

Sea Level and Storm Trends, Haleakalā National Park

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Sea Level Summary

Historical tide gauge data from the Kahului, HI tide gauge show that sea level around Haleakalā National Park (HALE) is rising (IPCC 2013; NOAA tides and currents 2012; Figure 1). Haleakalā has been directly hit by one tropical storm over the last century (tropical storm Gilma in 1988). Storms are expected to intensify over the next century, so at least one Saffir-Simpson category 1 hurricane should be expected to travel up to Haleakalā by 2100.

Table 1. Historical and projected sea level and storm trends for Haleakalā National Park.

Sea Level and Storm Surge Trends, Haleakalā National Park		2050 ²	2100 ²
Historical sea level trend, 1947–2012	+0.08 in		
Number of tropical storms, depressions and subtropical storm paths within 10 miles of Haleakalā, 1842–2011	1		
Highest observed water level 1983–2001 ¹	3.38 ft		
Low Emissions Scenario (USACE Gauge 1615680, Kahului) Projected sea level		+0.42 ft	+0.78 ft
Intermediate Emissions Scenario (USACE Gauge 1615680, Kahului) Projected sea level		+0.72 ft	+1.82 ft
High Emissions Scenario (USACE Gauge 1615680, Kahului) Projected sea level		+1.67 ft	+5.11 ft

¹Based on NOAA tidal data (source: <http://tidesandcurrents.noaa.gov/benchmarks.html?id=1617433>).

²Calculated using 1992 as a base year.

Sea Level Change and Storm Surge Vulnerability at Haleakalā National Park

- Increasing sea levels may lead to loss of land and critical habitat.
- Increased erosion and/or accretion across the coastline by storms coupled with shorelines adjusting to new mean sea levels.
- Rising groundwater tables and possible salt water intrusion due to rising sea levels.
- Increased risk of high intensity storm events.
- Potential loss of nearby freshwater ecosystems as sea levels rise.

References for Additional Sea Level and Storm Surge Information

- Intergovernmental Panel on Climate Change: <http://www.climatechange2013.org/report/>
- USACE Sea Level Calculator: <http://www.corpsclimate.us/ccaceslcurves.cfm>
- NOAA Tides and Currents: <http://tidesandcurrents.noaa.gov>
- NPS Storm Surge Mapping: <http://mariacaffrey.com/storms>
- NOAA Historical Storm Data: <http://www.ncdc.noaa.gov/ibtracs/>

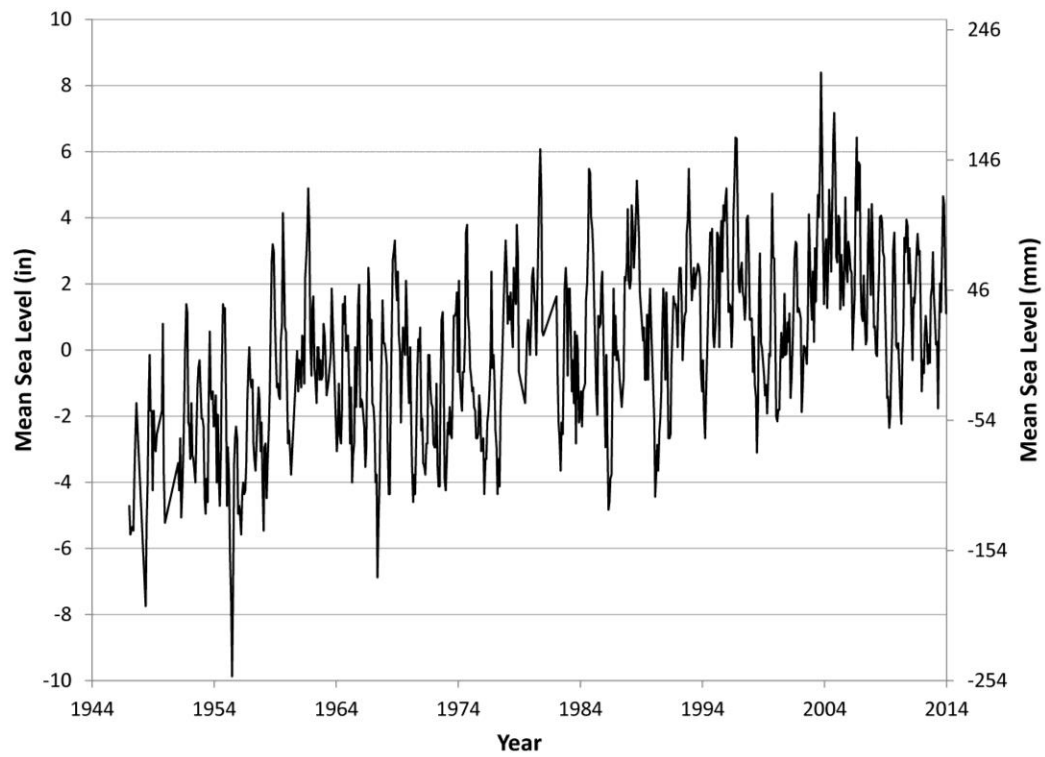


Figure 1. Sea level trends, Kahului Harbor tide gauge, 1947–2014.