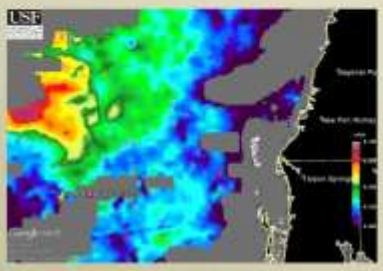


Red Tide Update

Staff Report

September 10, 2014

Florida Fish and Wildlife Conservation Commission

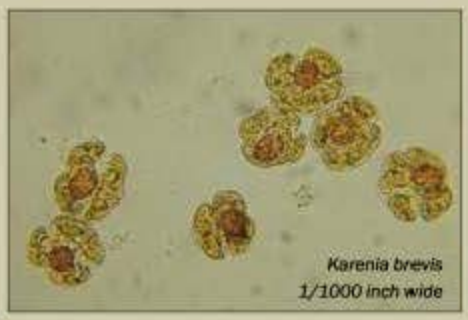
Wildlife Research Institute

Review and discussion of red tide bloom in the Gulf of Mexico that began in late July, 2014.

Author/presenter: Gil McRae

What is Red Tide?

- Microscopic algae that can grow or accumulate to form a "bloom", which can discolor the water
- Florida red tide organism *Karenia brevis* identified in 1947
- Naturally occurring phenomenon documented first in 1840's, but possibly as early as 1400's



Impacts of Red Tide

- Produces toxins that kill fish, birds, manatees, dolphins
- Filter feeding shellfish (clams, oysters, mussels) accumulate toxin and can cause Neurotoxic Shellfish Poisoning (NSP) in human consumers
- Toxin is carried in aerosol form in sea spray and causes respiratory irritation in humans
- Massive fish kills on beaches create aesthetic problems, economic losses and high clean up costs

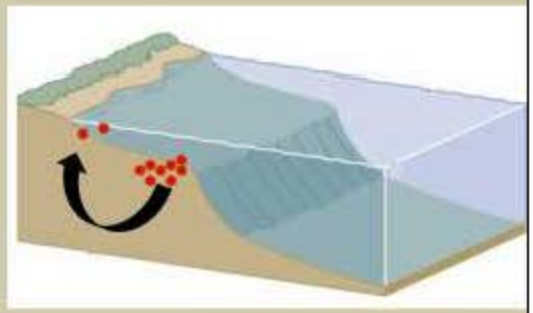
Where does Red Tide occur in Florida?

- Initiate offshore in the Gulf of Mexico, deep waters
- Transported inshore with upwelling and winds
- Most common in SW FL
- Atlantic can be impacted if blooms are transported to the E. coast
- Other Gulf states and Mexico also affected

Number of blooms since 1957

How does Red Tide occur in Florida?

- Initiated offshore in the Gulf of Mexico, deep waters
- Transported inshore with upwelling and winds



Management of Red Tide

- Control of red tide is not practical given the spatial extent of blooms
- Mitigate effects by monitoring, protecting public health & reducing economic losses

Florida Fish & Wildlife Conservation Commission (FWC) - routine & event response monitoring of water and shellfish, daily reporting to stakeholders, weekly reporting to public

Florida Department of Agriculture and Consumer Services (FDACS) - shellfish harvesting area closures (formal partnership with FWC through Biotoxin Contingency Plan)

Florida Department of Health (DOH) [county & state levels] – sampling, signage, coordination of health related actions, information dissemination

Mote Marine Laboratory – routine & event response monitoring, partnership between FWC and Mote (cooperative program)

National Oceanographic and Atmospheric Administration Harmful Algal Bloom Operational Forecasting System (NOAA HAB OFS) – reports on likelihood of respiratory irritation for FL counties based on FWC data

University of South Florida (USF) Collaboration for Prediction of Red Tides (CPR) – short term forecasts of bloom movement

