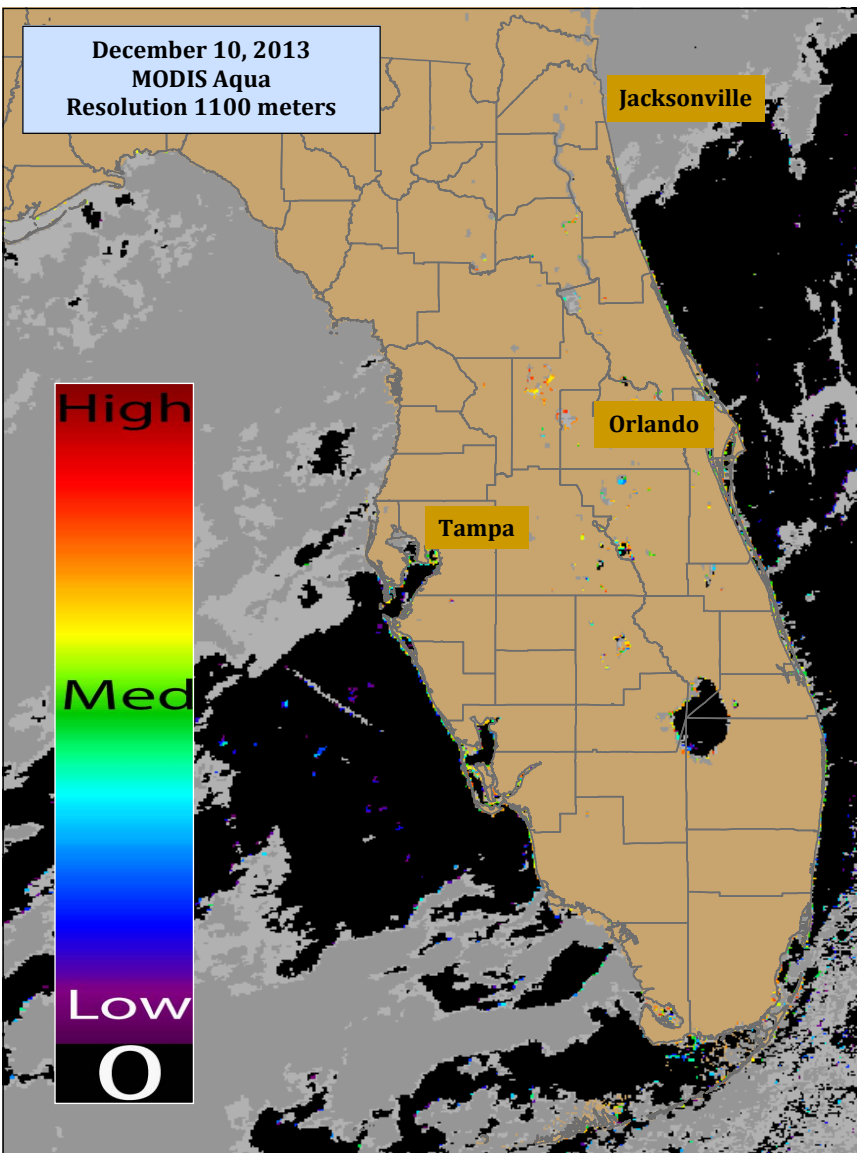




Inland Harmful Algal Blooms Health Bulletin: December 12, 2013



To report an illness related to a freshwater, estuarine, marine toxin or harmful algal bloom, please contact the Florida Poison Information Center at 1-800-222-1222. Images/data obtained from Florida Fish and Wildlife Research Institute, Florida Water Management Districts, National Oceanic and Atmospheric Administration (NOAA), NOAA National Climatic Data Centers and National Weather Centers. Support to produce this report from NOAA/NASA Contract NNH08ZDA001N.



MODIS Images display a chlorophyll-a index generated with a Moderate Resolution Imaging Spectroradiometer provided by the National Aeronautics and Space Administration (NASA)

Very low likelihood of a bloom

May indicate clouds or missing data

Low estimated chlorophyll-a concentrations

Medium estimated chlorophyll-a concentrations

Higher estimated chlorophyll-a concentrations

CyanoHAB Conditions Report

- Large water features in Florida were unremarkable on the 1100 meter resolution MODIS image.

MYC bioacc. can cause potential mutagenic effects in farm fish



The Egyptian Journal of Aquatic Research

5 December 2013



This study investigated the bioaccumulation of microcystin and its potential mutagenic effects in cage-reared fish. For six months, three reservoirs ... in arid regions of Brazil were monitored. After five months, 10 fish (*Oreochromis niloticus*) were collected from each tank, and the amounts of microcystin in their muscles and viscera were analyzed. Mutagenic effects were also evaluated. Species of cyanobacteria were present during all months of our study ... All fish sampled contained microcystin, ranging from 16.01 to 37.09 ng g⁻¹ in muscle and 228.2–804.0 µg g⁻¹ in liver. We observed significant differences between the micronucleus count in experimental and control fish ($p < 0.05$), suggesting a potential mutagenic effect in the experimental fish. In all reservoirs, the fish microcystin level was well above the World Health Organization (WHO) tolerable daily intake, indicating a serious risk to consumers. See <http://www.sciencedirect.com/science/article/pii/S1687428513001143>

K. brevis Florida Red Tide: SW Florida Coast

FWRI/FWC Red Tide Summary (December 6, 2013):

Karenia brevis was detected this week in very low concentrations in only two samples collected alongshore of southern Collier County. One sample collected alongshore of Pinellas County, two alongshore of Manatee County, and three alongshore of Sarasota County each contained background concentrations of *K. brevis*. Samples collected in other regions of southwest Florida did not contain *K. brevis*.



