



**NOAA
FISHERIES**



Cooperative monitoring of ecosystem stressors in the Gulf of Mexico

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Gulf Council Reef Fish AP meeting
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Acknowledgments

Florida Commercial Waterman's Conservation (FCWC)

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NOAA white ship crew, scientists, and
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R/V Walton Smith crew, scientists,
and volunteers

Florida FWC

Claire Crowley

Ted Switzer

The Problem

Marine ecosystems are getting hit with an increasing number and intensity of stressors and measurement of these stressors is lacking.

(oil spills, water quality, freshwater diversions/spillway openings, increasing human population, coastal development, etc.)

The Solution

Surveys conducted by NMFS and other scientists can only cover so much and at best sample once every couple of months. We need more eyes on the water – *fishermen can fill this important gap.*

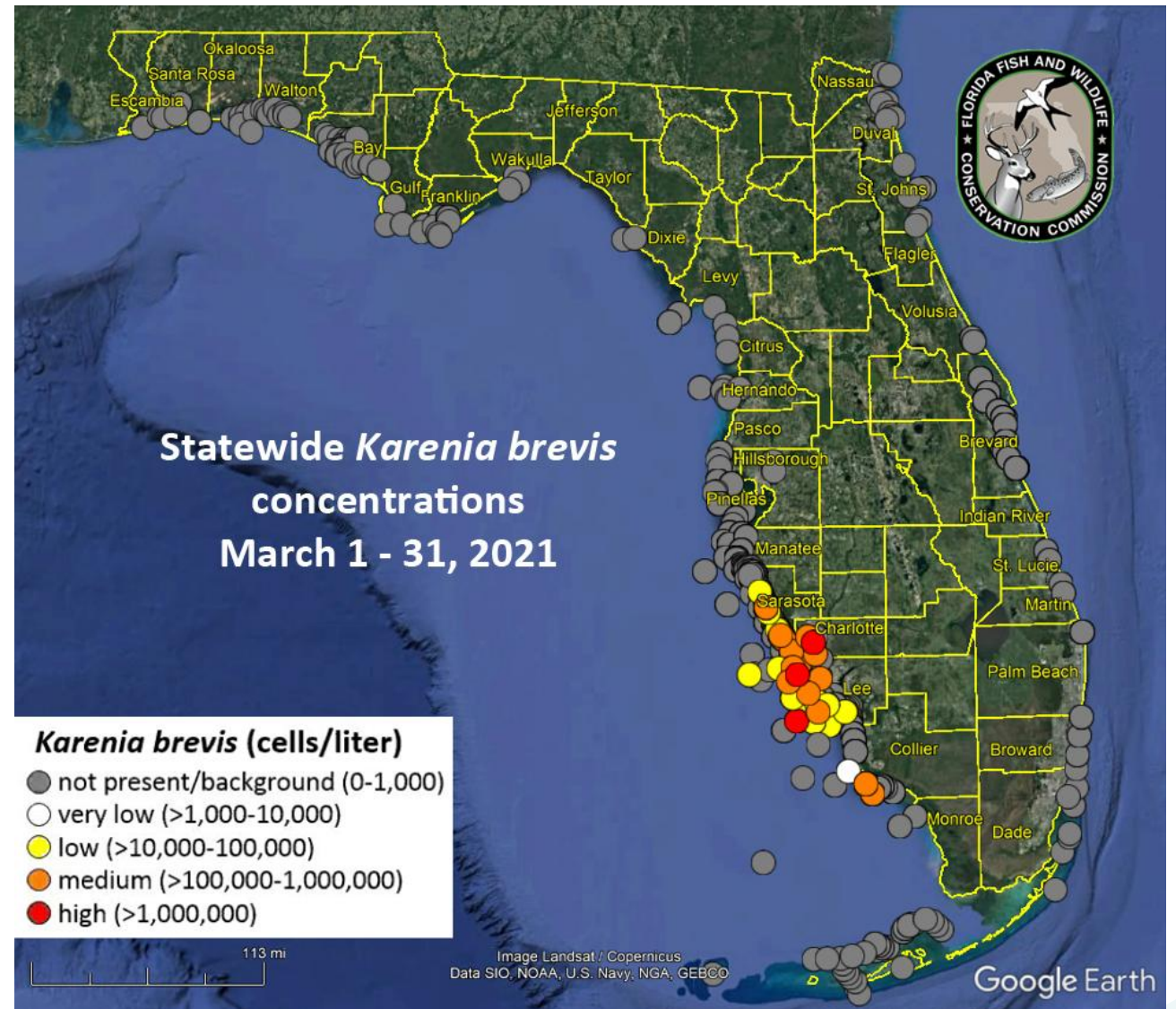
Red tide case study

- NOAA – Florida Commercial Watermen’s Conservation (FCWC) collaborative research
 - <https://floridawatermen.org/>
- Volunteer based water quality sampling out of Matlacha, FL
- Started in late 2018 in response to bad red tide
- 5 water quality units
- Fishermen sample water column with sensor at several locations during fishing trip
 - Total time per drop depends on depth but averages 2 ½ minutes*



