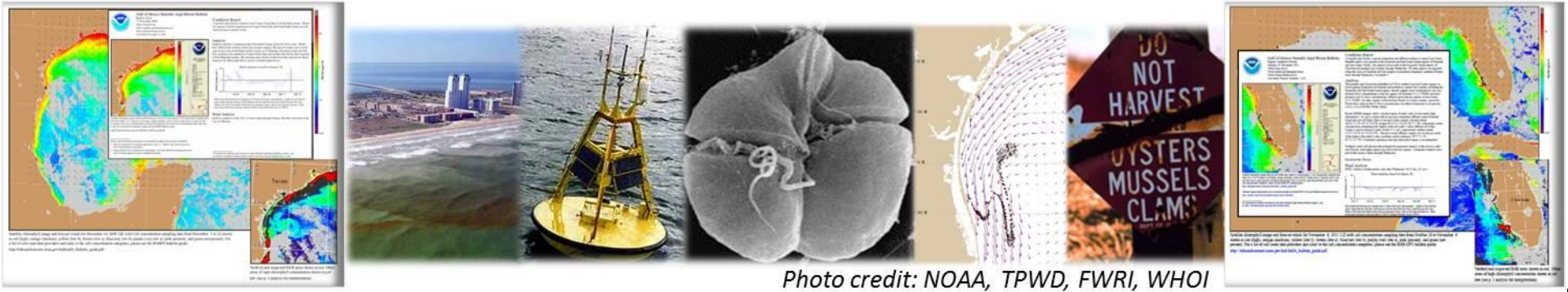


Photo credit: NOAA, TPWD, FWRI, WHOI

Refining *Karenia brevis* Detection: An Assessment of Ensemble Imagery Products for Operational Forecasting

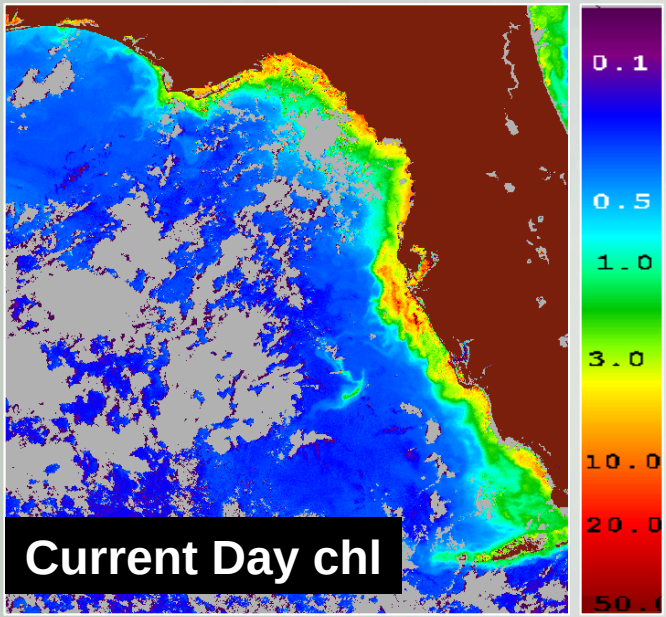
Katherine Derner
NOAA/NOS Center for Operational Oceanographic Products & Services

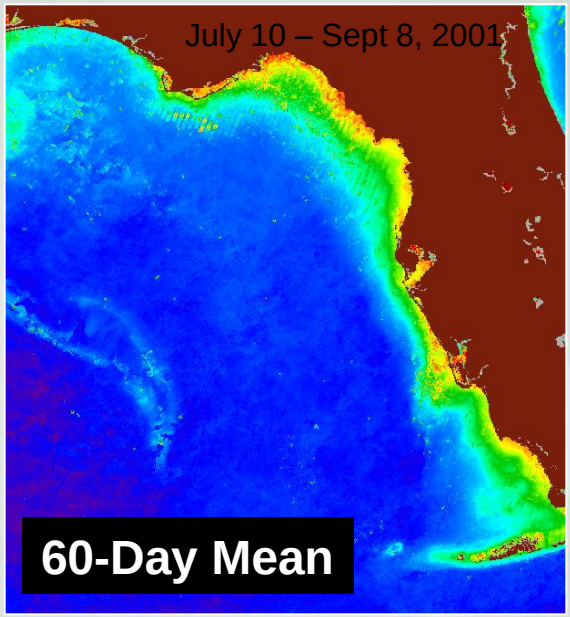
co-authors: Karen Kavanaugh & Michelle Tomlinson