For the NOAA Gulf of Mexico HAB Bulletin visit:
<http://tidesandcurrents.noaa.gov/hab/bulletins.html>.

**** Due to background levels of *K. brevis* off Florida's SW coast, status reports for Florida red tide will be suspended until bloom concentrations re-occur.**

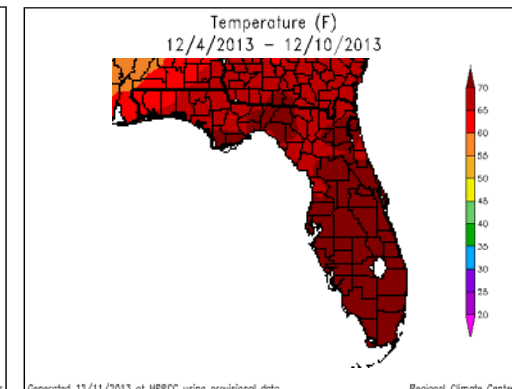
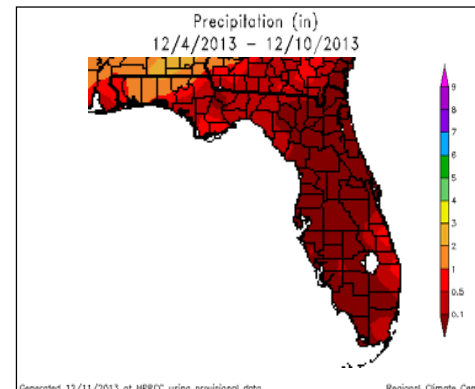
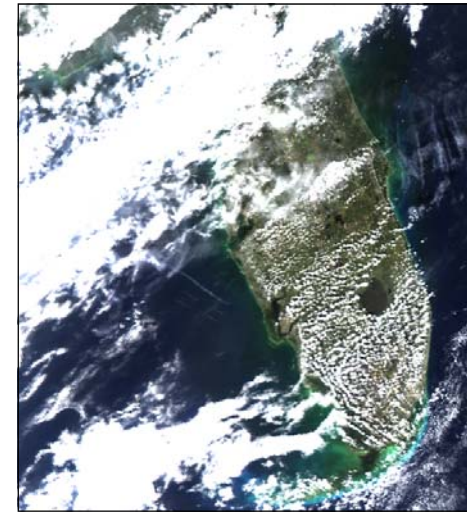
Interpreting Moderate Resolution Imaging Spectroradiometer Data

- The Moderate Resolution Imaging Spectroradiometer (MODIS) is deployed by NASA onboard the Terra (EOS AM) and Aqua (EOS PM) satellite. It passes over the earth, collecting new imagery every 1-2 days.
- This imagery is used as a surveillance tool. Data collected by the MODIS sensor are used to generate a chlorophyll-a index which is used to forecast harmful algal blooms. The results are not specific to any one HABs species and should be followed-up with onsite field observations. Data is only suggestive of a potential HAB event.
- MODIS uses a spectral band which is much coarser than MERIS, therefore only select larger water bodies in FL are visible using this technology.
- MODIS is better at depicting low to medium chlorophyll-a concentrations so once a potential bloom is depicted, a switch in algorithms may be used to improve the visibility. MODIS has a few spectral bands which have higher resolution that are more comparable to MERIS although these bands do not cover all of FL.
- Several environmental factors may affect how results can be interpreted. For example, areas with abundant aquatic vegetation may present with a high Chl-a index resulting in a false positive bloom reading.
- The sensor identifies biomass near the surface (in the upper few feet of water). As a result, it may underestimate the total biomass for blooms that are mixed or dispersed through the water column.
- While patches of red or warm colors may indicate higher chlorophyll-a concentrations, these data have not been verified in most cases using ground-truth methods.

Weather Conditions: Precipitation and Temperature - 12/04/13 to 12/10/13

- Weather conditions can impact the duration and location of blooms and the satellite imagery shown in this report may no longer be relevant.
- Images represent the last image taken with a realization that blooms may have moved, dissipated or intensified.
- Cloud coverage can obscure imagery and create patches or gray areas on map and obscure bloom detection.

December 10, 2013
MODIS Aqua True Color Image



To review HABs satellite reports in the Gulf of Mexico and marine waters visit the NOAA Harmful Algal Bloom Operational Forecast System bulletin archive at:
<http://tidesandcurrents.noaa.gov/hab/bulletins.html>



For Individual Weather Station Data, visit:
<http://www.sercc.com/perspectives>

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