2021 red tide event

- Bloom lingered since Nov 2020 in SWFL
- March: blooms crept up coast toward Tampa Bay
- Early April: Piney Point discharges into TB
- May: Fishermen reported “green slime” fouling gear in 100-130 ft of water off Sanibel - unusual to have macroalgal growth so deep



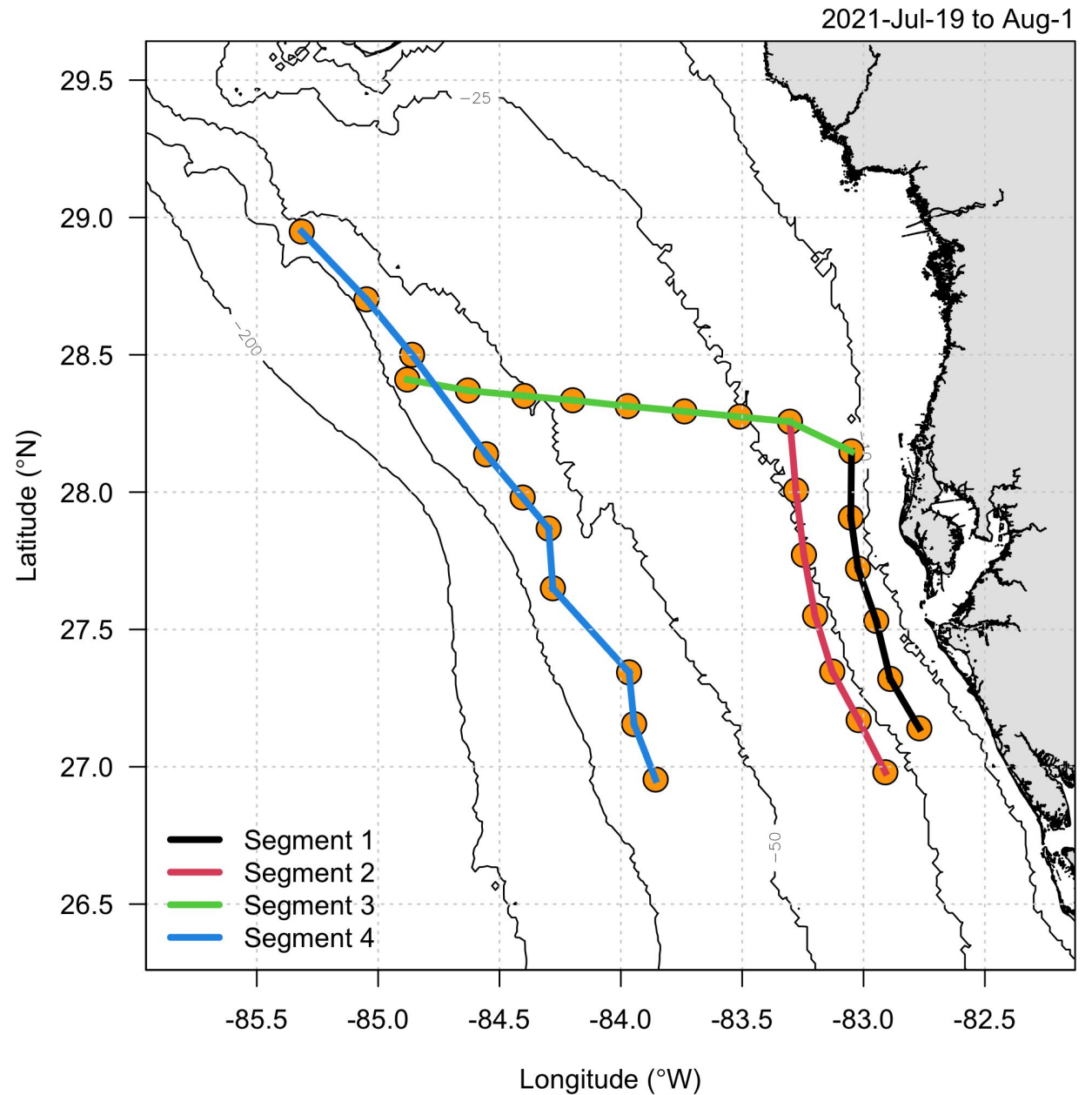
Collaborative NOAA AOML cruise sampled for algae in locations identified by fishermen