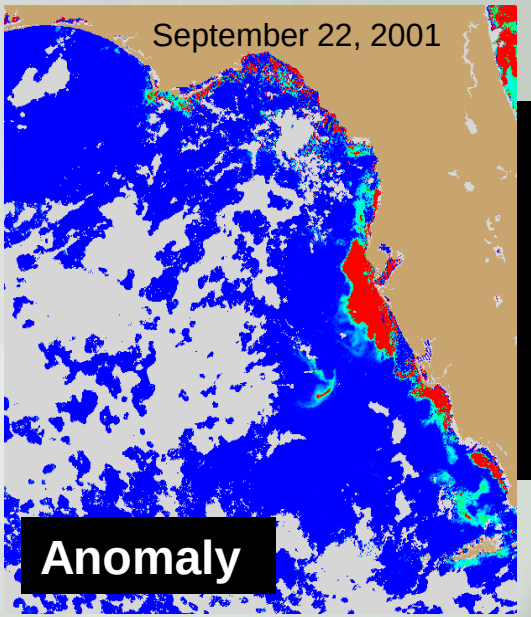
November 16, 2015

http://tidesandcurrents.noaa.gov/hab

Chlorophyll Anomaly Imagery



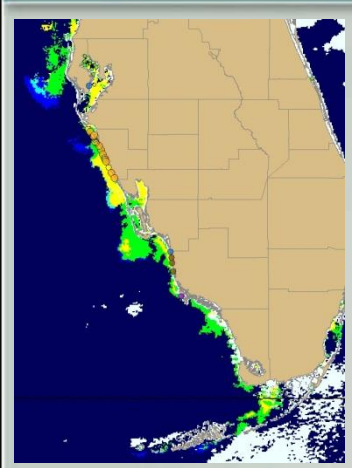




New Blooms

- SeaWiFs (2000-2009)
- Moderate Resolution Imaging Spectroradiometer (MODIS) Aqua (2009 to present)

