



# AOML/SEFSC Workshop on Observations, Data and Products from the Global Ocean Observing System

Miami, June 1<sup>st</sup> 2009

## CoastWatch Program. Ocean Observations and Products

Caribbean and Gulf of Mexico Regional Node

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Caribbean/Gulf of Mexico Node



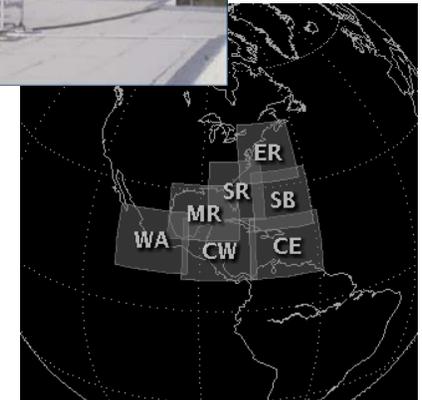
# CoastWatch Program. Ocean Observations and Products

Satellites & CoastWatch



## ◆ Fundamental Advantages

- **Synoptic view**
- **Short revisit times**
- **Operational data availability**
- **Integration with GIS**



## ◆ CoastWatch Objectives

- **Continuity: Promote follow-on sensors/Archival**
- **Accessibility: OPeNDAP/THREDDS/ LAS (Open&Free)**
- **Quality: NRT Products**
- **Utilization: Regional and global, multipurpose**

Products

GIS on the Web

OGC Servers

Other Online Tools

Conclusion



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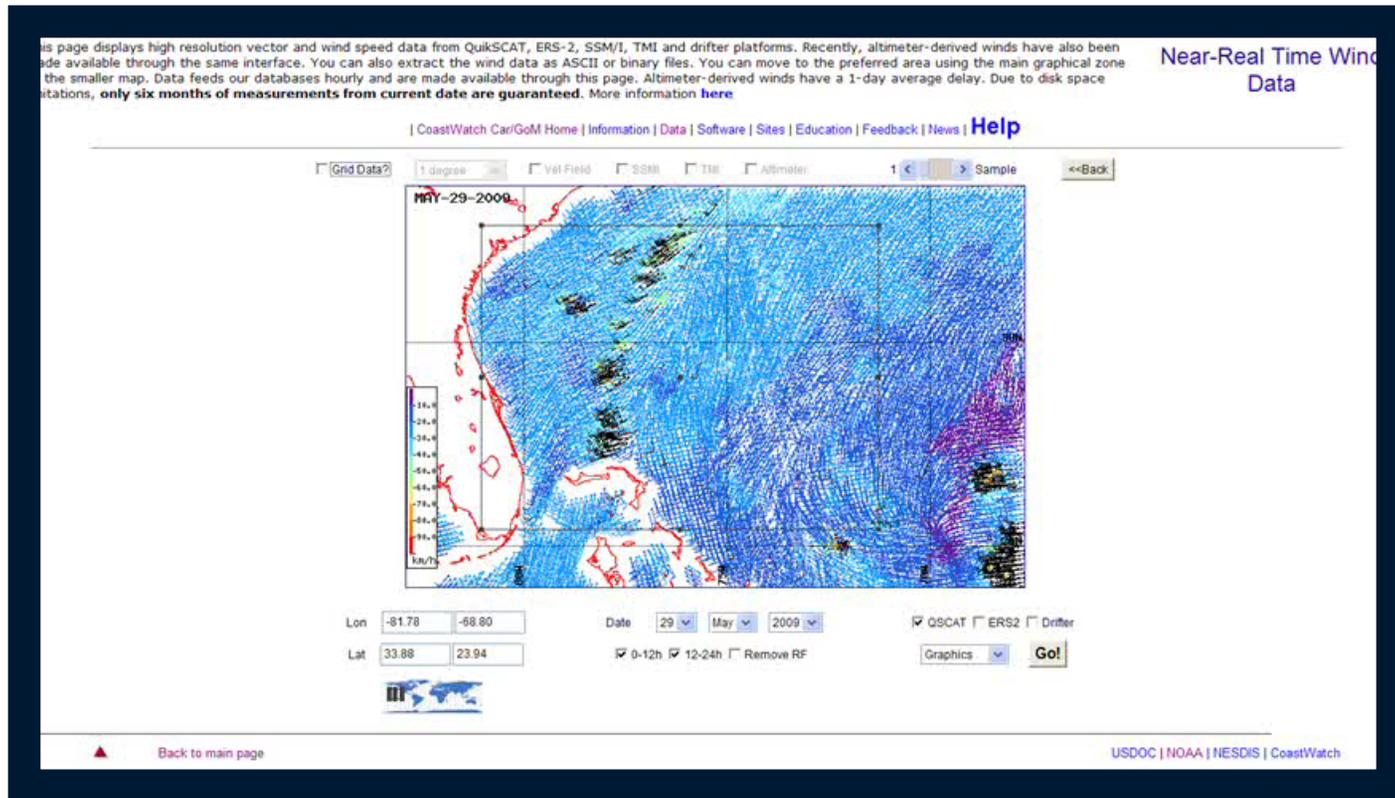
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- ◆ Winds, SST, Chlorophyll, Altimetry, Turbidity, etc