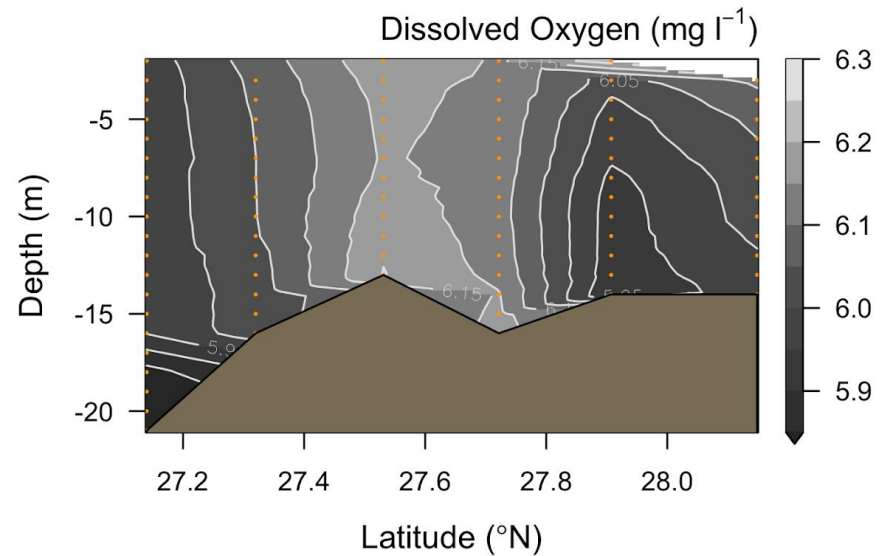
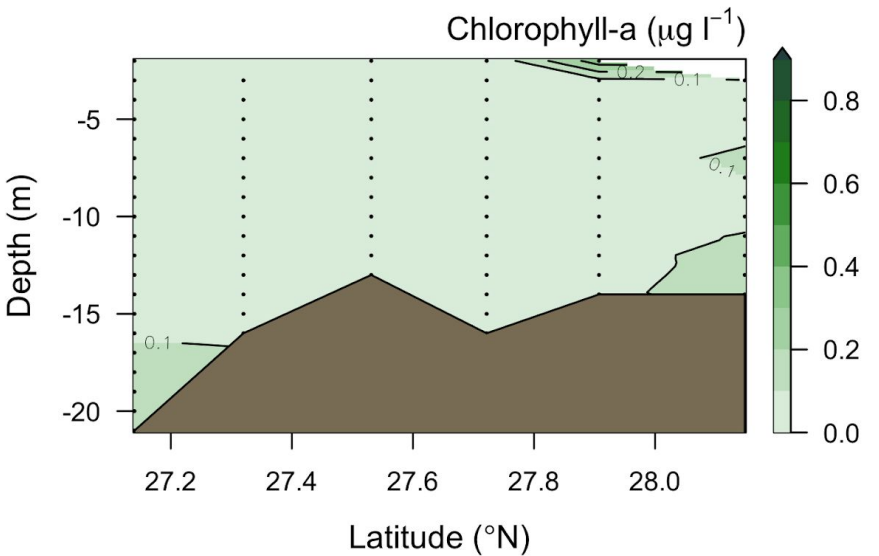
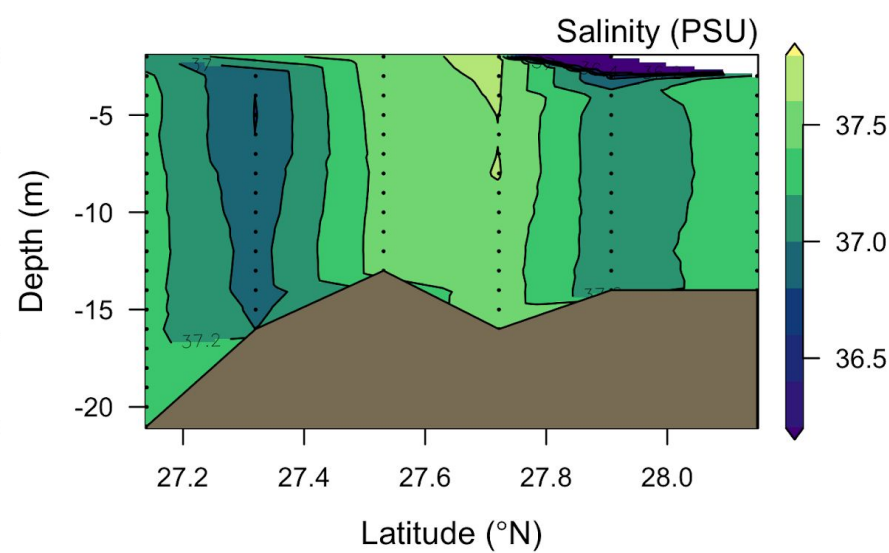
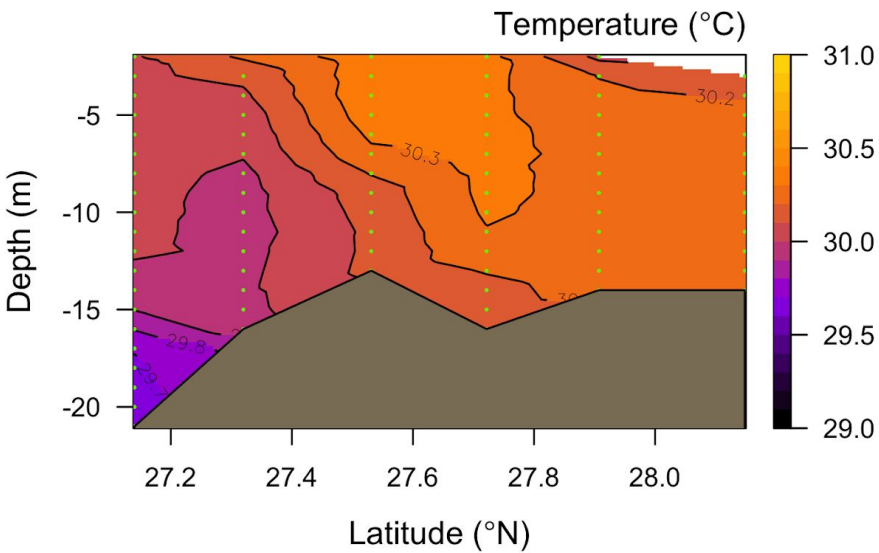
Identified as a mix of non toxin-producing algae: Dasya (red algae) and cladophora.



