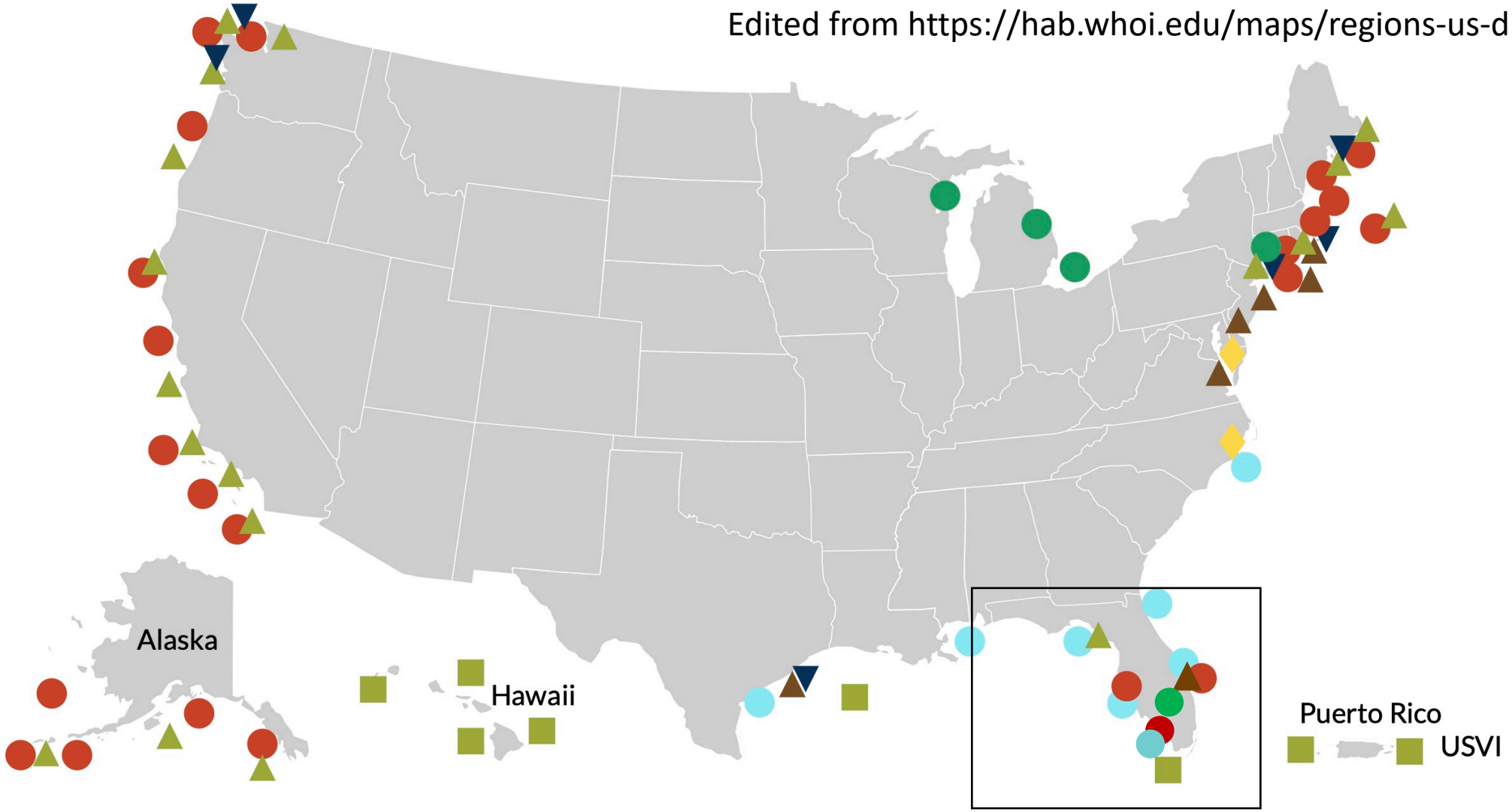
SECOORA HAB Panel, 12/2/21
Kate Hubbard
FL Fish and Wildlife Conservation Commission

US HABs and syndromes

Edited from https://hab.whoi.edu/maps/regions-us-distribution/



Karlodinium NSP PSP DSP Ciguatera Brown tide ASP CyanoHABs

Occasional anoxia, marine mammal mortalities (whales, manatees, sea lions, dolphins), noxious blooms (aesthetics), macroalgal blooms