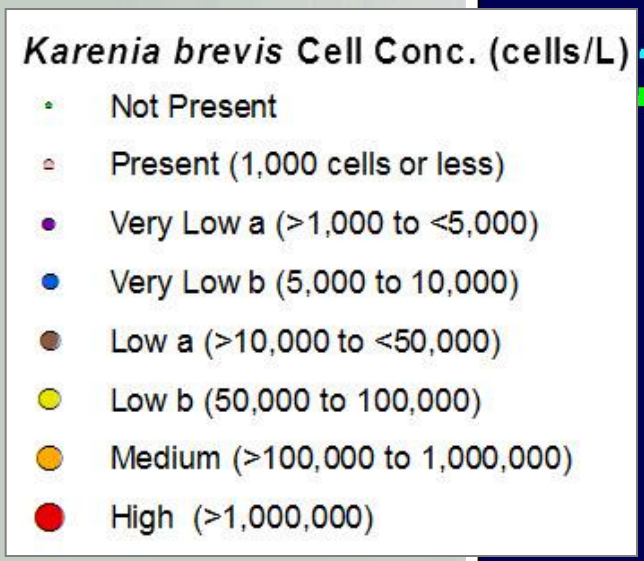
Ensemble Imagery Products

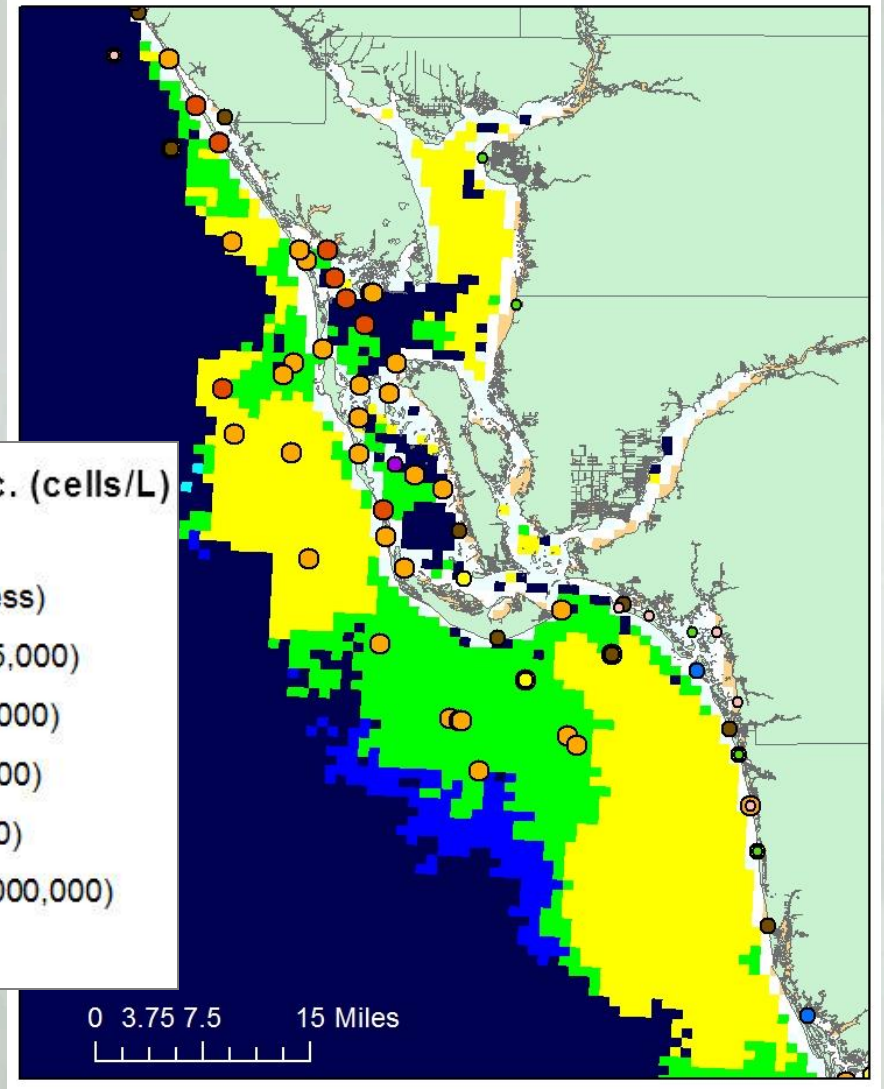


PIXEL COLOR	IMAGERY PRODUCT	PRODUCT ALGORITHMS	INTERPRETATION
	Chlorophyll Anomaly	Chlorophyll Anomaly only	Less likely to be *K. brevis*
	Spectral Shape Ensemble	Chlorophyll Anomaly + Spectral Shape 490nm	Could be *K. brevis*
	Backscatter Ensemble	Chlorophyll Anomaly + Backscatter Ratio b_{bp}	Could be *K. brevis*
	Full Ensemble	Chlorophyll Anomaly + Spectral Shape 490nm + Backscatter Ratio b_{bp}	Likely *K. brevis*