July-Aug FCWC Monitoring

- **At the time, no information about water quality in areas of grouper habitat**
- Commercial fisherman conducted water quality sampling Jul-Aug
- No fish kills seen, blue water off St. Pete, water offshore looked fine
- Fishing good but south of 27.8 Latitude gag stopped biting





No unusual conditions found

Presented to Gulf SSC on Aug 9 2021 and **update**
upcoming SSC on Jan 11 2022

Influenced SSC decisions about assumptions of red grouper mortality in stock assessment projections

SSC opted for less conservative (**greater**) catch limit

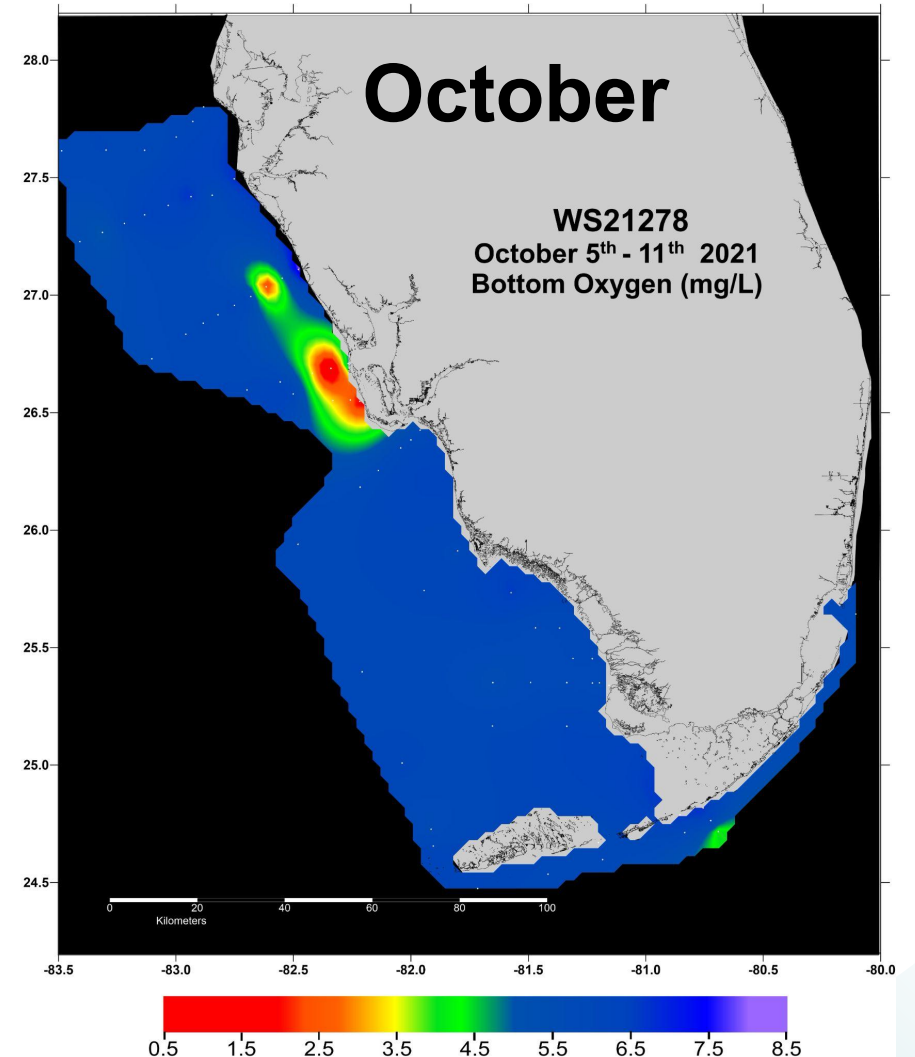
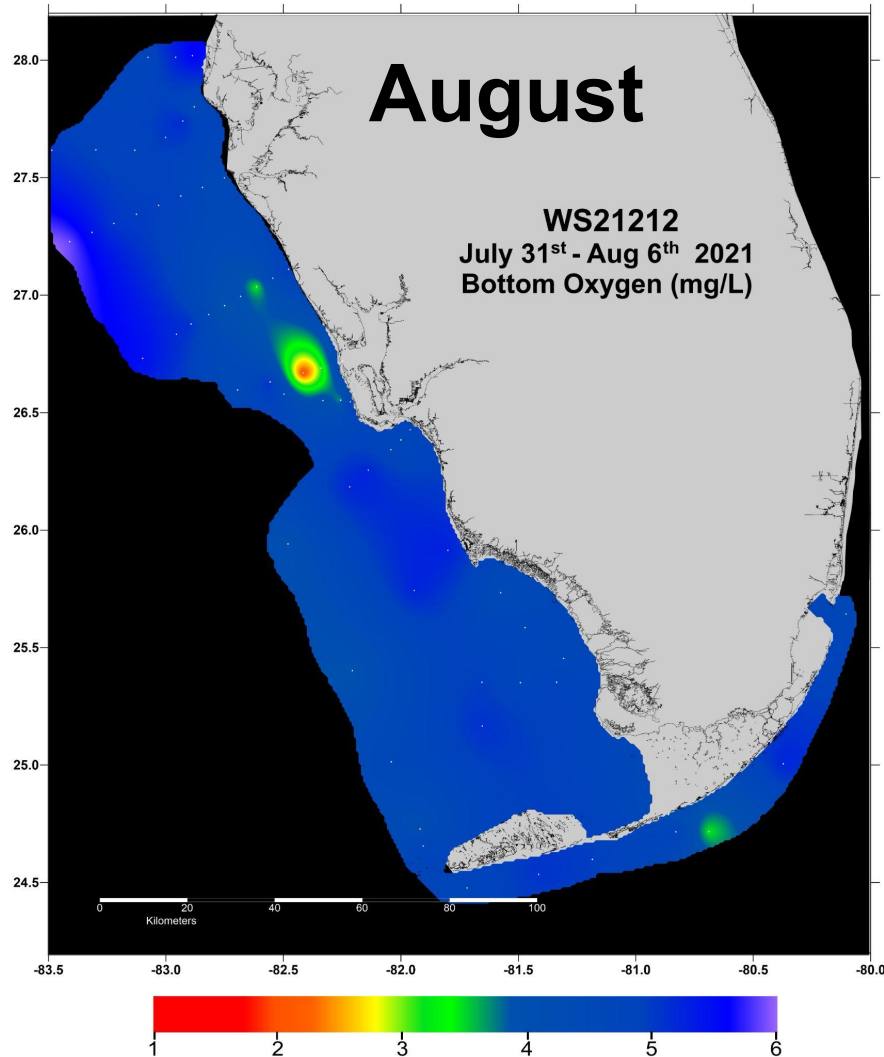
Using ecosystem information does **NOT** always equal quota cuts