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## Harmful Algal Blooms – Operational Monitoring and Forecasting

**ACUMAR 5000**

**Gulf of Mexico Harmful Algal Bloom Bulletin**  
 Region: Southwest Florida  
 18 May 2009  
 NOAA Ocean Service  
 NOAA Satellite and Information Service  
 NOAA National Weather Service  
 Last Bulletin: May 11, 2009

**Conditions Report**  
 There is currently no indication of a harmful algal bloom at the coast in southwest Florida, including the Florida Keys. No impacts are expected alongshore southwest Florida today through Monday, May 25.

**Analysis**  
 There is currently no indication of a harmful algal bloom at the coast in southwest Florida. Samples collected last week alongshore Sarasota County (New Pass) indicated *Karlodinium brevis* was not present at locations where previous background concentrations had been found (5/11-15; MML). No *K. brevis* was reported alongshore southwest Florida from Pinellas to Monroe Counties, nor offshore of Pinellas, Lee and Monroe Counties (5/7-14; PWRI, SCD, MML).

MODIS imagery has been cloudy over the last week and limits analysis. Patches elevated to high chlorophyll continue to be visible offshore southern Collier and Monroe Counties. Two larger offshore patches are located at 25°39'40"N 81°44'17"W (5.7 µg/L) and at 25°20'44"N 81°52'9"W (7.5 µg/L). Elevated chlorophyll features in this region are not necessarily indicative of a harmful algal bloom.

Harmful algal bloom formation alongshore southwest Florida is not expected today through Monday, May 25. Due to technical difficulties SeaWiFS imagery is presently unavailable. MODIS imagery has been used for bloom analysis and display on this bulletin.

\*\*Due to government closures on Memorial Day, the next bulletin will be issued on Tuesday, May 26.\*\* -Fenstermacher, Unizar

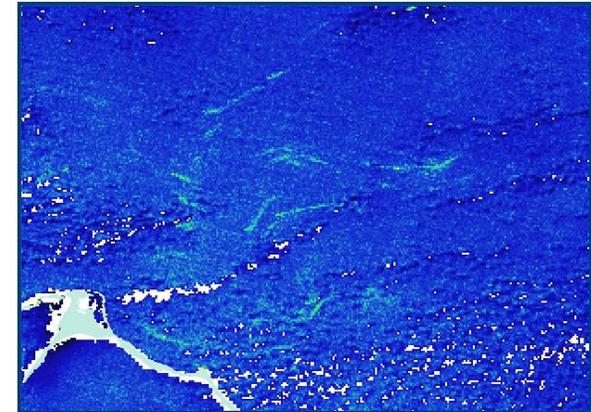
Wind conditions from Naples, FL

Wind speed and direction are averaged over 12 hours from buoy measurements. Length of line indicates speed; angle indicates direction. Red indicates that the wind direction favors upwelling near the coast. Values on the left of the dotted vertical line are measured values; values to the right are forecasts. Wind observation and forecast data provided by NOAA's National Weather Service (NWS).

