

Title: Forecasting the next hot summer and high sea levels for Hawaii

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Matthew Widlansky is the associate director of the University of Hawaii Sea Level Center where he researches climate variability and helps to maintain the center's global database of tide gauge observations. Through a research program primarily funded by NOAA, he uses global climate models of the ocean and atmosphere to assess the limits of predicting future changes. Matthew is especially interested in seasonal forecasting and also assessing how climate variability affects coastal environments.

Abstract: Hawaii recently experienced anomalously warm ocean temperatures and high sea levels that, respectively, contributed to coral bleaching and coastal erosion events. The effects of these unusual temperatures and sea levels are made worse by ongoing global warming and sea level rise; yet, locally, such extremes vary between seasons and years. For instance, record daily-maximum sea levels occurred during each of 2017–2019, although 2017 experienced by far the greatest number of record-setting high sea levels. Then in 2019, extremely warm ocean temperatures around Hawaii contributed to the record summer heat on land. Such climate variability is explained by oscillations in the ocean and atmosphere that are increasingly better observed and can even be predicted many months in advance using climate forecasting computer models. This talk will explore the physical causes of the recent record warmth and high sea levels at Hawaii, discuss how these climate conditions are related, and explore opportunities for predicting their future occurrence.