Quarterly NOAA-AOML cruises

R/V Walton Smith found **hypoxia** (low oxygen) 2 months apart in same area

Stone crab season opens Oct 15

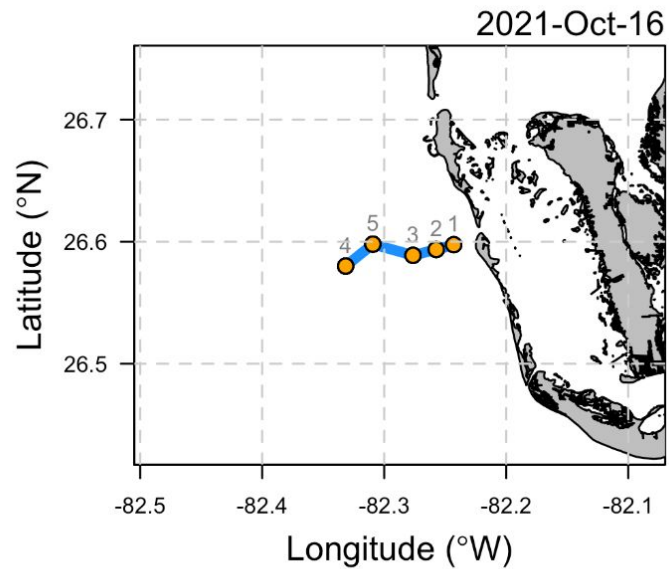
NOAA-AOML cruise timed to provide early warning