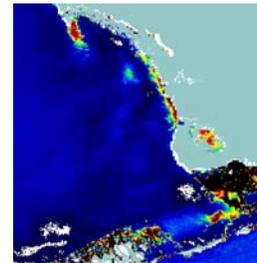
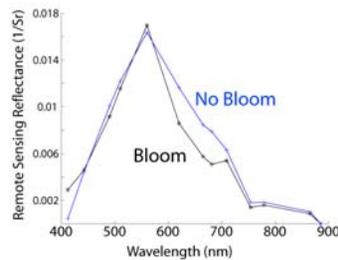
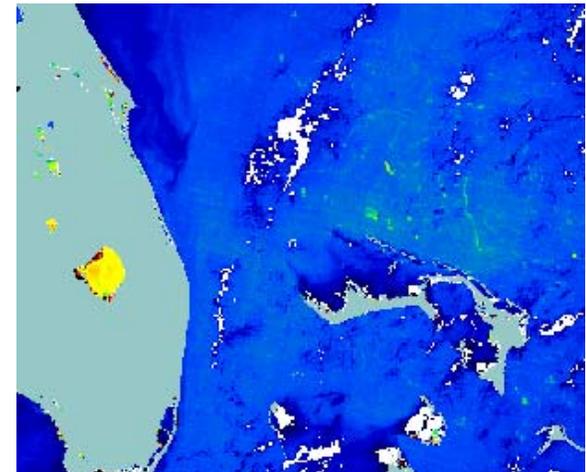
**Wind Analysis**  
 Collier & Monroe Counties, SW Florida: Northeast to east winds today through Tuesday followed by south to southeast winds Wednesday through Friday (10-20 kt; 5-10 m/s).

To see previous bulletins and forecasts for other Harmful Algal Bloom Bulletin regions, visit the NOAA CoastWatch bulletin archive: [http://coastwatch.noaa.gov/hab/bulletin\\_archive](http://coastwatch.noaa.gov/hab/bulletin_archive)

Please note the following restrictions on all SeaWiFS imagery derived from CoastWatch:  
 1. Data are restricted to civil marine applications only; i.e. federal, state, and local government use/operation is permitted.  
 2. Image products may be published in newspapers. Any other publishing arrangements must receive Google approval via the CoastWatch Program.

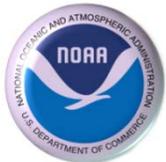


## MERIS RR&FRS



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The screenshot shows the 'Caribbean and Gulf of Mexico Operational Data' web application. It features a central map displaying sea surface temperature data. To the left of the map are controls for map size (set to 'small'), a 'Quick View' dropdown, a 'Ground Scale' of 25230187, and a 'Distance' input field. Below the map is a 'Contact us' section. To the right of the map is a 'Legend' and 'Palettes' section with a 'Manage Layers' list containing 'latlon\_grid', 'sst20090428avhrr', 'coastlines', and 'continents'. Below the legend is a 'Select Layer to Visualize' section with a list of data layers such as 'SST AVHRR', 'SST AVHRR ANOMALIES', 'GOES POES SST', 'GOES SST', 'ISOTHERMS GOES SST', 'FRONTS GOES SST', 'SST MODIS AQUA', 'SST MODIS TERRA', 'MICROWAVE SST', 'Sea Height Anomaly', 'Dynamic Topography', 'Tropical Cyclone Heat Potential', 'GEOSTROPHIC CURRENTS', 'PUERTO RICO MODIS CHL...', 'PUERTO RICO MODIS250m', and 'REFERENCE'. At the bottom, there is an 'Access Products' section with links for 'WMS Server', 'WFS Server', 'THREDDS(OPeNDAP,WCS)', and 'ERDDAP'.

## ◆ Features:

- **Public access**
- **Integrate ocean variables within GIS Environment**
- **Retrieve data from local and remote servers**
- **Client interact directly with web services**
- **Query capabilities, etc.**