Study Region

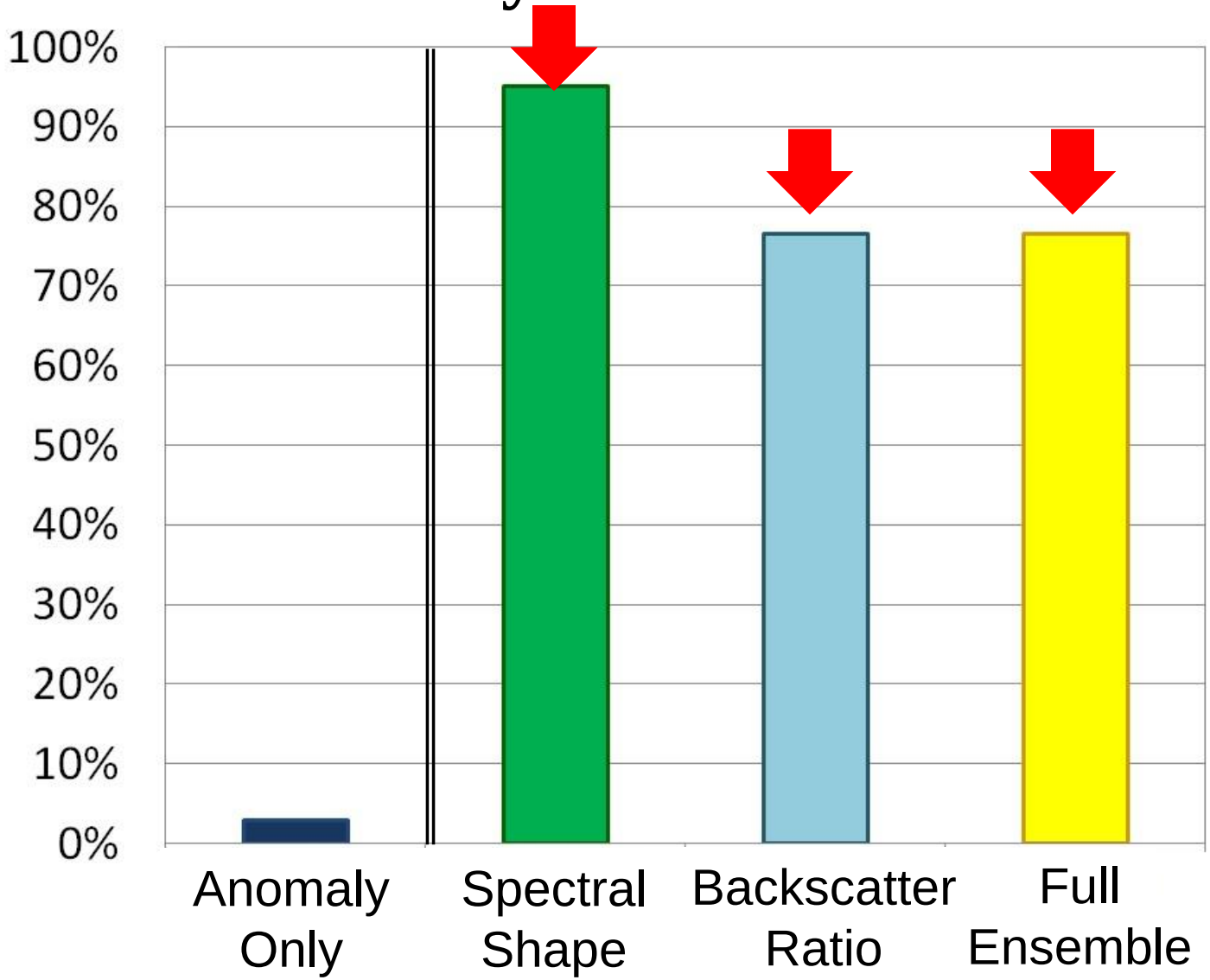
Ensemble Imagery Analysis



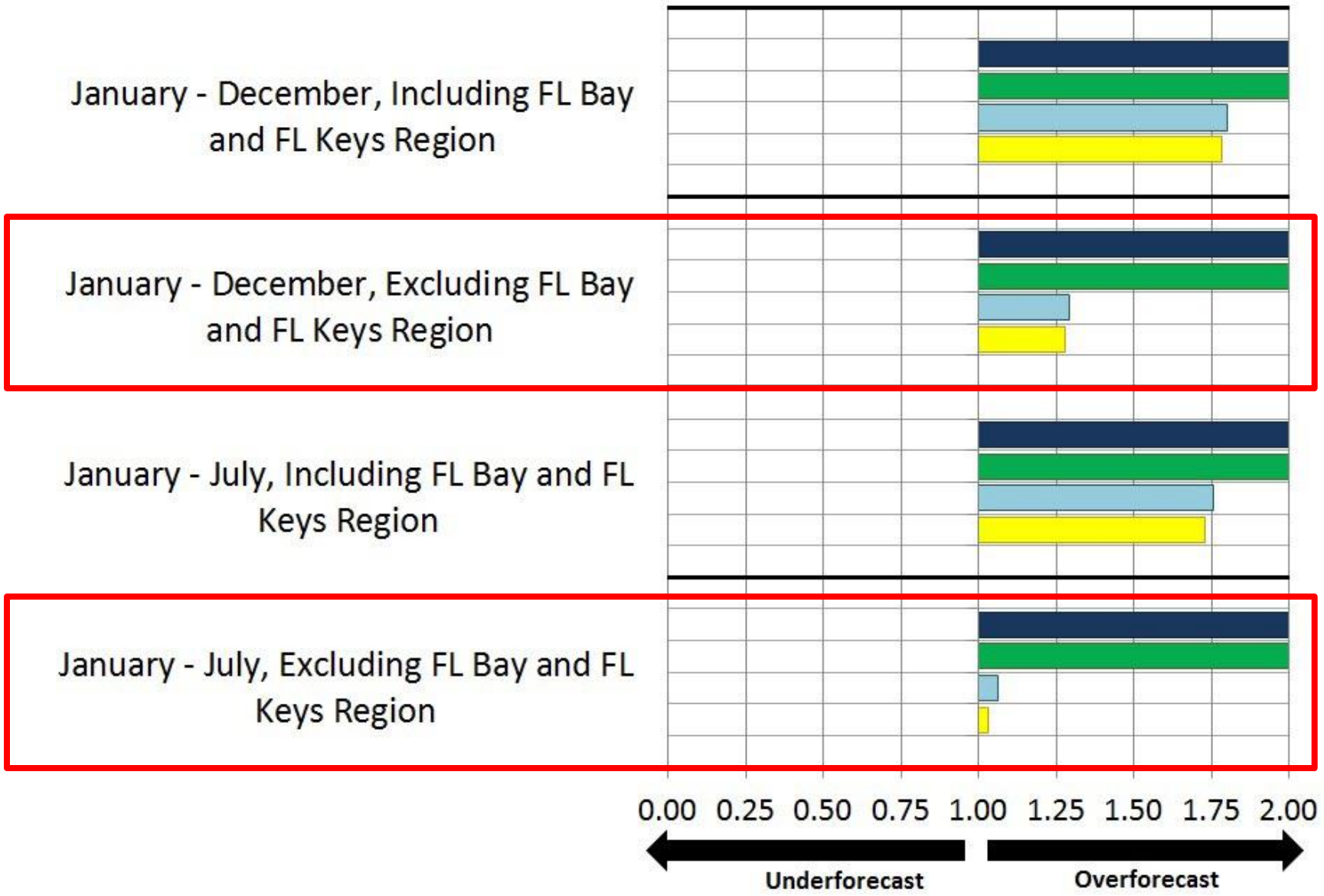


PIXEL COLOR	IMAGERY PRODUCT
	Chlorophyll Anomaly
	Spectral Shape Ensemble
	Backscatter Ensemble
	Full Ensemble