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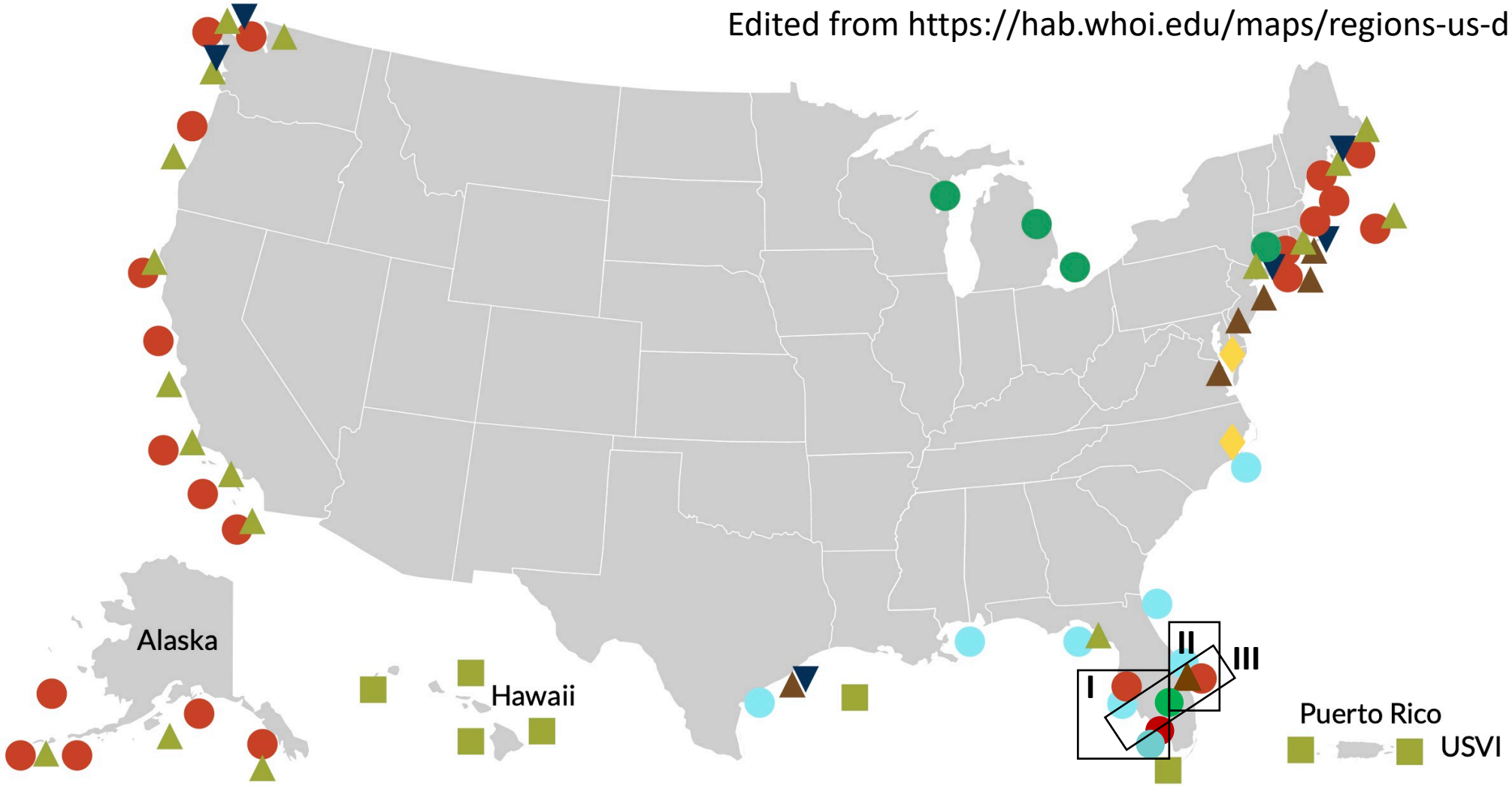

