



Developing VIIRS Ocean Color Products for Coral Reef Ecosystem Managers

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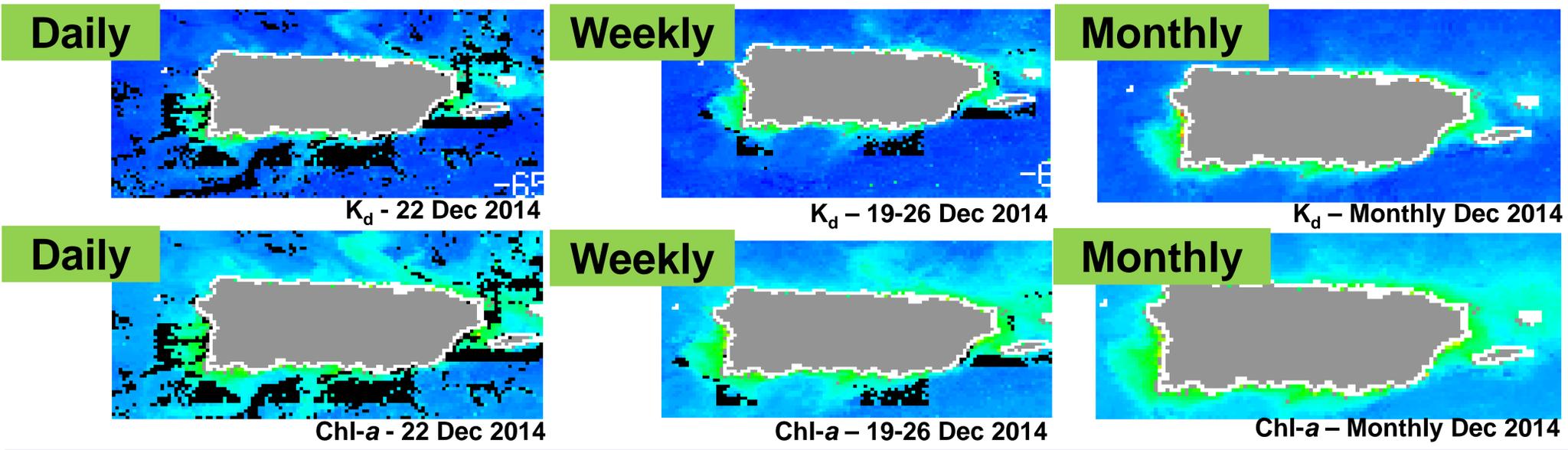
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NOAA Coral Reef Watch (CRW) and NESDIS/STAR's Ocean Color Team are developing new satellite products from the Visible Infrared Imaging Radiometer Suite (VIIRS) on the Suomi National Polar-orbiting Partnership (SNPP) that assist in monitoring the threat of land-based sources of pollution (LBSP) to coral reef ecosystems.

NOAA has identified LBSP as one of the major threats to coral reefs that can cause coral disease and mortality, disrupt critical ecological functions, and impede growth, reproduction, and larval settlement.

Following two years of in-house prototype work (FY13/14), a new collaboration between STAR and NOAA's Coral Reef Conservation Program is building ocean color tools that managers can use to track water quality on or near their reefs, to assist with the timely and effective management of local pollution from watershed alteration, run-off, and coastal development.



Background levels of each parameter are being derived using VIIRS data from which we can construct anomaly products. Starting with the earliest-available VIIRS data (2012), time-series products for each watershed will be developed giving managers information as to how water quality conditions have varied through time. The project team will be incorporating *in-situ* measurements over coral reefs to validate each parameter, in collaboration with NOAA's Educational Partnership Student Scholarship Internship Opportunity (EPP SSI) Program with doctoral candidate interns working together with NOAA's National Centers for Coastal Ocean Science (NCCOS). A pilot calibration/validation field study of the VIIRS-based ocean color products for coral reefs began this spring in Puerto Rico (Guánica Bay Watershed - La Parguera) with the University of Puerto Rico Mayaguez's Bio-Optical Oceanography Laboratory.

Near-real-time satellite products of turbidity [Diffuse Attenuation Coefficient at 490 nm - $K_d(490)$], Chlorophyll-*a*, and SST are being developed for the three U.S. Coral Reef Task Force Priority Watershed sites:

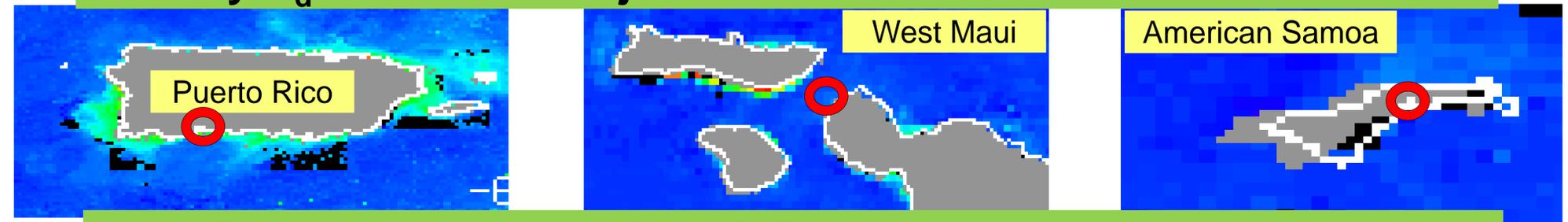
- Ka'anapali (West Maui, Hawai'i)
- Faga'alu (American Samoa) and
- Guánica Bay (Puerto Rico)

From VIIRS, derived anomalies of $K_d(490)$, Chl-*a*, and SST will be generated over manager-defined Virtual Areas (VA) located along stream outflow over reefs.



Subject to the outcome of this pilot effort, proposals will be submitted to expand the Cal/Val work with NOAA EPP to include the priority watersheds in Hawai'i and American Samoa. NOAA CRW will also continue to engage local coral reef managers to ensure the new regional ocean color products are relevant and useful.

Weekly K_d - All Three Major US Coral Reef Task Force Watersheds



True Color - All Three Major US Coral Reef Task Force Watersheds



Mar 2012 to Oct 2014 - K_d Climatology