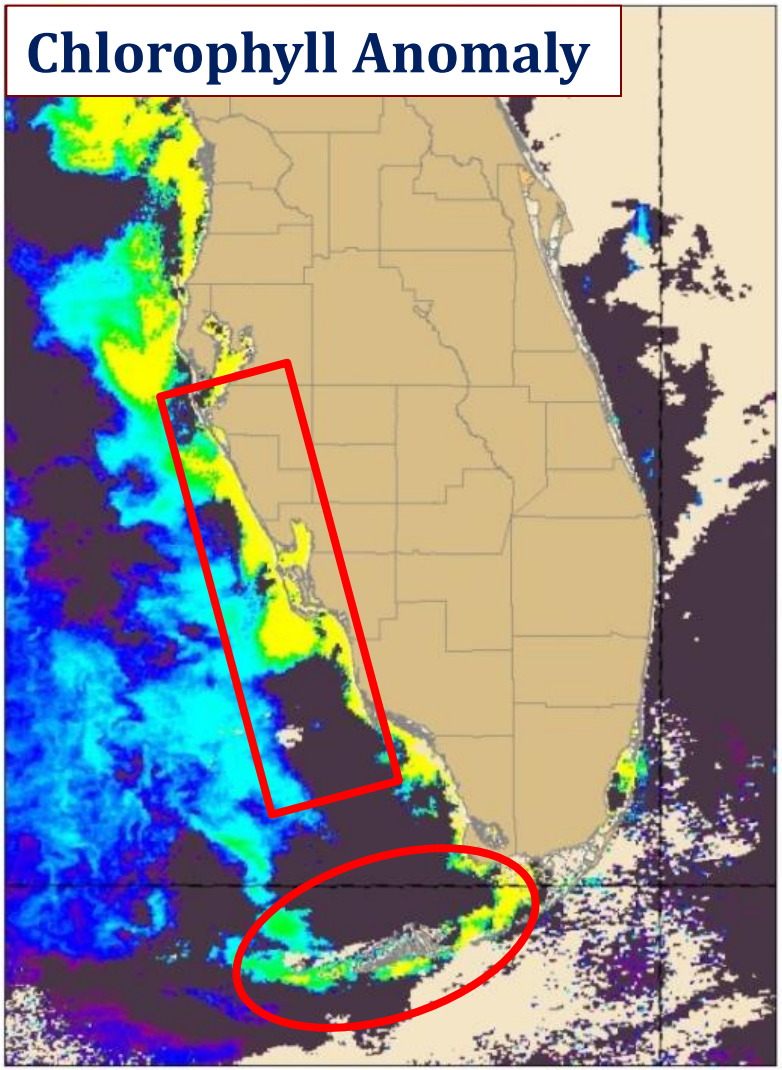
HAB Detection: Percent Better than Anomaly or Ensemble Product

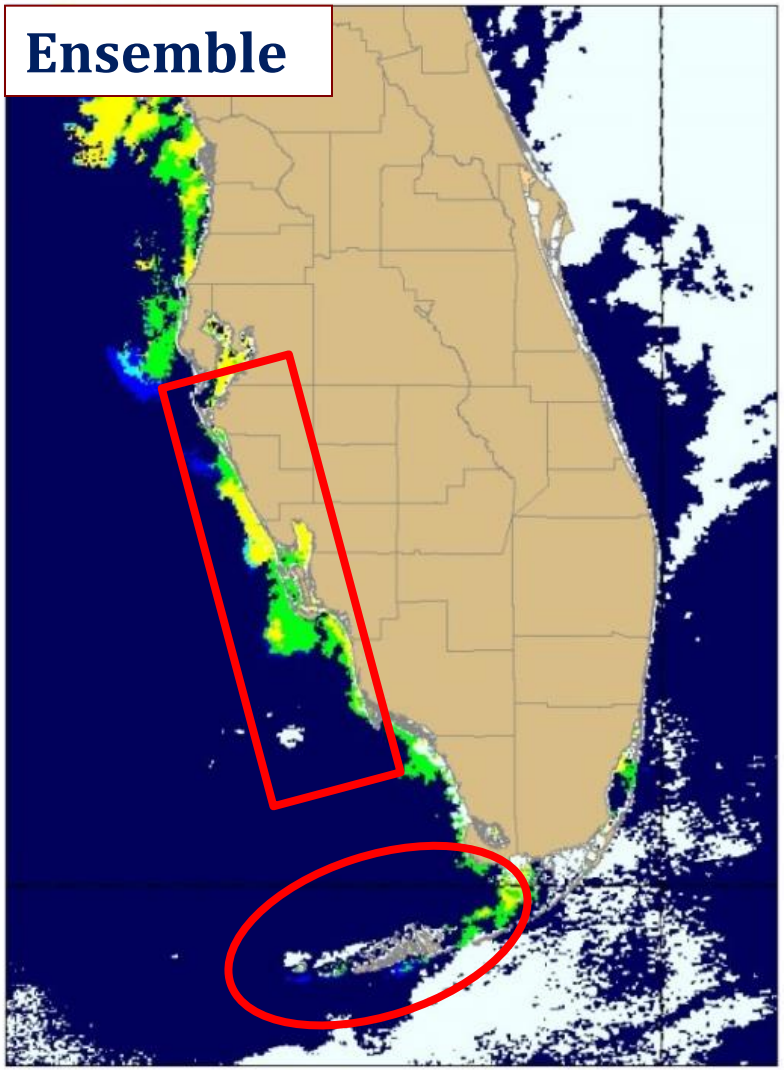


Product Reliability (Bias)



