

Coral Reef Watch



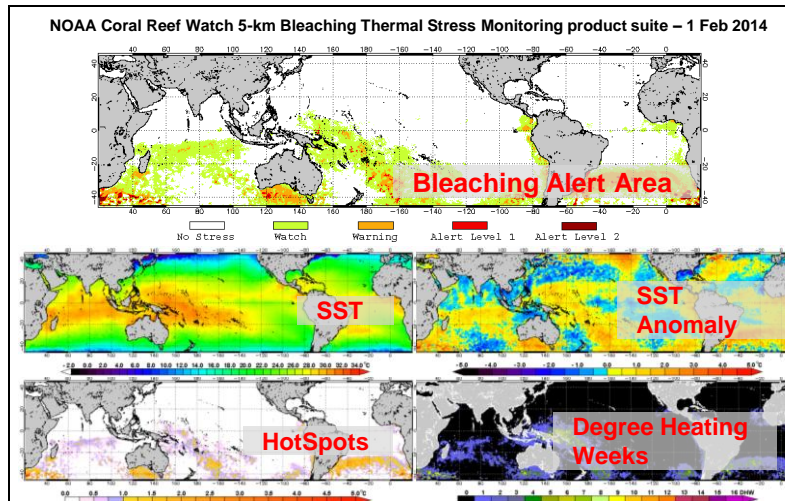
Coral Reef Watch uses satellite data to provide current reef environmental conditions to quickly identify areas at risk for coral bleaching.

Coral reefs are one of the most diverse ecosystems in the world. Reefs support essential coastal fisheries, protect coasts from erosion, support local tourism, and are sources of pharmaceuticals.

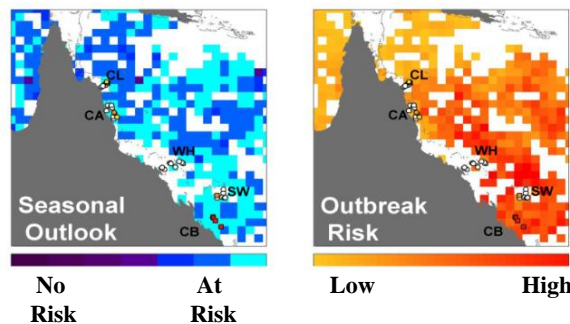


Sustained high water temperatures, in conjunction with other natural and human-based stressors, could cause coral bleaching to become an annual event in most oceans. This could lead to a rapid decline in the health of coral ecosystems worldwide.

Coral Reef Watch is part of the NOAA Coral Reef Conservation Program and the National Environmental Satellite Data and Information Service.



High-Resolution Monitoring: Coral Reef Watch released a new experimental daily global 5-km coral bleaching thermal stress monitoring product suite in June 2012. It is based on NOAA's new-generation operational global 5-km SST analysis, derived from a blend of geostationary and polar-orbiting satellite observations. Our most user-requested improvement, the high-resolution product suite was developed with NASA and NOAA Coral Reef Conservation Program funding. It dramatically advances Coral Reef Watch monitoring capabilities and provides near-reef-scale information to help managers track climate change impacts on coral reef environments.



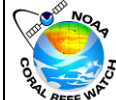
Coral Disease Outbreak Risk: Coral Reef Watch is researching and developing an experimental product that estimates the risk of coral disease outbreaks. The product currently serves risk assessments for the Great Barrier Reef and Hawaiian archipelago.

Latest global data and images freely available at:

<http://coralreefwatch.noaa.gov>

For more information, contact us at:

