ALLEN **CORAL ATLAS**
Coral Reef Bleaching Monitoring System

The Coral Reef Bleaching Monitoring System utilizes satellite imagery and advanced analytics to support scientists, conservationists, and policymakers protecting the world's coral reefs.

BACKGROUND

The Allen Coral Atlas recently launched a unique satellite-imagery-based coral bleaching monitoring system. The monitoring system allows management and conservation planning by tracking the location, extent, and bleaching severity of coral reefs worldwide. Combined with the Atlas' bathymetric, benthic, and geomorphic maps, the full suite of tools provides a comprehensive spatial and temporal system for understanding coral reefs.

TECHNIQUE

The bleaching monitoring system uses machine learning to analyze the reflectance of satellite-based imagery of coral reefs over time and is initiated by the "Bleaching Alerts" of the National Oceanic and Atmospheric Administration's (NOAA) Coral Reef Watch (CRW), which records time series data of sea surface temperature (SST) anomalies for 214 coral regions around the globe.

By comparing the reflectance or "brightening" of Sentinel-2 images during warmer and colder periods for the areas previously mapped as coral habitat, the monitoring system generates new pixel-by-pixel areas potentially bleached, visualized in three classes of low, moderate, and severe levels at bi-weekly intervals. The Atlas detection algorithms will further be strengthened by the participation of ongoing stakeholders and a global network of coral reef monitors who will engage and validate bleaching in reef sites worldwide.

FEATURES

- Global tropics reef-level bleaching detection
- Based on Sentinel-2 satellite imagery data
- 100m2 resolution and 15m depth limit
- Bathymetric data (download only)
- New data is available biweekly and begins January 4, 2021

ABOUT THE ALLEN CORAL ATLAS

First ever global, high resolution mapping and monitoring system of the world's tropical shallow coral reefs, available worldwide in 2021.

To learn more, visit allencoralatlas.org

PARTNERS

Arizona State University-Center for Global Discovery and Conservation Science: Leading strategy and innovation, website engineering. Development of the dynamic reef monitoring system, with supercomputing support from ASU's Knowledge Enterprise Development program

The National Geographic Society: Leading field engagement and outreach

Planet: Delivering pre-processed global high resolution satellite imagery

University of Queensland: Creating benthic and geomorphic habitat maps and leading field verification

Vulcan: Leading policy outcomes, and previously led the original founding members of the Atlas partnership

Coral Reef Alliance and Wildlife Conservation Society (WCS): Leads stakeholder engagement and outreach of the bleaching component