Imagery Analysis

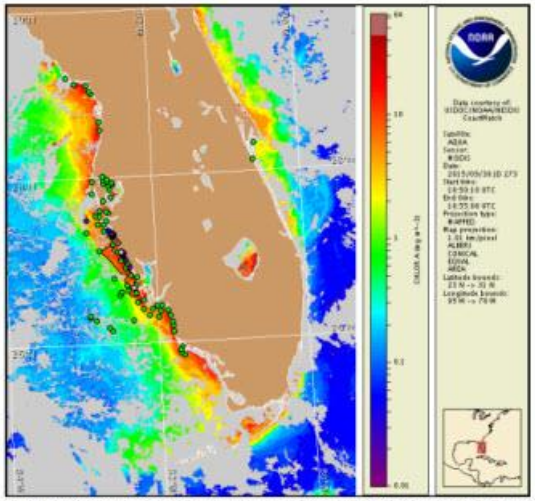




NOAA HAB-OFS Bulletins

Gulf of Mexico Harmful Algal Bloom Bulletin

Region: Southwest Florida
Thursday, 01 October 2015
NOAA National Ocean Service
NOAA Satellite and Information Service
NOAA National Weather Service
Last bulletin: Monday, September 28, 2015



Satellite chlorophyll image with possible *K. brevis* HAB areas shown by red polygon(s), when applicable. Points represent cell concentration sampling data from September 21 to 30: red (high), orange (medium), yello (low b), brown (low a), blue (very low b), purple (very low a), pink (present), and green (not present). Cell count data are provided by Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute. For a list of sample providers and a key to the cell concentration categories, please see the HAB-OFS bulletin guide:
http://tidesandcurrents.noaa.gov/hab/habfs_bulletin_guide.pdf

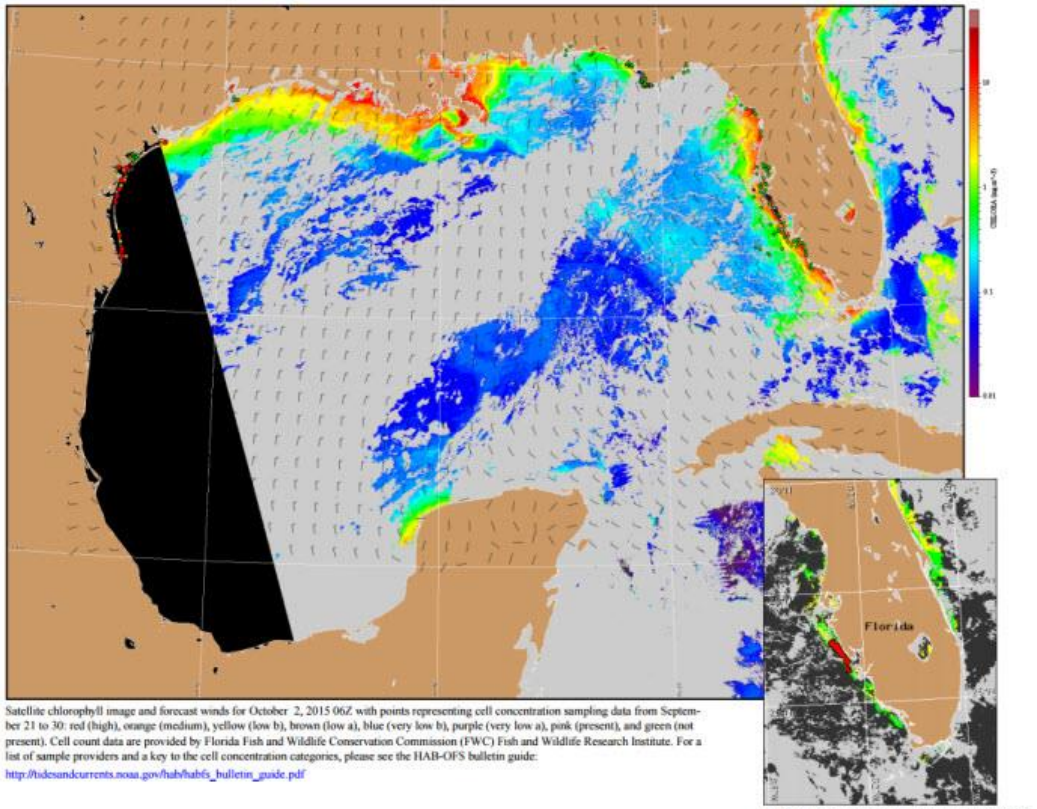
Detailed sample information can be obtained through FWC Fish and Wildlife Research Institute at:
http://myfwc.com/redtidestatus