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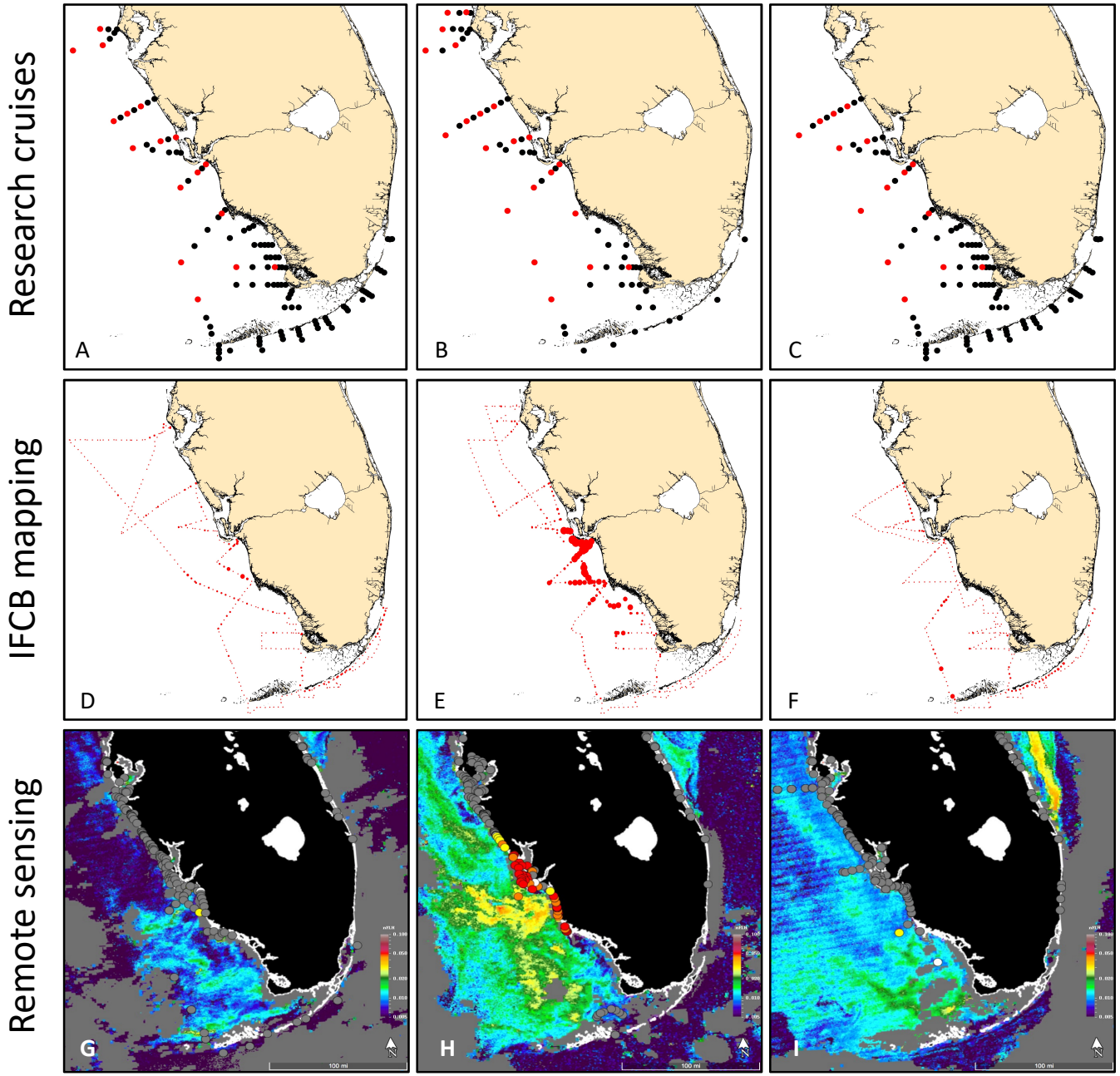
FWC Center for Red Tide Research

- FWC's Center for Red Tide Research established in 2020 and continues to expand.
- The Center provides the backbone to enhance existing partnerships and develop new ones with more than 14 interdisciplinary projects to address critical monitoring/management/research gaps.
- Center for Red Tide Research funds supported the reactivation of the Harmful Algal Bloom/Red Tide Task Force

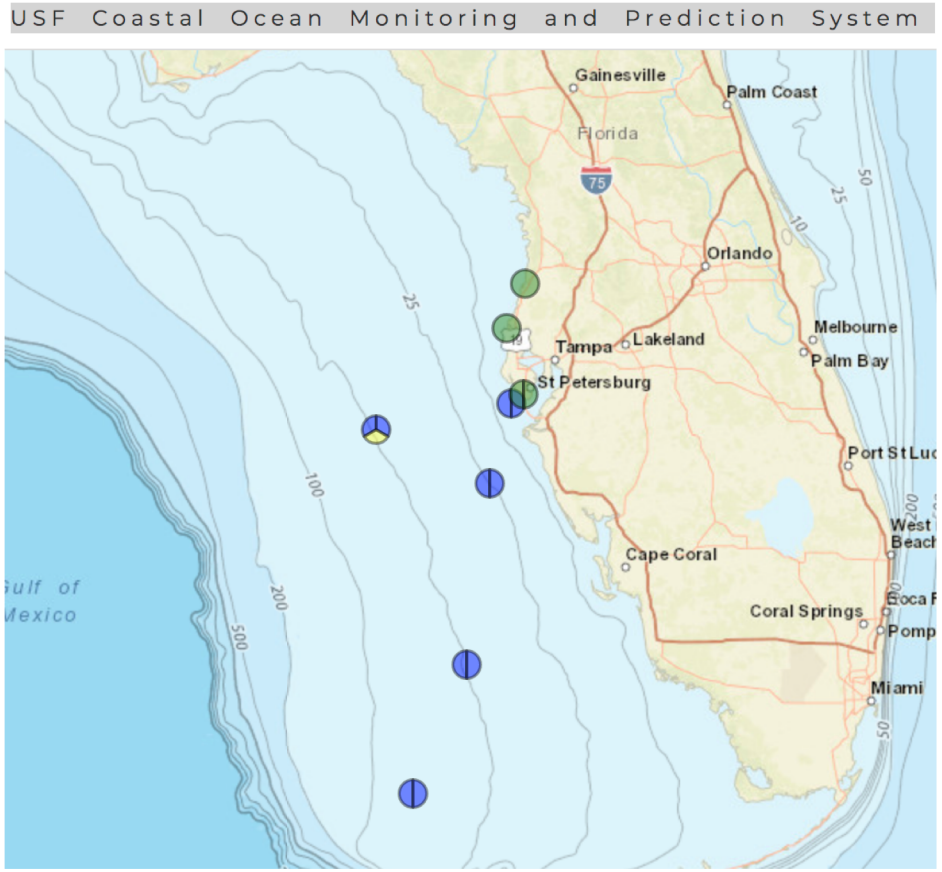
Increased routine surveys, in situ monitoring via gliders, buoys, remote sensing, and flow-through sampling



