

NCEI Use Case for the *Benefits of Ocean Observation Catalog (BOOC)*

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Product Name: Marine Heat Waves

Website: described here

<https://www.noaa.gov/news/ongoing-marine-heat-waves-in-us-waters-explained> and accessible here (joint with NMFS) <https://ecowatch.noaa.gov/thematic/marine-heatwaves>

1. Sources and type of data and information used

Marine heatwave data sets are calculated by NOAA's National Centers for Environmental Information using Optimum Interpolation Sea Surface Temperature (OISST) data. The NOAA 1/4° OISST is a long-term Climate Data Record that incorporates observations from different platforms (satellites, ships, buoys and Argo floats) into a regular global grid. The *in situ* component of this input is critical.

2. Transformation into an actionable information service

Marine heatwave data is derived from NCEI Daily OISST (DOISST) from 1982 to present. SSTs above the 90 percentile sustained for longer than 5 days are defined as a marine heatwave event. The 90 percentile SST is determined over the climatological period of 1982-2011. The DOISST is reconstructed from observations from ships, moored and drifting buoys, Argo floats, and satellite observations. Biases of ship observations are corrected using buoy and Argo observations, and biases of satellite observations are corrected using buoy, Argo, and corrected ship observations.

3. Describing the Benefits

Marine heatwaves are periods of persistent anomalously warm ocean temperatures, which can have significant impacts on marine life as well as coastal communities and economies. When ocean temperatures are exceptionally high in a specific area for an extended period of time, it has the potential to affect the biology and chemistry of an ecosystem. Understanding the duration, intensity, and spatial coverage of marine heatwaves is important to coastal communities as increased incidence of intense heatwave events may affect the area available for fishing, recreational, or cultural practices and the overall health of a local ecosystem.