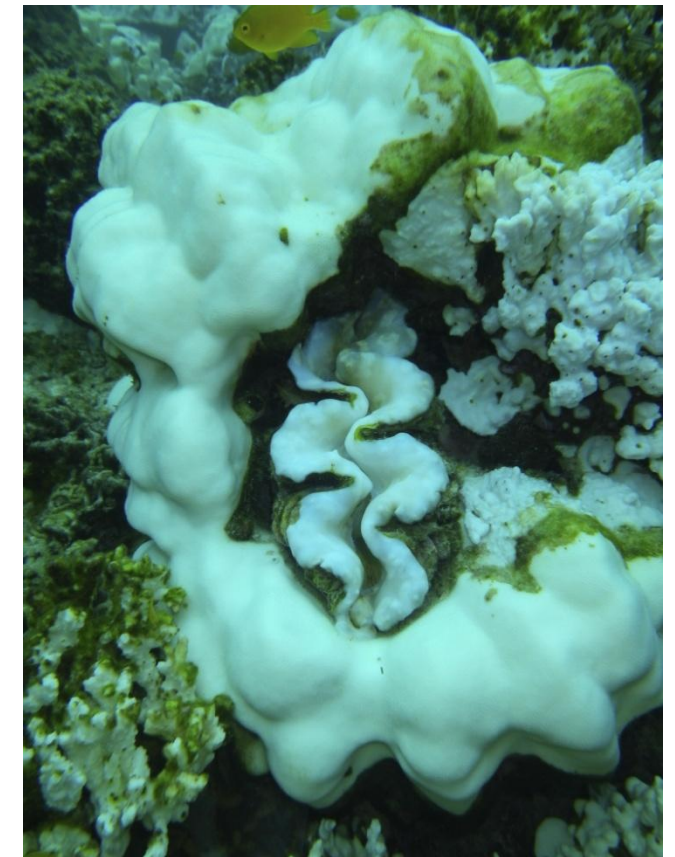
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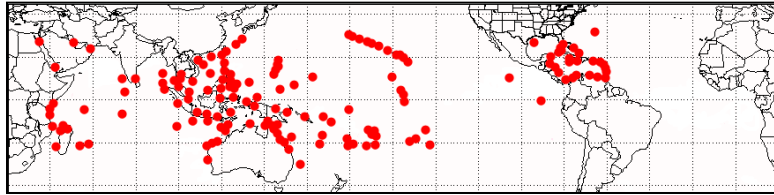


NOAA Coral Reef Watch



Satellite Monitoring for
Coral Reefs

Automated Bleaching Alert System

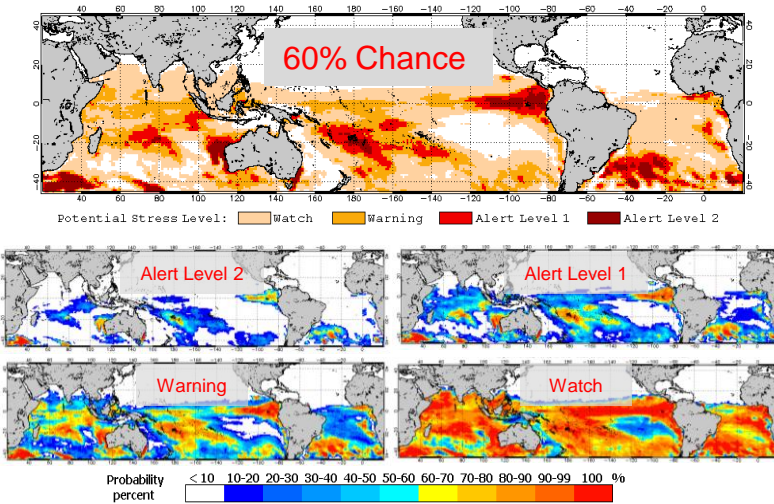


At 227 representative coral reef locations around the world, including all U.S. reefs, Coral Reef Watch's satellite "Virtual Stations" provide detailed information on current bleaching thermal stress conditions. Several even provide data from *in situ* sensors. Free Automated Bleaching Alerts notify subscribers via e-mail when thermal stress levels change at these stations.

Subscribe at: <http://coralreefwatch.noaa.gov/satellite/vs.php>

Seasonal Bleaching Outlook

NOAA Coral Reef Watch – 28 Jan 2014 – Probabilistic Bleaching Thermal Stress Outlook for Feb-May 2014



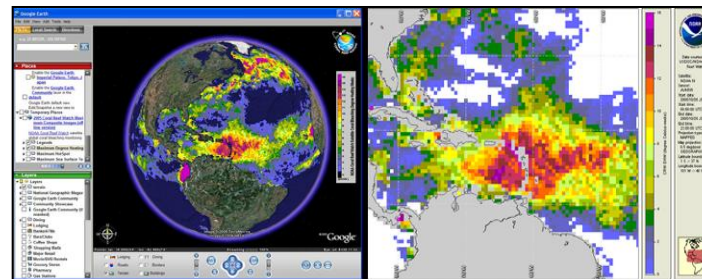
This seasonal bleaching forecast system, released in June 2012, predicts the probability of thermal stress events capable of causing large-scale, mass coral bleaching events. It uses a weekly, 28-member ensemble of sea surface temperature forecasts from NOAA National Centers for Environmental Prediction's operational, dynamical Climate Forecast System (CFS) to predict the probability of coral bleaching up to four months in the future.