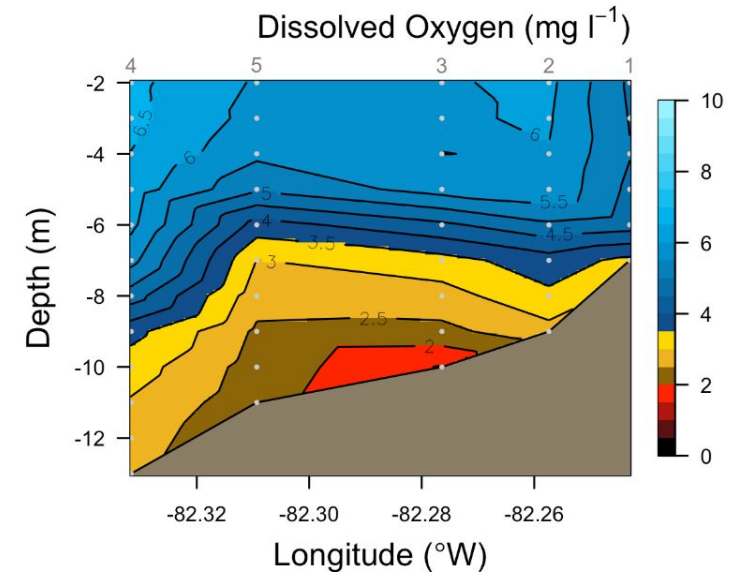
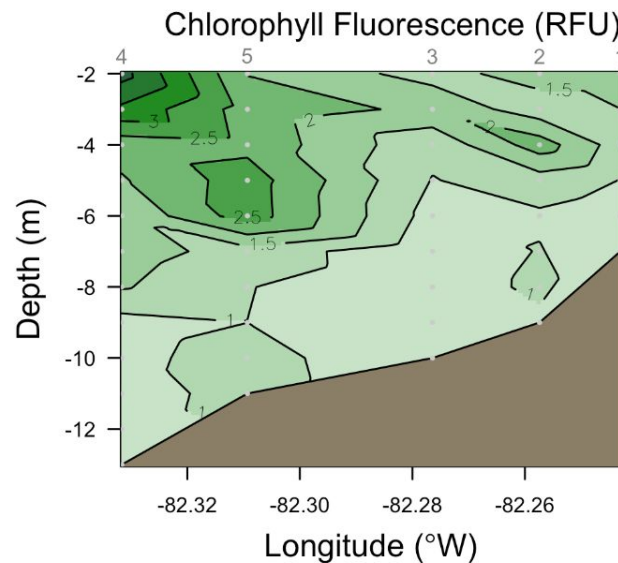
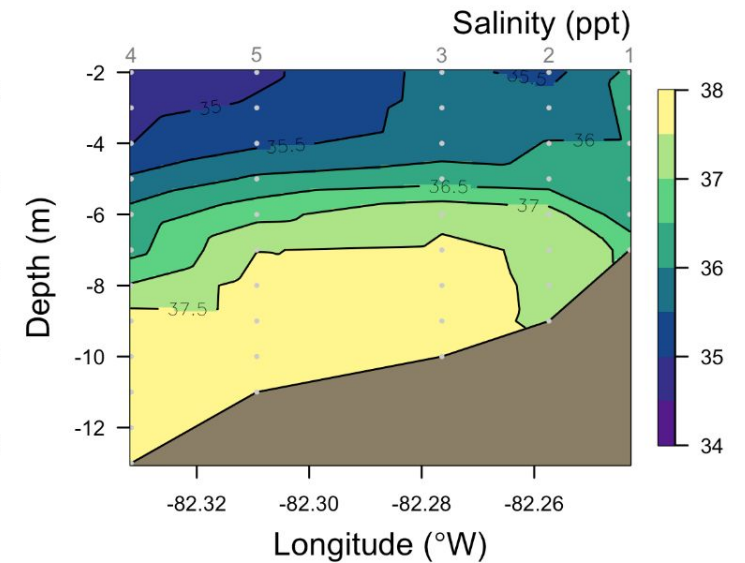
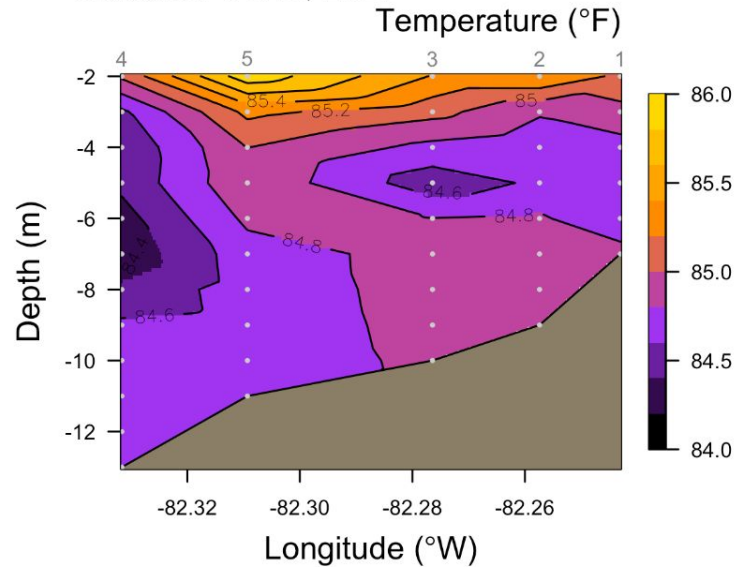
October FCWC monitoring

