





Partnering to Enhance Environmental Intelligence and Build Community Resilience

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- Purpose
- Issue
- Presentation of Briefing
- NOAA Coordination and Views
- Desired Outcome







Informational:

Provide the SAB with an overview on NOS and NWS collaboration to meet NOAA priorities







- Improving environmental intelligence and services requires interdisciplinary program integration.
- NOAA is creating strategic Roadmaps to put continued resources and emphasis on customer service, and breaking down the communication barriers to integrated product development and delivery



Challenges on the coast – What does the future hold?





A Changing World Population Shifts, Technological Dependence





Growing Issues Facing the Nation's Water Enterprise





- Population growth, agriculture and economic development
 - Stressing water supplies and water quality
 - Escalating socioeconomic risks of floods and droughts
- Shifting population density
 - Increasing vulnerabilities
- Changing climate
 - Impacting water availability and quality
 - Increasing uncertainty
- Aging infrastructure
 - Forcing critical, expensive decisions

Water: a Vital Nexus



WATER



Availability

ENERGY

ND ATMOSE

NOAA



Facing the Intersecting Scientific Challenges



- Societal challenges require an interdisciplinary approach
 - Earth System, Physical, Biological, Chemical and Social Science
- Total Water Prediction linking inland/terrestrial freshwater with coastal/estuarine observing, modeling, and products
- Ecological Forecasting evolves ocean prediction to include biochemical components to address economic and health impacts
- "Environmental Intelligence" synthesizing coastal observations, climate trends, and prediction systems to provide integrated products and services for decision making



Science Based & Customer Focused



Science connected to community challenges, at the scale and time needed to take action

Inundation Customers Ask:

- Who will get flooded? How much?
- When will it arrive and leave?
- What will the impacts be?
- How often will it occur?
- How should I act?

Ecological Forecasting

Outcome:

 Local communities use warnings of ecological hazards to take actions which manage natural resources and protect human health



Improved Hurricane Forecasts & Products



HWRF Forecast Track & Forecast Radar Reflectivity for Hurricane Arthur (18z 01 JUL '14)



Hurricane Arthur Potential Storm Surge Mapping 'Best Guess, Worst Case Scenario'



Advances, thanks to NWS Partnership:

- Increased resolution, reliability; decreased run time
- Improved real time and backup input fields
- NCEP access to boundary conditions
- Coastal ocean backbone to support navigation, hazards response, ecological
- **Users:** Federal, State agencies; coastal managers; maritime industry; emergency response community
- Values: reliability, timely delivery, usefulness, accessibility.











Enabling Delivery for HAB Bulletins



NOS HAB-OFS issues operational HAB forecast bulletins for southwest FL and TX, based on:

- NOS OFS forecasts of current
- NESDIS ocean color
- NWS wind forecasts
- Observations (NWS NDBC & local partners)
- Public health & life guard reports



Gulf of Mexico Harmful Algal Bloom Bulletin Region: Southwest Florida Monday, 25 February 2013 NOAA Shatima Uoean Sartise NOAA Shatima Uifentarian Sartise NOAA Shatima Uifentarian Sartise Last bulietis: <u>Timariar Refurary 11</u>, 2013



Statilie delorsphyl image with poroble K. Iwwe HAD man shows by read polygou(). Gall concentration sampling data frame (branzy 15 nz 2 shows as ned (high), comage (assistim), yabor (low 0), basiyen yon 0), parja (way yon 0), pink (present), and green (not present). Cell court data are provided by Fronti FUC Final and Wildliff Research instrints. For a list of sample providers and a key to the cell concentr from Holdward formers are and showhich building mode.

Detailed sample information can be obtained through the Florida FWC Fish and Wildlife Research Institute at: http://myfwc.com/research/redride/events/status/itatwaide/

To see provious bulletins and forecasts for other Harmful Algal Bloom Bulletin regions, visit at: http://tidesandoureuts.nosa.gov/hab/bulletins.html

Conditions Report

Very low to high concentrations of Karenia brevis (commonly known as Florida Red Tide) are present along- and offshore southwest Florida, as well as offshore the lower Florida Keys, Alongshore northern Sarasota County, patchy low respiratory impacts are possible today through Thursday, Alongshore southern Sarasota County, patchy moderate respiratory impacts are possible today through Thursday. Alongshore Charlotte County patchy low respiratory impacts are possible today through Thursday. Alongshore Lee County and in the bay regions of southern Charlotte and Lee counties, patchy moderate respiratory impacts are possible today. Wednesday, and Thursday, with patchy high respiratory impacts possible on Tuesday. Alongshore northern Collier County, patchy very low respiratory impacts are possible today, with patchy moderate respiratory impacts possible Tuesday through Thursday, Alongshore and in the bay regions of central Collier County patchy moderate respiratory impacts are possible today, Wednesday, and Thursday, with patchy high respiratory impacts possible on Tuesday . Alongshore southern Collier and northern Monroe counties, patchy low respiratory impacts are possible today and Tuesday, with patchy very low respiratory impacts possible Wednesday and Thursday. No respiratory impacts are expected elsewhere alongshore southwest Florida, including the Florida Keys, today through Thursday, February 28. Over the past several days, reports of respiratory irritation were received from Sarasota, Charlotte, Lee and Collier counties Reports of dead fish were received from Lee and Collier counties