Coral Reef Conservation & Satellite Technology

NOAA Coral Reef Watch uses sea surface temperature (SST) data measured by polar-orbiting and geostationary environmental satellites to keep a constant, vigilant eye on changes in the environmental conditions of U.S. and global coral reef ecosystems.

Continuous monitoring of SST at global scales provides coral reef managers and other stakeholders with tools to understand, monitor, and better manage the complex interactions leading to coral bleaching, disease, and overall deterioration in coral health. When thermal stress conditions occur, Coral Reef Watch products are used to trigger bleaching and disease response plans and to support appropriate management decisions.

NOAA



Google Earth and HDF Data

The entire suite of Coral Reef Watch data products is available in the following formats: Google Earth, Hierarchical Data Format (HDF), ASCII text, graphs, and images – and soon netCDF.

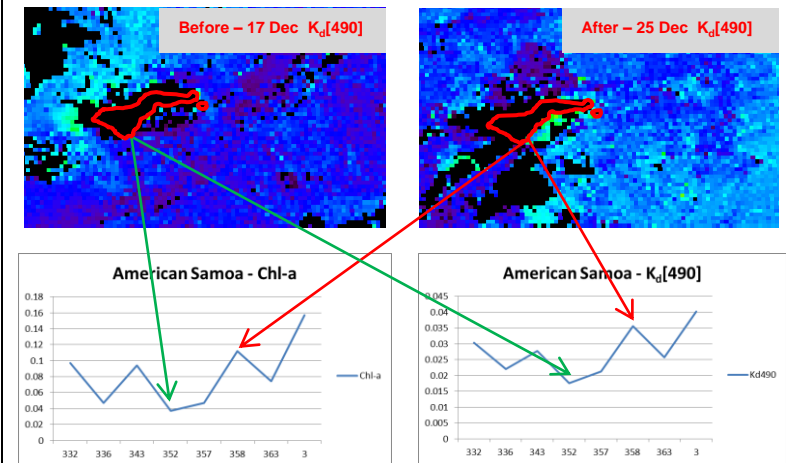
Future Directions

Coral Reef Watch is working on a number of experimental products to enhance its current suite of temperature-based products. These include a light stress damage product, coral disease outbreak risk product, and modeling ocean chemistry responses to ocean acidification. Coral Reef Watch is also prototyping an ocean color product.

Coral Reefs and Climate Change

Under stress from elevated water temperatures and UV light, corals respond by expelling symbiotic algae living within their tissues that provide most of their energy and coloring. While corals can recover from short term, minor stress, they can starve and die if the thermal stress continues for weeks or months. Recognizing that coral bleaching has become much more severe in recent decades, Coral Reef Watch has developed and operates a world benchmark near-real-time monitoring and decision support system, based on satellite data, to inform and alert managers and researchers to environmental stresses to coral reef ecosystems. Historical satellite data are also used to investigate and provide information on long-term changes in coral reef environmental stresses.

Ocean Color for Coral Reefs



Working with partners in the U.S. Coral Reef Task Force Faga'alu Watershed Working Group in American Samoa, NOAA's Ocean Color Team and Coral Reef Watch are developing pilot satellite ocean color products to help reef managers monitor variable water turbidity (diffuse attenuation coefficient at 490 nm, $K_d[490]$) and chlorophyll-a affecting coral health over American Samoan reefs, especially following large precipitation events (e.g., the sizeable rainfall event after Cyclone Evan in December 2012). Also shown is the 2-month time-series of each variable, 2-km off Pago Pago Harbor, from the VIIRS-Suomi National Polar-orbiting Partnership.