Hypoxia same location as Walton Smith

Information provided to industry



FCWC Water Quality Bulletin Collected: Oct16, 2021



Future Plans

- Expand water quality monitoring by fishermen
- **Building communication network to inform fishermen (beyond the grapevine)**
- Dashboard with conditions
 - <https://oceandata.shinyapps.io/fcwc-data-explorer/>
- Integrating additional NOAA and FWC environmental data
- Red tide tracking with satellites
- Nowcast, and eventually, seasonal hypoxia forecast
 - hypoxia happens when red tides linger over summer

FCWC Data Explorer

Date range:
2019-09-01 - 2021-12-14

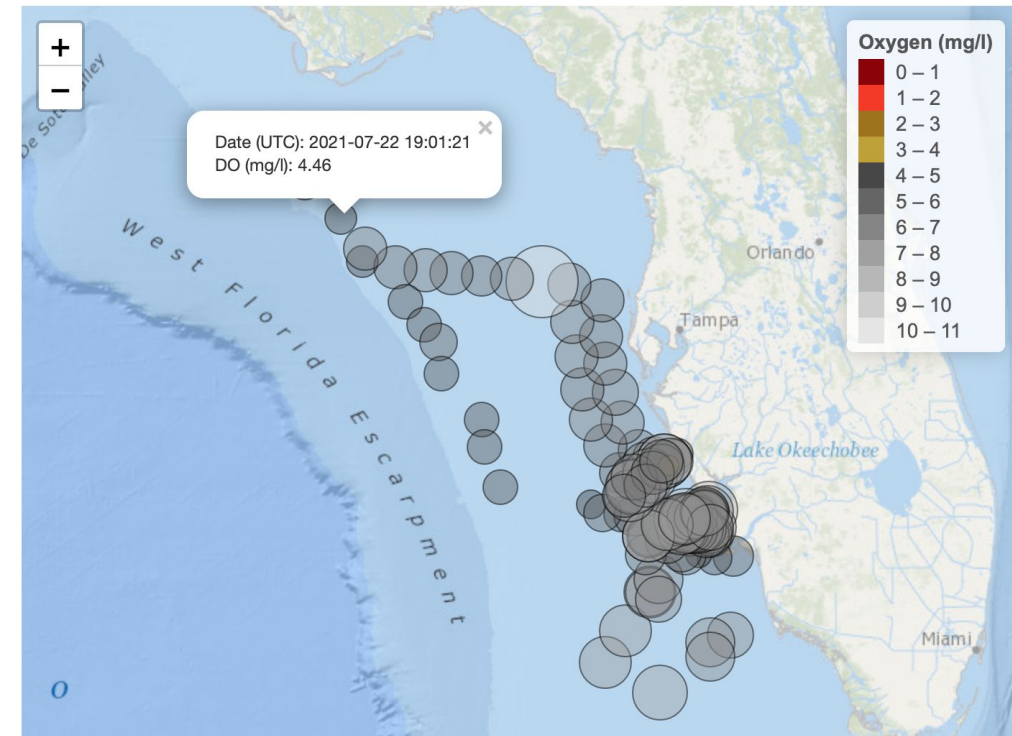
Parameter:
Bottom.Dissolved.Oxygen

Serial Number:
all

Document format:
 PDF HTML Word

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Click on any point on the map and the data will pop up and depth profiles will be displayed below map