Analysis

A narmful algal bloom of *Karonia browis* is present along- and offshore southwest Florida from Sarasota to Collier counties, with *K browis* concentrations ranging from 'not present' to 'high'. Harmful algae has also been identified offshore the lower Florida Keys.

Recent samples from Lee County identified 'medium' to 'high' K. bwviz concentrations throughout the Plue Island Sound region, 'very low b' and 'high' concentrations alongshore Samble and Captiva Islands, respectively, and 'medium' concentrations alonglow Samble and Captiva Islands, respectively, and 'medium' concentrations alongshore Lighthouse Beach (Samble Island) and several locations alongshore southen Lee County (WRI; 2:0-2:0). Low a' to 'bu' concentrations identified alongshore southen Lee County (WRI; 2:0-2:0). Low a'' to 'bu' is not present, with only one sample indicating background concentrations (WRI; 2:10-2:1). Reprintery intrition was reported along several backnes in Lee County, as well as Nokomis and Manasona Beaches in Samota County (AML, CCPCPD; 2:22-34). Dead fish have been reported in Lee and Collier counts (WRI; 2:20-24). Nor K bwvit was identified in samples collected offibore Oriot and Harkor Kays on 2:14 and 2:20 (AML).

In researt MODIS Aqua imagery (2/3, shown left), elsevated chaorophyll (+10 ggL) is visible stretching along- and offshore the southwest: Florida costiline from Surasota to Collier counters, with parches of high to very high chlorophyll (11 to >0 ggL), visible alongshore southern Lee to Collier countes in imagery from 2/23 and 2/4 (not shown). In MODIS imagery from 2/22 (not shown) parches of high to very high chlorophyll (12 to >0) mouther southers and offshore Collier to Monree countes. These regions will continue to be monitored as imagery becomes svalible. Imagery throughout the Florida

Disseminated to coastal managers via subscriber listserv



Enabling Delivery for Ecological Forecasting





HAB forecasts and Beach Hazards Statement



Charlotte County: Bay regions of Southern Charlotte/northern Lee: patchy high respiratory impacts are possible Tuesday.

Lee County: Gulf coast: patchy high respiratory impacts possible Tuesday. Bay regions: patchy high respiratory impacts are possible Tuesday.

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Enabling Service Delivery for Vibrios

- NCEP running NOS postprocessing algorithms on NCEP computers
 - Chesapeake Bay, Delaware Bay, northern Gulf of Mexico, Tampa Bay
 - Output on NCEP web page (password-protected)
- Oxford Lab, WFO Tampa Bay Area jointly identifying vibrio stakeholders and requirements



Concentration of V. perahaemolyticus cells in Tampa Bay Oysters TBOF5 Model Purc20131212/0000 Daily Forecast for 20131212







"Summit to Sea " Treetop to Bedrock"

- Recognition that the hydrological cycle is a resource and a threat; and that the "Weather-Climate linkage" depends on its inclusion.
- *Full understanding and prediction of all sources of water*, accounting for all factors that influence water's behavior from rainfall to streams to rivers to the coastal domain. TWP will link:
 - Inland: Rainfall, Runoff, Terrestrial Storage, Human Effects (Withdrawals, Diversions, Dams) Streamflow, Floods, Urban Hydrology, Inundation
 - Along the Coast: Impacts of Sea Level Change, Tides and Water Levels, Storm Surges, and Fresh Water Inputs and Flows on Total Water Levels



Total Water Prediction Applied to the "Dead Zone"



- Quantifying impacts in support of mitigation, goal setting, and managing fisheries
- Coupled hydrodynamic,
 biogeochemical and living
 resource models
- Advancing ecological modeling for diversions and hypoxia in the northern Gulf of Mexico







What's the future?



- Improving observations and predictions to address societal challenges and mitigate impacts on community well-being.
- Advance Team NOAA's support to Federal partners (e.g. CDC, FDA, EPA), decision-makers, and the public.













- Coordination with:
 - NOAA Ecological Forecasting and Storm Surge Roadmaps have cross-NOAA teams and exec oversight.
 - NOS & NWS have quarterly coordination meetings
- NOAA leadership continues to support participation and problem solving through these teams





Any Questions?