WS19266 Sept. 23 – 29, 2019

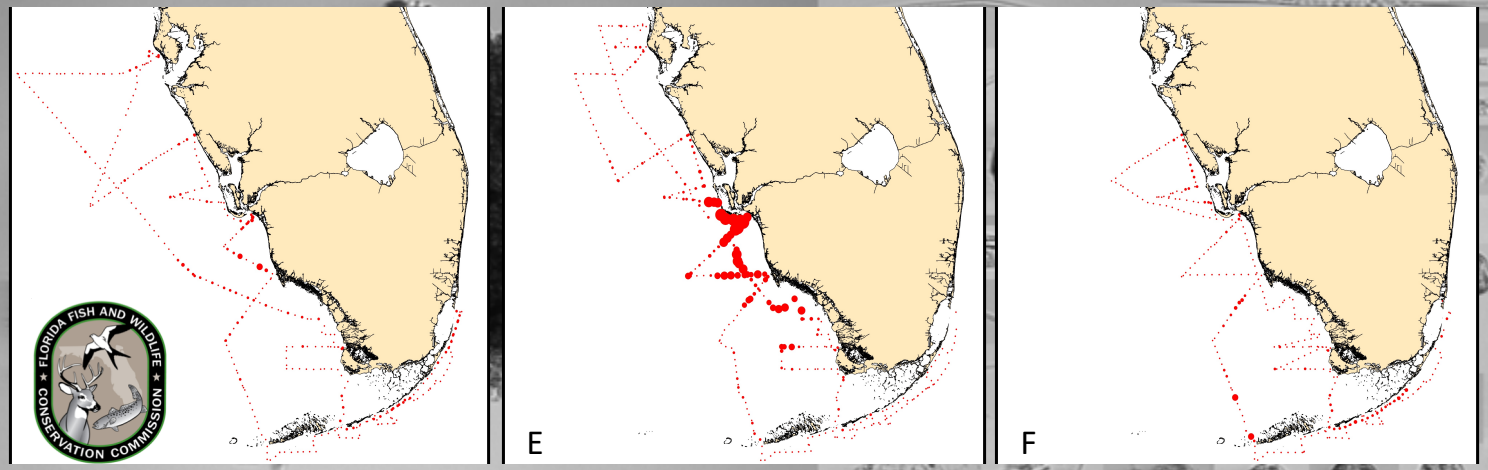
WS19322, Nov. 18 – 24, 2019

WS20006 Jan. 6 – 11, 2020

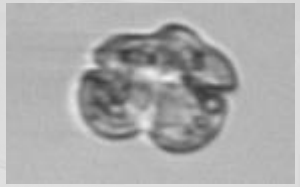


Partners and funding sources are numerous and include NOAA, IOOS regional associations GCOOS and SECOORA, NAS, NSF, FWRI, Mote Marine Laboratory, USF, USGS, State of Florida and many others

IFCB mapping



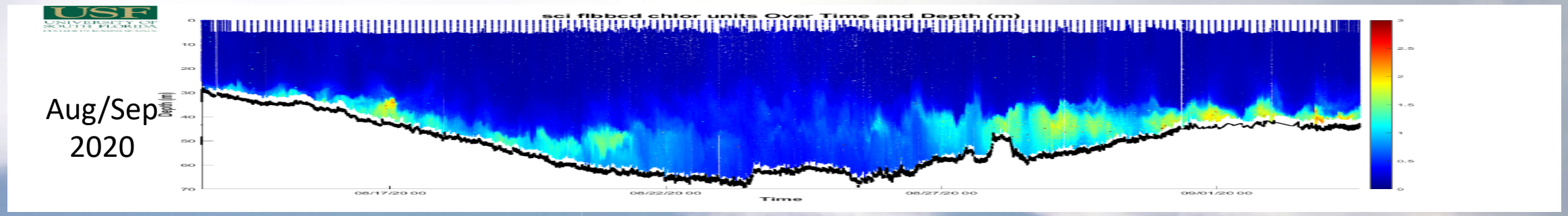
Computer classification of distinct *Karenia* cell types