To see previous bulletins and forecasts for other Harmful Algal Bloom Bulletin regions, visit at: http://tidesandcurrents.noaa.gov/hab/bulletins.html

Conditions Report

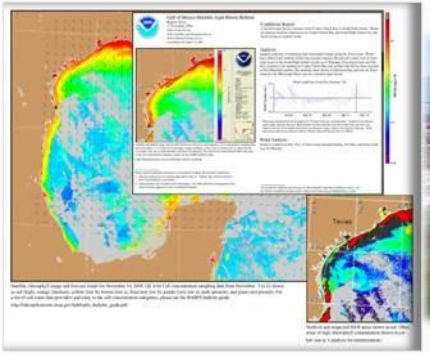
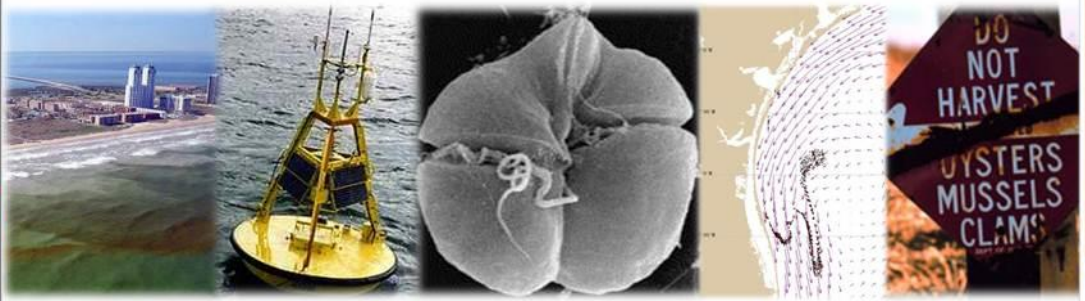
Karenia brevis (commonly known as Florida red tide) ranges from not present to low concentrations along the coast of southwest Florida, and is not present in the Florida Keys. *K. brevis* concentrations are patchy in nature and levels of respiratory irritation will vary locally based upon nearby bloom concentrations, ocean currents, and wind speed

-3-



Satellite chlorophyll image and forecast winds for October 2, 2015 06Z with points representing cell concentration sampling data from September 21 to 30: red (high), orange (medium), yellow (low b), brown (low a), blue (very low b), purple (very low a), pink (present), and green (not present). Cell count data are provided by Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute. For a list of sample providers and a key to the cell concentration categories, please see the HAB-OFS bulletin guide:
http://tidesandcurrents.noaa.gov/hab/habfs_bulletin_guide.pdf

Verified and suspected HAB areas shown in red. Other areas with *K. brevis* optical characteristics shown in yellow (see p. 1 analysis for interpretation).

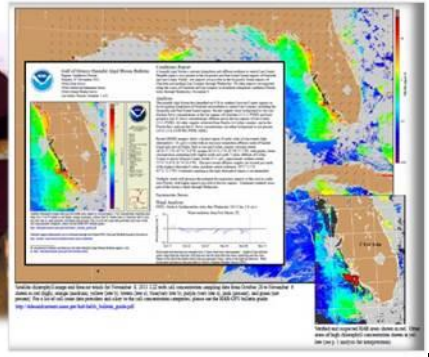


Photo credit: NOAA, TPWD, FWRI, WHOI

Poster Session 1 – Monday 5-6:30pm
Poster #9

Bulletin Guide: http://tidesandcurrents.noaa.gov/hab

katie.derner@noaa.gov
hab@noaa.gov