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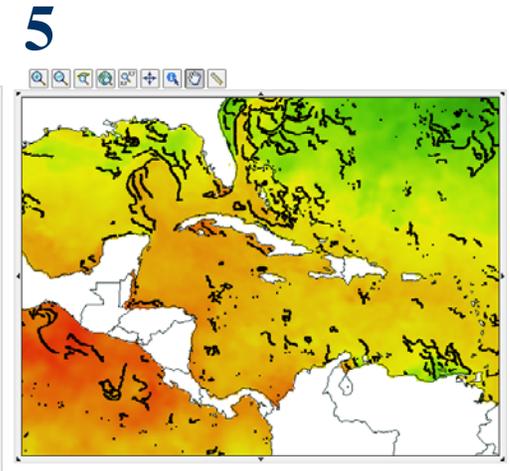
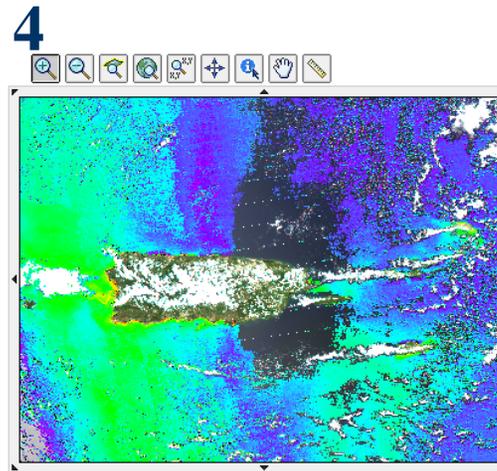
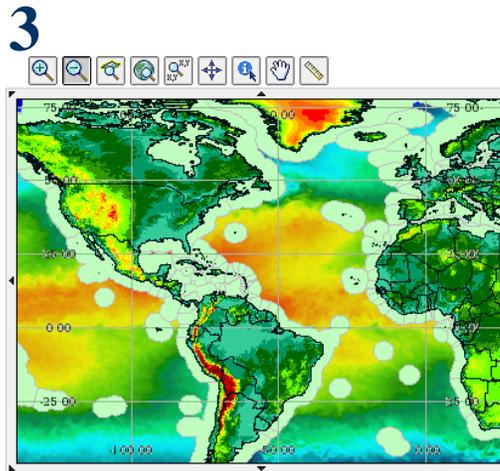
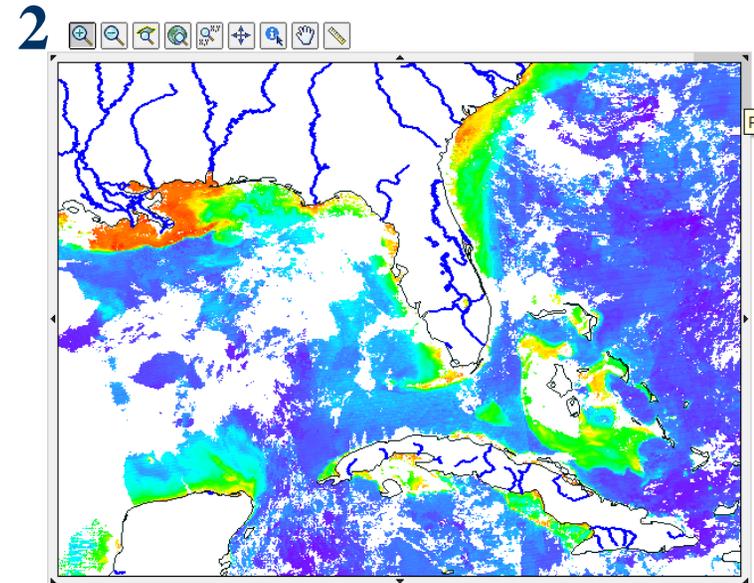
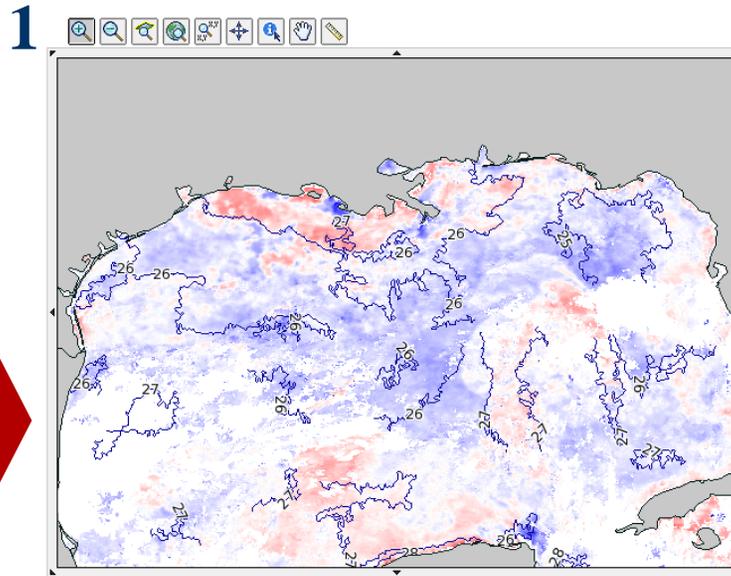