Singlet

Spherical

Paired



Aug/Sep 2020

C. Lembke - USF Ocean Technology Lab

FWRI *R/V HAB Hunter*

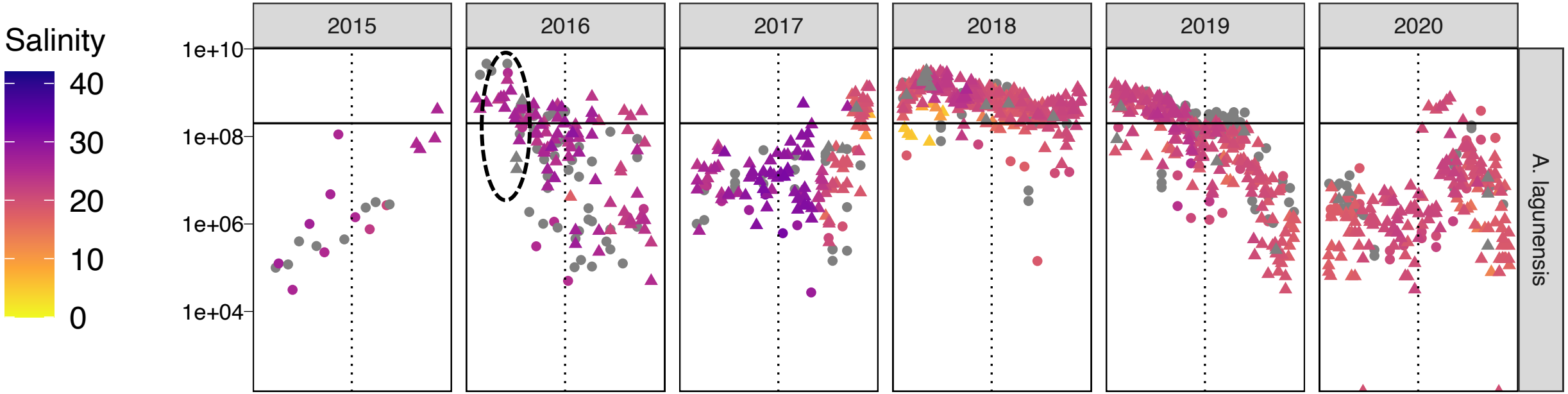
USF Glider Sam

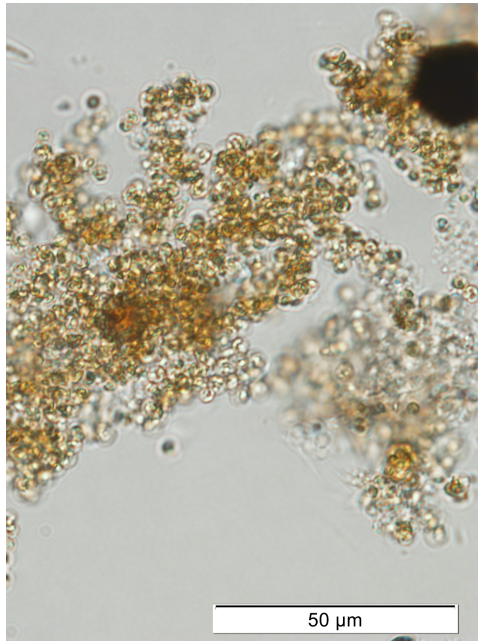
Image: USF

