



KAUA'I CLIMATE ADAPTATION PLAN

Air Temperatures, Heat, and Marine Heat Waves

What types of heat affect Kaua'i?

High air temperatures and marine heat waves (a short period of abnormally high sea surface temperatures) are two related climate change impacts.

Statewide, the rate of air temperature increase has accelerated in recent years and is now warming four times faster than half a century ago.¹ On Kaua'i, five consecutive days of the island's all-time heat record of 91°F were measured and a total of 33 daily max/min temperature records were set in the summer of 2019.²

The record setting air temperatures in the summer of 2019 were caused by a marine heat wave located in regional Hawaiian waters. Studies³ found a 54% increase in annual marine heat wave days globally due to an increase in average ocean temperatures, suggesting the number of marine heat wave days will keep increasing with continued global warming.

1. Giambelluca, T.W., et al. (2008) Secular Temperature Changes in Hawai'i, *Geophysical Research Letters*, 35:L12702.

2. Washington Post, Hawaii goes 20 days in a row setting a heat record during its hottest summer ever: <https://www.pennlive.com/nation-world/2019/09/hawaii-goes-20-days-in-a-row-setting-a-heat-record-during-its-hottest-summer-ever.html>

3. Oliver, E.C.J., et al. (2018) Longer and more frequent marine heatwaves over the past century. *Nat Commun* 9, 1324. <https://doi.org/10.1038/s41467-018-03732-9>



Warming



Akikiki (USGS)



Coral Bleaching (NOAA)



Marine Heat Wave

Projected Changes and Related Impacts

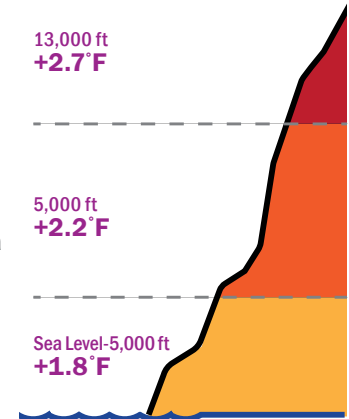
4. Keener, V., et al. (2018) Hawai'i and U.S.-Affiliated Pacific Islands. In Impacts, Risks, and Adaptation in the United States: 4th National Climate Assessment, Volume II [Reidmiller, D.R., et al. (eds.)]. USGCRP, Wash. DC, USA, p. 1242-1308. doi:10.7930/NCA4.2018.CH27

Projected Change

- **Temperature will increase more at higher elevations.** Temperatures will increase the most at 13,000 ft and above, which contains the island's last "untouched" habitats
- **More intense El Niño effects** including record-breaking hot windless days, intense rains, active hurricane seasons, and spikes in sea surface temperatures⁴

Related Impacts

- **Increased thermal stress** on native plants and animals, encouraging the growth of invasive species
- **Increased wildfire risk**



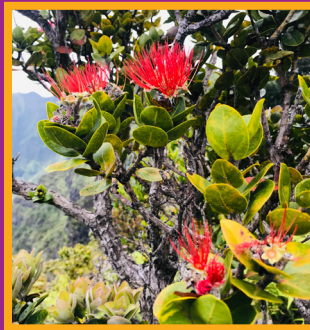
Key Vulnerabilities



Keiki, kupuna, and people with underlying health conditions (like asthma and heart disease)



Corals, limu, and other ocean organisms



Native flora and fauna, especially native forest birds that face habitat loss and diseases



Power system

How can I get involved?

- Attend an Open House
- Attend a Deep Dive session
- Share a story on the website
- Participate in an online survey
- Contact the Planning Department

Get in Touch

For more information on the Kaua'i Climate Adaptation Plan visit kauaiadaptation.com or scan the code below with your phone.

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