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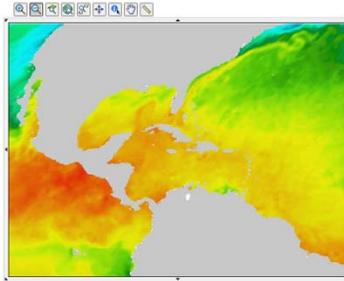
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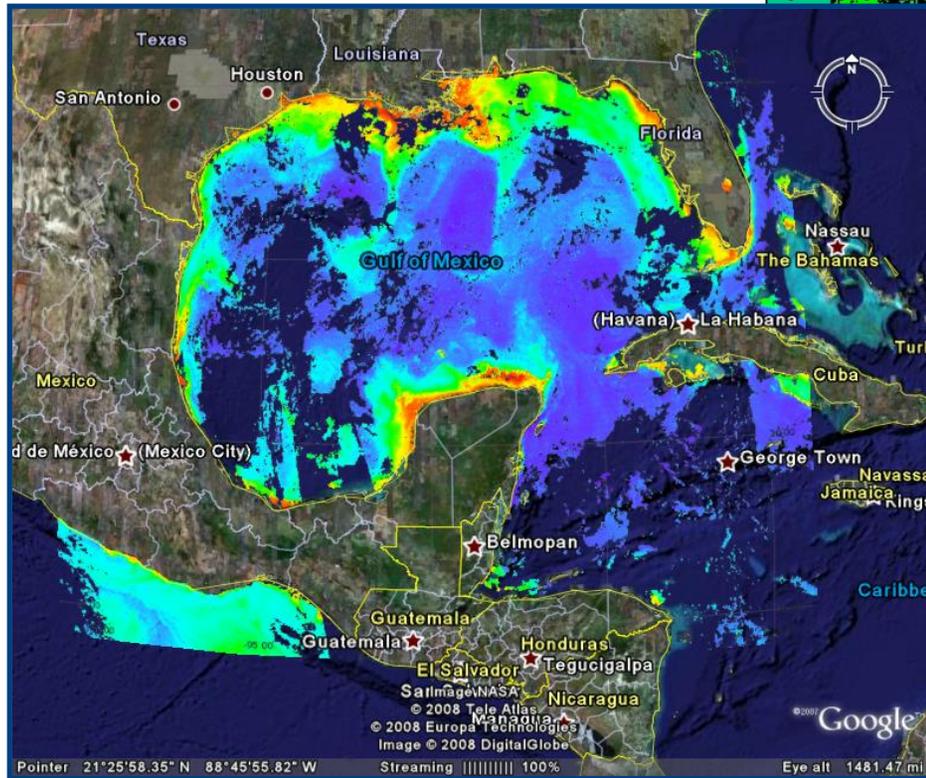
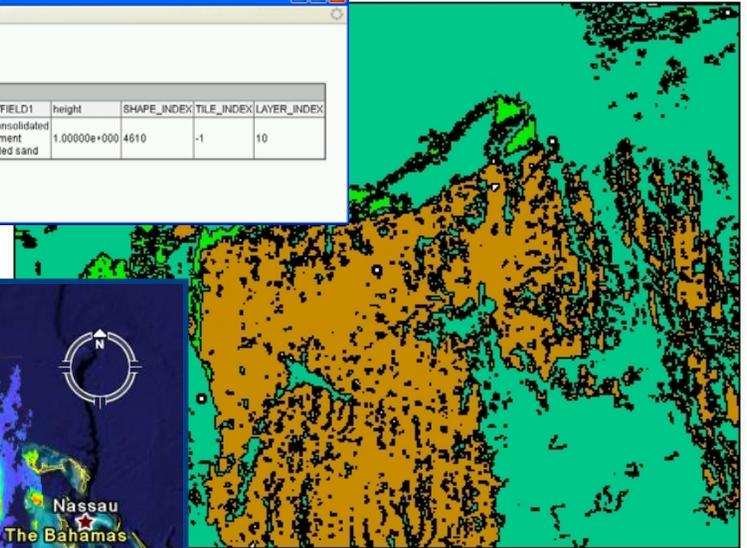