Indian River Lagoon – An Impaired Estuary

Lopez et al. 2021
Aureoumbra lagunensis

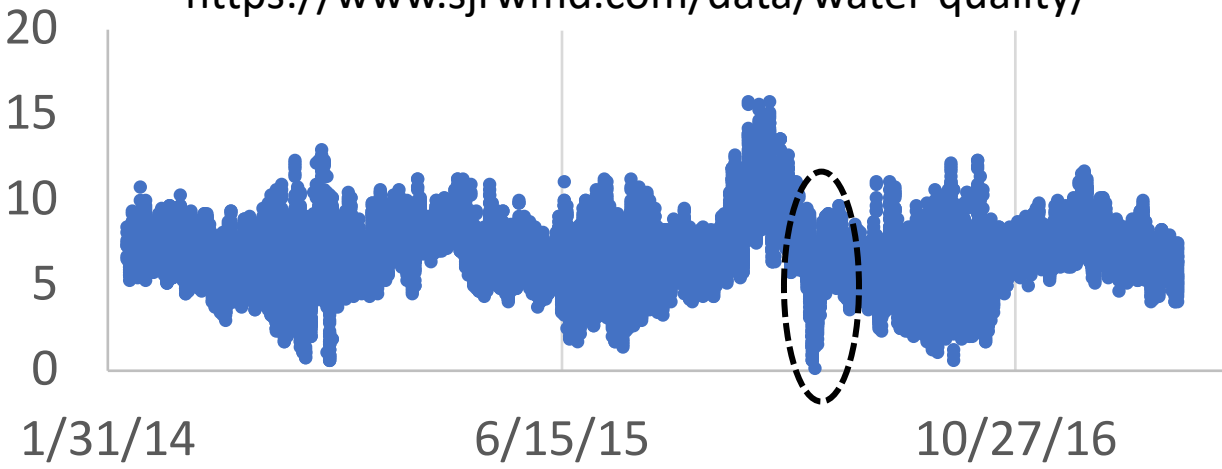
Banana River

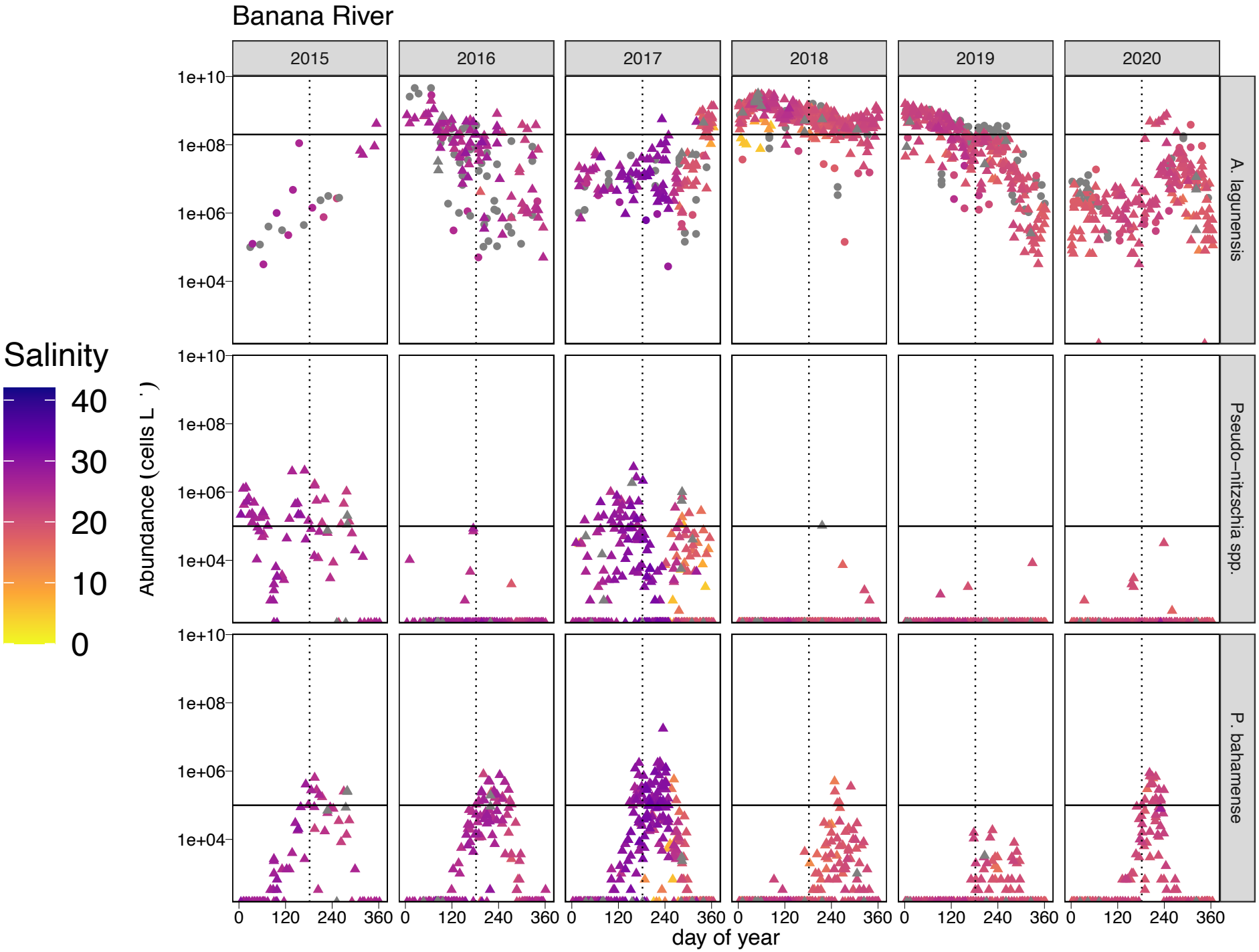




Banana R. Dissolved oxygen (mg/L)

