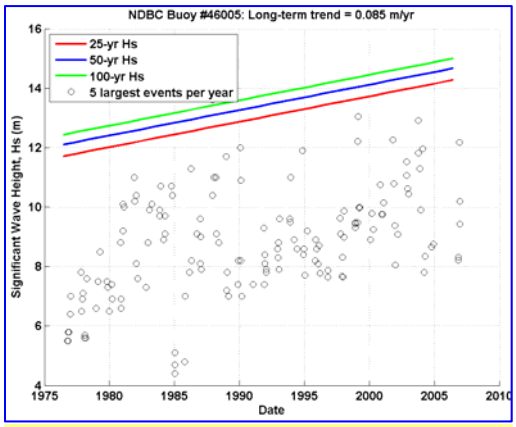
Photo courtesy of the American Samoa Coastal Management Program

- In Hawaii, more lives are lost annually to high surf than any other weather-related event. On one day in June 2003, the biggest south swell of the season closed the entrance to the Ala Wai Yacht Harbor, tossed boats and enthralled wave riders as lifeguards on Oahu performed 350 rescues at Waikiki and Ala Moana beaches and assisted another 600 ocean goers.

Photo courtesy of NOAA

Heavy Rains, Strong Winds, and High Seas

Theme-specific data integration and product development teams have been formed to conduct analyses of historical records collected throughout the Pacific region. These teams are comprised of recognized agency and university-based experts. They include representatives from NOAA's National Climatic Data Center (NCDC) as well as the University of Hawaii, University of Alaska, University of Guam, and Oregon State University. Sources of information include NCDC's Integrated Surface Hourly (ISH) mean sea level pressure (MSLP) and wind speed dataset and Global Historical Climate Network-Daily (GHCN-D) precipitation dataset; the National Data Buoy Center (NDBC) and the SCRIPPS Institution of Oceanography Coastal Data Information (CDIP) wave buoy dataset; and the University of Hawaii Sea Level Center (UHSLC) Joint Archive for Sea Level: Research Quality Data Set and the GLOSS/CLIVAR "fast delivery" sea level dataset.

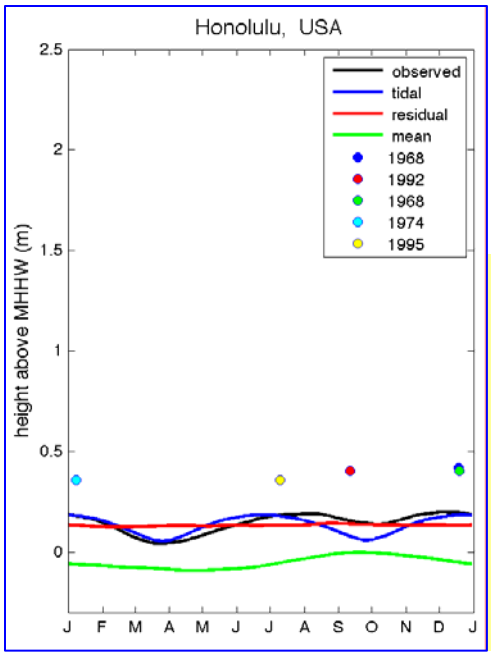


Extreme Value-based Trend in Wave Height at the Washington Buoy

This plot shows the long-term trend of significant wave height calculated using a modified "non-stationary" version of the GEV analysis for the annual series for the entire length of the station record. It shows the 25, 50, and 100 year trend lines with the rate given as text. The 5 largest observed values in each year are plotted as points.

Source
Developed for Pacific Storms by OSU

The results of these analyses is an integrated suite of products that include the delineation of rates of sea level rise and high water return periods, as well as changes in the frequency of both short-lived intense rainfall events and extended periods of heavy rains, and the linkages of these patterns and trends to climate indices. Such information is critical to risk assessment scenario development in support of coastal land-use planning and resource management. It also forms the basis for establishing infrastructure (roads, water, sewer) design criteria, among other things. Taken together, these products serve to reveal the patterns and trends of extremes within and between locations and regions, how they have been expressed historically, and may be expected to be expressed in a changing climate.



Daily Time Series of Extreme Water Levels at Honolulu

This plot shows the daily extreme event (95th percentile) of the observed water level, the extreme event (95th percentile) of the daily non-tidal residual, the 95th percentile of the daily predicted tide, and the daily average water level. The five highest hourly values measured are included for comparison with the climatology.

Source
Developed for Pacific Storms by the UHSLC

Last updated 5/14/10