http://cwcaribbean.aoml.noaa.gov - Query Results - Mozilla Firefox

Query Results

Grays Reef	UNIQUEID	MAJOR_CAT_	MINOR_CAT_	POLYNUM	AREA	NEWFIELD1	height	SHAPE_INDEX	TILE_INDEX	LAYER_INDEX
5	Unconsolidated Sediment	Rippled sand	4610	38272000	Unconsolidated Sediment	1.00000e+000	4610	-1	10	

Close



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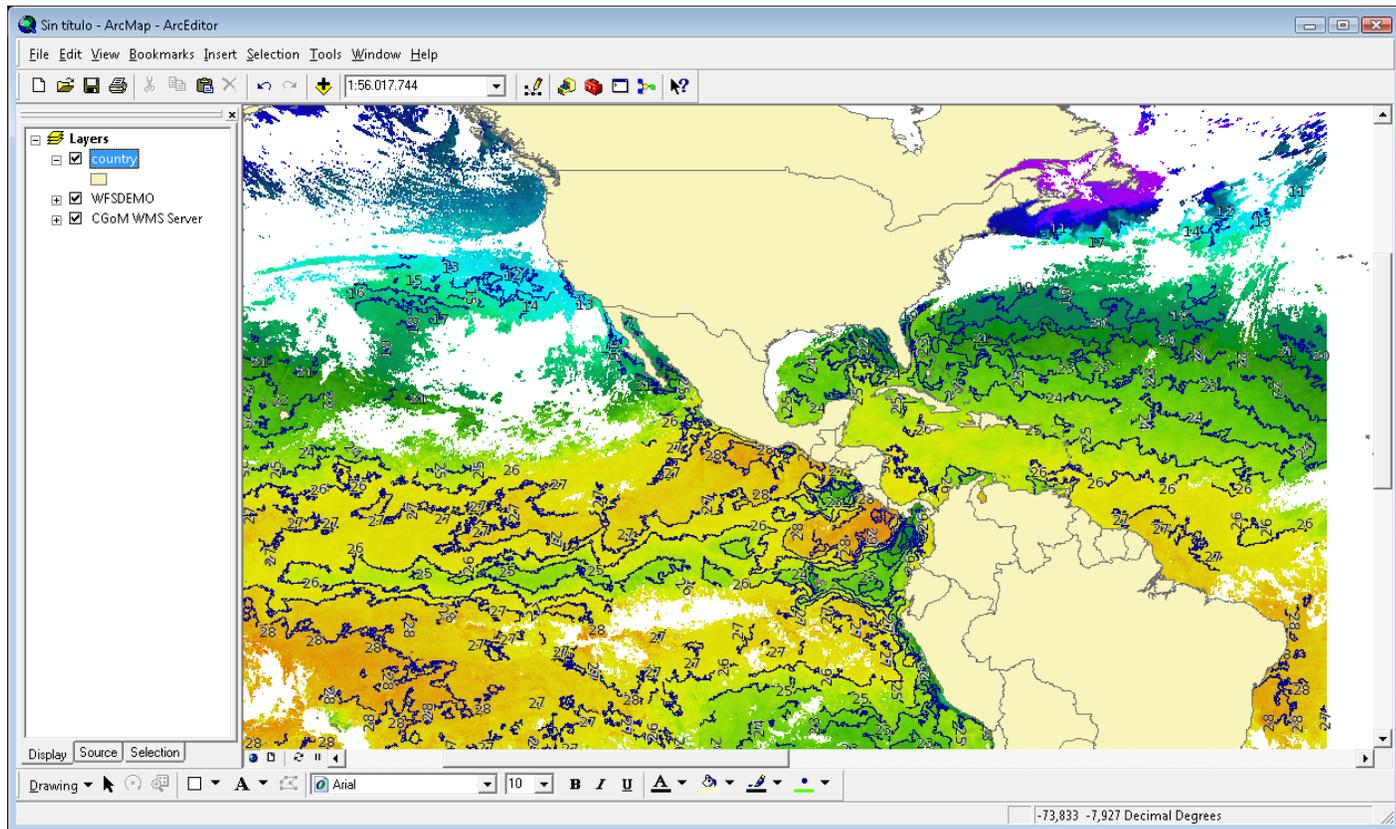
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## ◆ OGC Servers: WFS, WMS and WCS

*Example: ArcGIS 9.3 (GOES 24HR+Isotherms)*



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## ◆ THREDDS



THREDDS Data Server

unidata

Catalog <http://cwcgom.aoml.noaa.gov/thredds/catalog.xml>

Dataset: THREDDS Server Catalog : Caribbean and Gulf of Mexico Regional Node/CHLOR\_MODIS\_AQUA

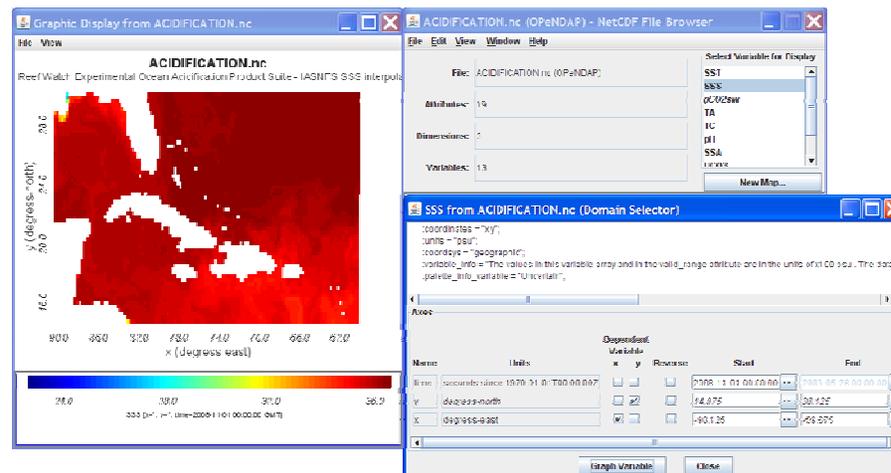
- Data type: Grid
- ID: MODIS\_AQUA\_CHLOR