https://www.sjrwmd.com/data/water-quality/





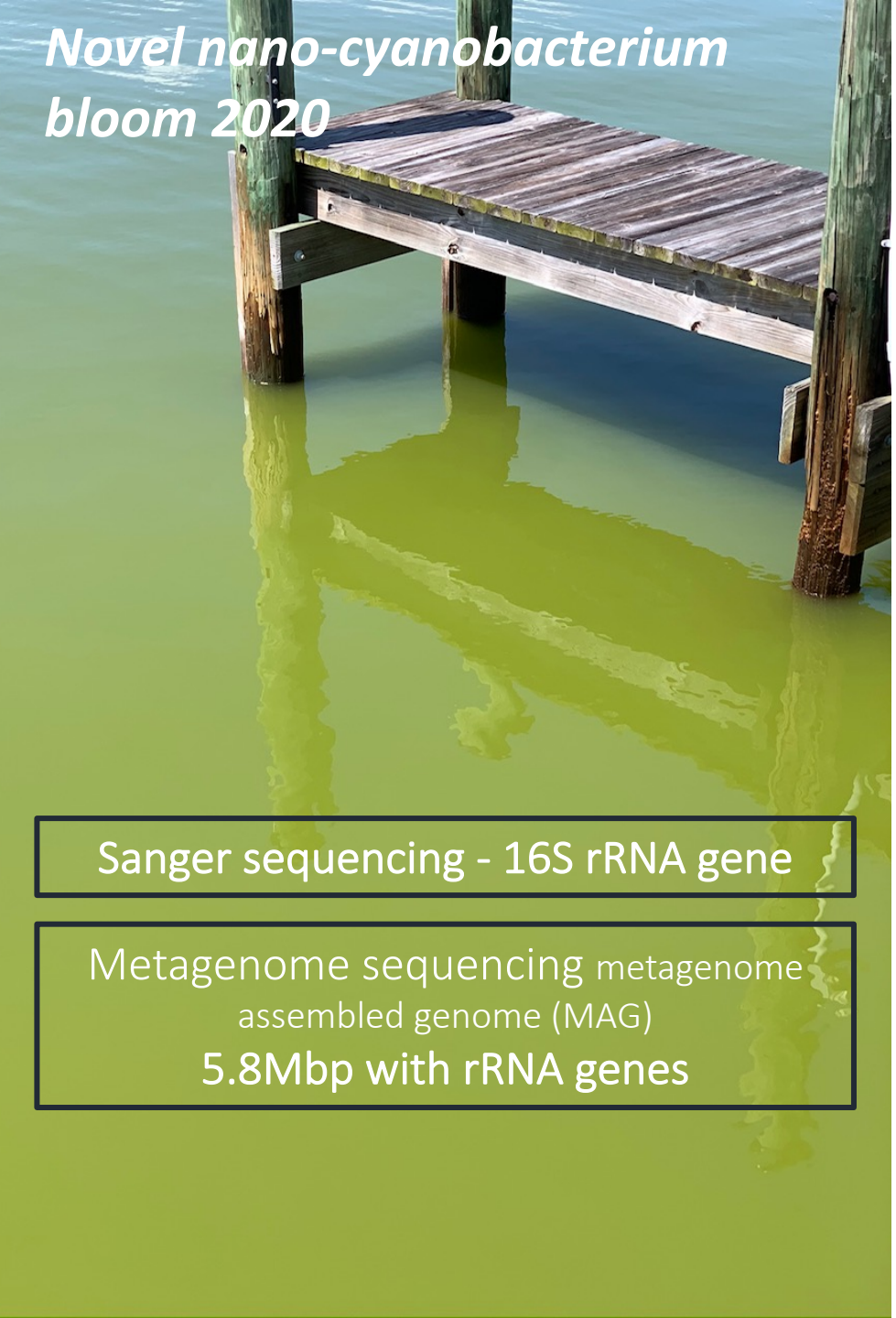
Aureoumbra lagunensis

Pseudo-nitzschia spp.