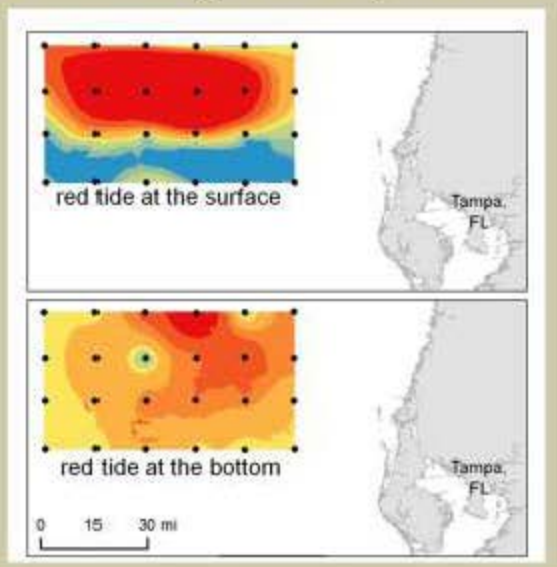
Optical Oceanography Laboratory – customized satellite images to detect surface blooms

Current Red Tide

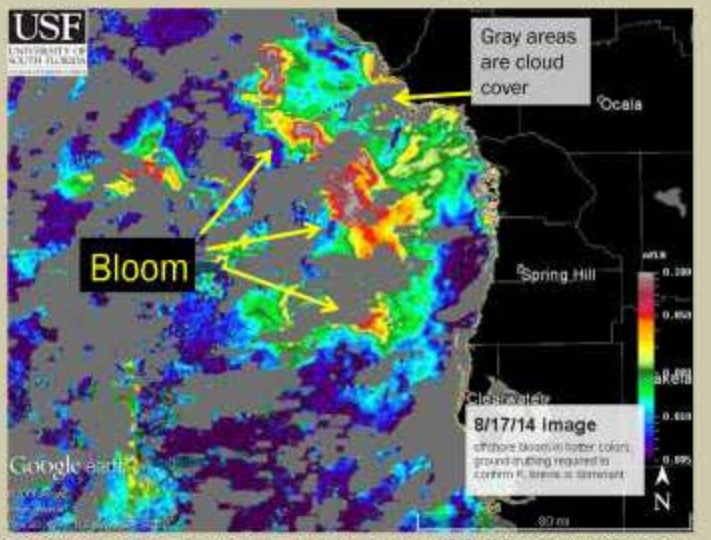
- In early July 2014, FWC received numerous reports of dead fish, dominated by bottom-dwelling reef fish
- Offshore cruises confirmed a bloom of the Florida red tide organism, *Karenia brevis*.
- Satellite images from the Optical Oceanography Lab at the University of South Florida revealed an extensive surface bloom approximately 80 miles long and up to 50 miles wide in waters 40 to 90 miles offshore between Dixie and Pasco counties.
- Since that time, the bloom has remained offshore and become more patchy.
- Red tide has not been detected in inshore sampling.

Current Red Tide: August 3-6, 2014

- FWC offshore monitoring cruise Aug 3-6, 2014
- Revealed 3D structure of bloom
- Additional offshore cruise scheduled for the week of August 25, 2014



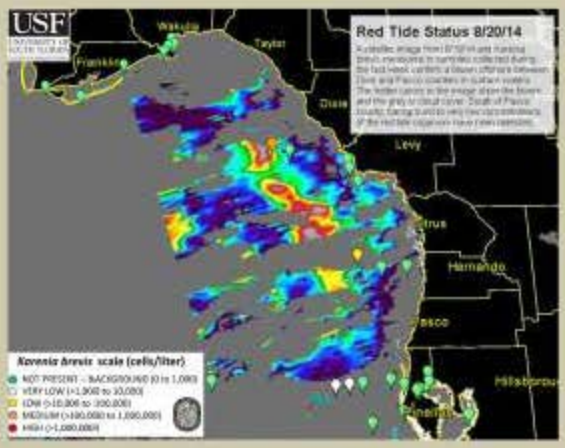
Current Red Tide: August 17, 2014



A satellite image showed a patchy bloom 20-30 miles offshore stretching between Dixie and the northern part of Pinellas Counties.

Current Red Tide: August 20, 2014

- Red tide remained offshore and became more patchy
- Not detected in inshore sampling
- Current forecasts show S-SE movement of surface and bottom waters
- Additional offshore cruise scheduled for the week of August 25, 2014



Current Red Tide

- Forecast models predict 3 day movement
- USF current model indicates predominantly south flow of surface currents and southeast flow of bottom currents in the vicinity of the bloom patch through 8/20/14 at approximately 4 miles per day.
- Red tide status reports updated every Friday (http://research.myfwc.com) while bloom is offshore
- Updates twice a week (Wed, Fri) if bloom moves inshore

Note: This presentation will be updated with the latest information prior to the meeting