Access:

1. **OPENDAP:** [http://cwcgom.aoml.noaa.gov/thredds/dodsC/MODISAQUACHLOR/CHLOR\\_A.nc](http://cwcgom.aoml.noaa.gov/thredds/dodsC/MODISAQUACHLOR/CHLOR_A.nc)
2. **WCS:** [http://cwcgom.aoml.noaa.gov/thredds/wcs/MODISAQUACHLOR/CHLOR\\_A.nc](http://cwcgom.aoml.noaa.gov/thredds/wcs/MODISAQUACHLOR/CHLOR_A.nc)
3. **NetcdfSubset:** [http://cwcgom.aoml.noaa.gov/thredds/ncss/grid/MODISAQUACHLOR/CHLOR\\_A.nc](http://cwcgom.aoml.noaa.gov/thredds/ncss/grid/MODISAQUACHLOR/CHLOR_A.nc)

Viewers:

- Integrated Data Viewer (IDV) (webstart)
- NetCDF-Java Tools (webstart)



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## ERDDAP

Dataset Title: **Archived NOAA Coral Reef Watch 25km Ocean Acidification Product Suite for the Greater Caribbean Region Quality Flag**  
Dataset ID: miamiacidification  
Institution: CoastWatch Caribb-NOAA NESDIS Coral Reef Watch  
Information: [Summary](#) | [Variables](#) | [Background](#) | [Data Access Form](#)

**Graph Type:** surface

X Axis: longitude

Y Axis: latitude

Color: pH

**Dimension Ranges**

time (UTC) specify just 1 value → 2009-05-28T00:00:00

latitude (degrees\_north) 14.875 + 30.125 -

longitude (degrees\_east) -90.125 + -59.875 -

**Graph Settings**

Color Bar: Continuity: Scale:

Min: Max: N Sections:

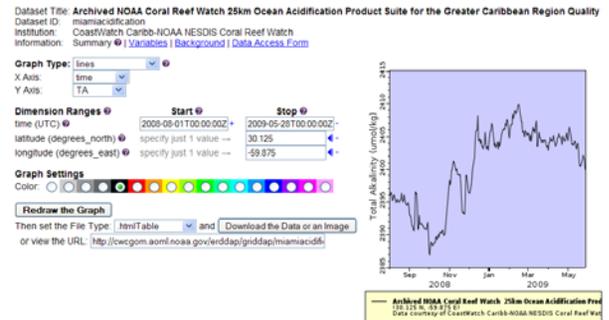
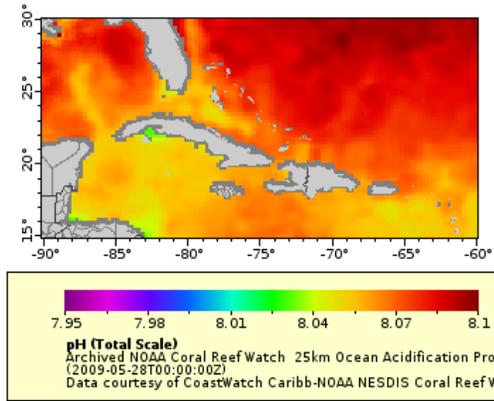
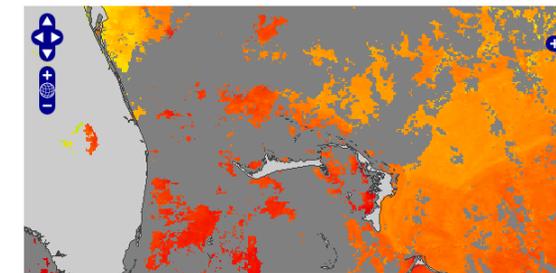
Draw the land mask: over the data

**Redraw the Graph**

Then set the File Type: .htmlTable and Download the Data or an Image

or view the URL: <http://cwcgom.aoml.noaa.gov/erddap/griddap/miamiacidifi>

You can select different values for the data variable's dimension(s):



