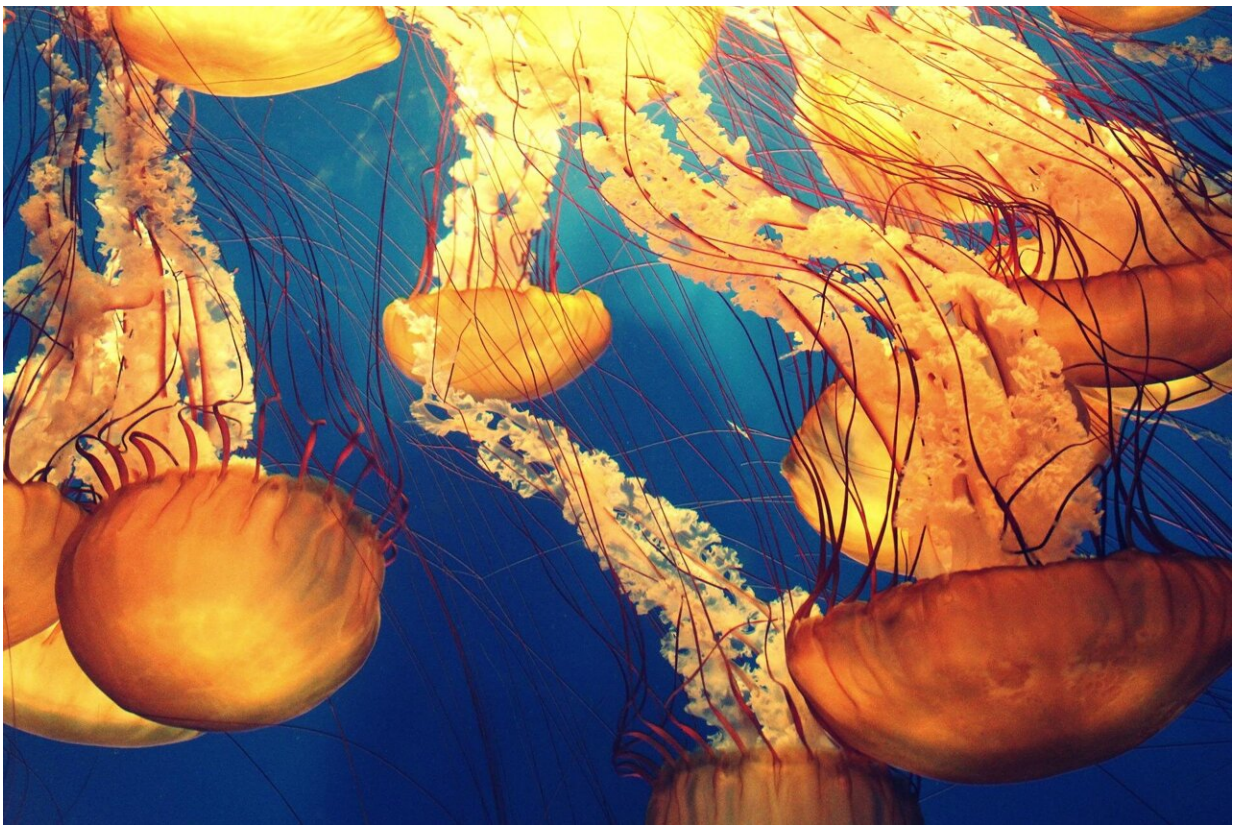
Marine heatwaves have devastating impacts on marine life in the tropical western and central Pacific Ocean region

August 1 2022



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Research published in *Global and Planetary Change* examines the trends and projected frequency, intensity and duration of marine heatwaves

(MHWs). A MHW is a 'discrete, prolonged anomalously warm water event' lasting five or more days, with temperatures warmer than the 90th percentile relative to climatological values. The research focuses on Fiji, Samoa and Palau in the tropical western and central Pacific Ocean region (TWCPO).

The authors analyze sea surface temperature data from the U.S. National Oceanic and Atmospheric Administration 1/4° daily Optimum Interpolation Sea Surface Temperature. They examine projections based on the Coupled Model Intercomparison Project, phase 6 (CMIP6).

The study finds that, in 1982-2001, MHW frequency increased by one MHW event per decade, and duration by more than four days per decade. These trends have tangible impacts. In 2016, a MHW caused the deaths of hundreds of marine fin fish and invertebrates including sea snakes, octopus and crabs, and led to coral bleaching. During a MHW in Fiji in 2019, dead and weak live fish were discovered in shallow waters.

The authors consider low and high greenhouse gas emissions scenarios. Today, the region experiences 10–50 moderate MHW days per year and less than one day per year extreme MHW. By 2050, under low emissions, the researchers project more than 100 moderate MHW days per year, more than 200 days per year nearer the equator, and less than five days per year of extreme MHW. For high emissions, they project 200 moderate MHW days per year, more than 300 days per year nearer the equator, and more than 50 days per year of extreme MHW.

This has serious implications for the health, livelihoods and food security of Pacific Islanders. MHW can promote the growth of harmful algae blooms, affect the fish that comprise a critical component of local diets and negatively impact ecotourism through the degradation of coral reefs.

More information: Neil J. Holbrook et al, Impacts of marine heatwaves on tropical western and central Pacific Island nations and their communities, *Global and Planetary Change* (2021). DOI: 10.1016/j.gloplacha.2021.103680