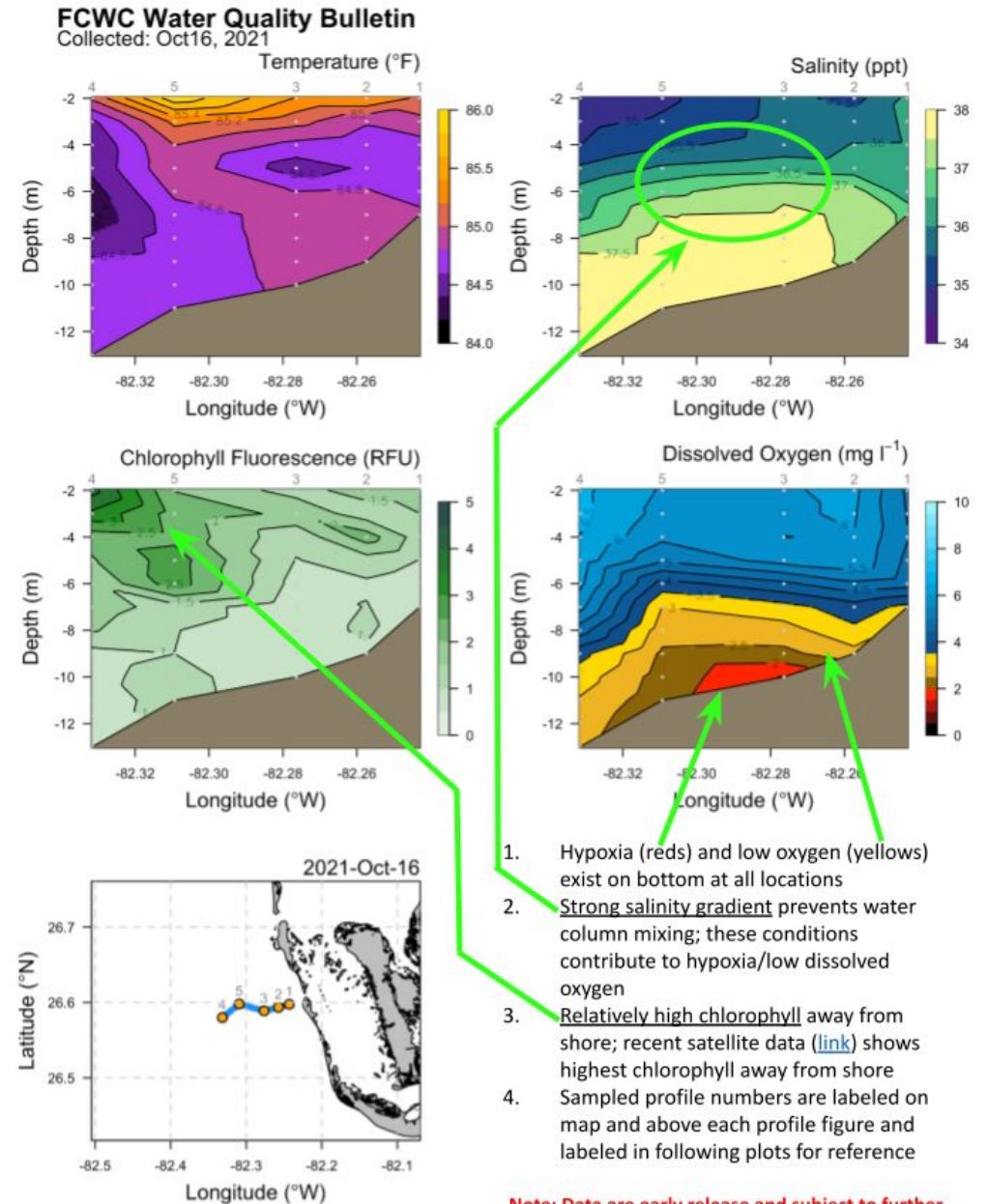
Thank you for your time

What anomalous conditions have you seen that you think NOAA should be aware of?

How can we increase information flow from fishing community to NOAA scientists and vice versa?

Is this type of subsurface information valuable to you? **Example bulletin** →

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Note: Data are early release and subject to further QA/QC, please contact brendan.turley@noaa.gov for comments/concerns