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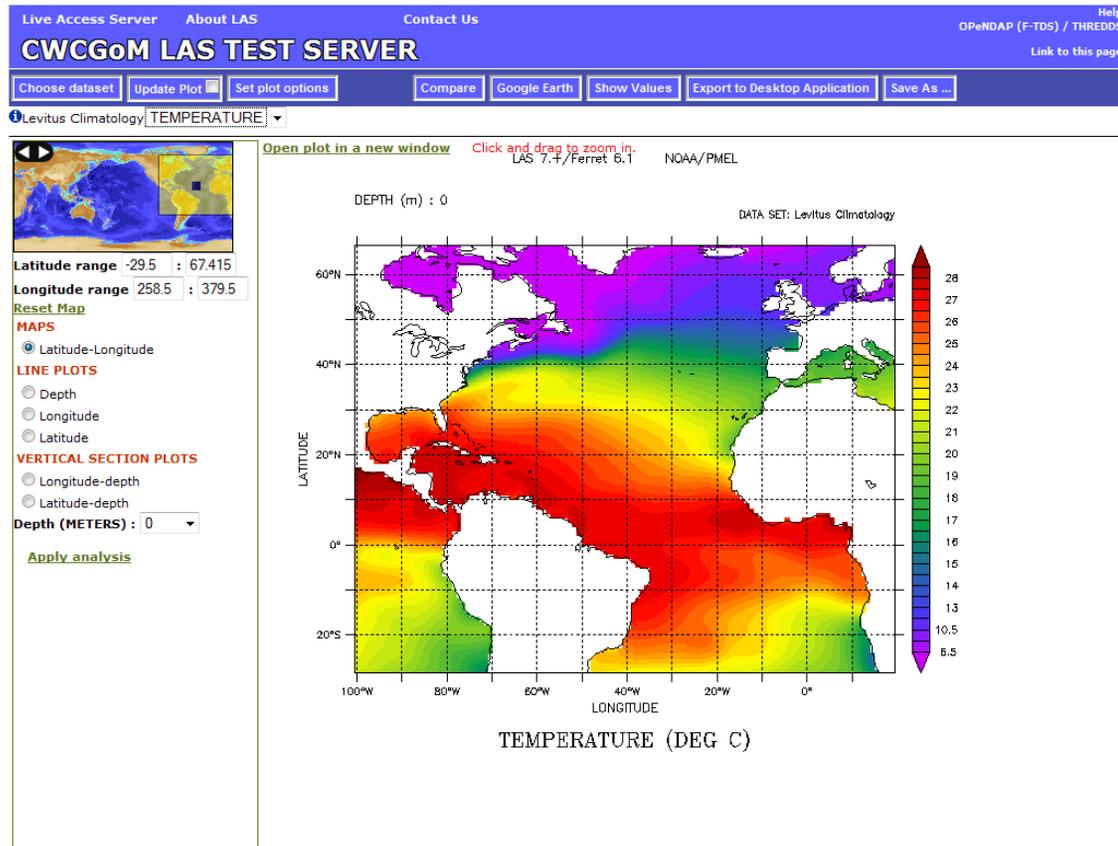
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## ◆ LAS



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## ◆ Ongoing Enhancements:

- **Multiday Composites**
- **Anomalies**
- **Trends**
- **Additional Vector features**
- **Regional Algorithms (e.g. TSM)**
- **Wind Stress and Ekman Transports**

## ◆ Future products:

➔ **Bacteria (vibrio), fish ethology, model hypoxia, upwelling indexes, SST/Chlor/Currents frontal product (strength-related, persistence), marine sanctuaries, etc.**



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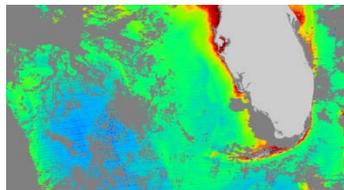
Other Online Tools

Conclusion

- ◆ We look forward to closer collaboration with Fisheries
- ◆ Goal: meet your needs and requirements
- ◆ Your comments and feedback are always welcome

Contact Info:

**Joaquin.Trinanes@noaa.gov**



Productivity



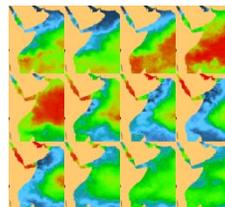
Coral Reefs/Acidification



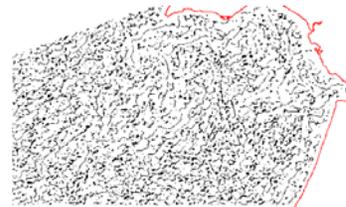
CPUE



Migrations



Ocean Dynamics



Frontal Products



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