Pyrodinium bahamense

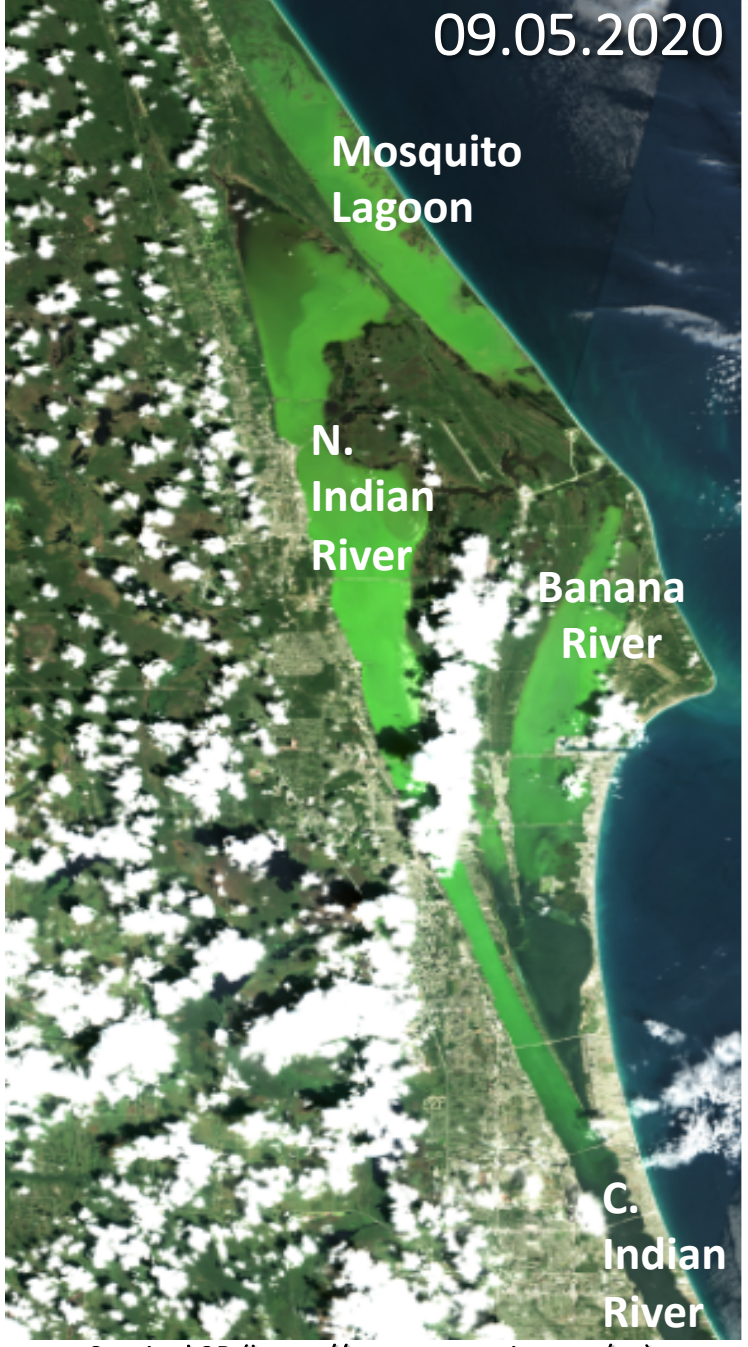
Lopez et al. 2021

Novel nano-cyanobacterium bloom 2020

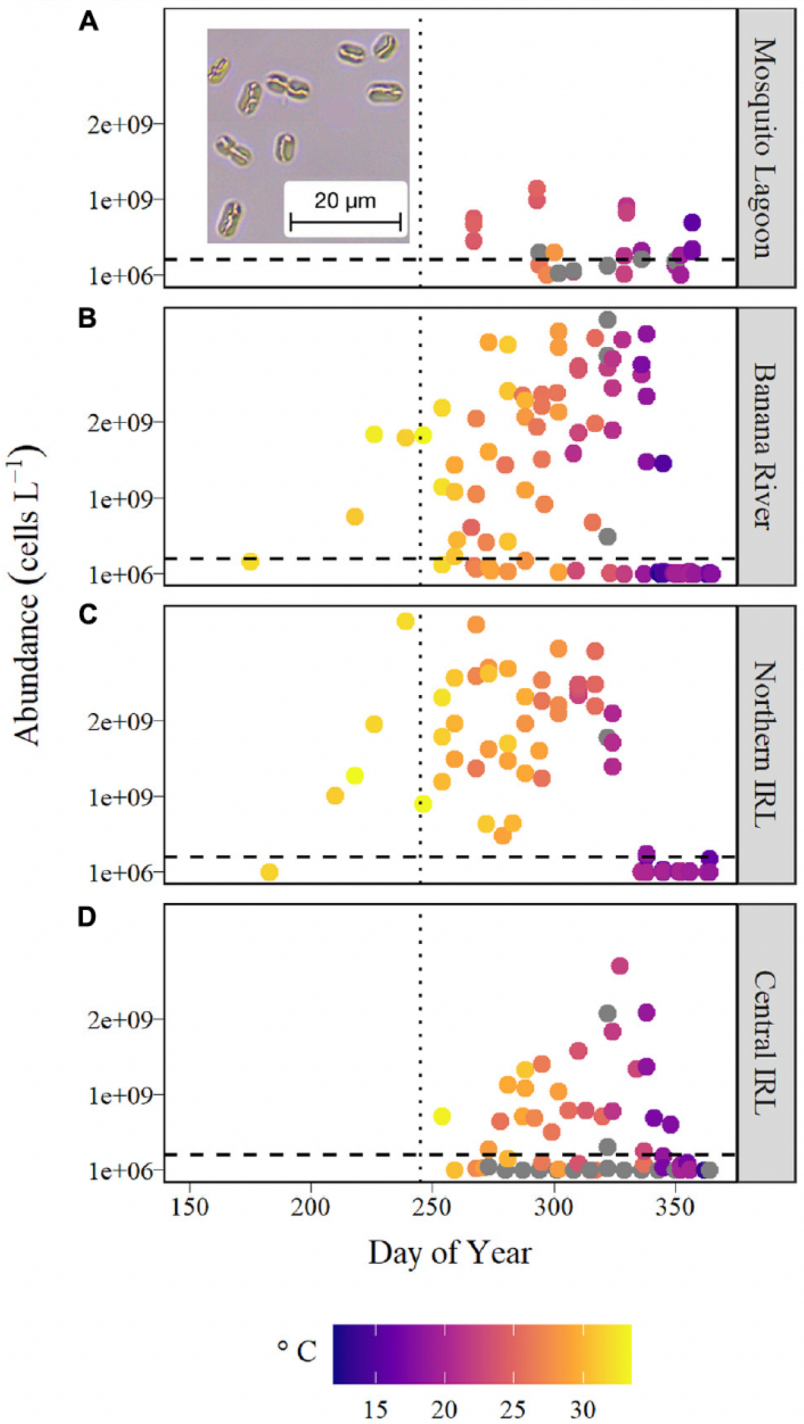


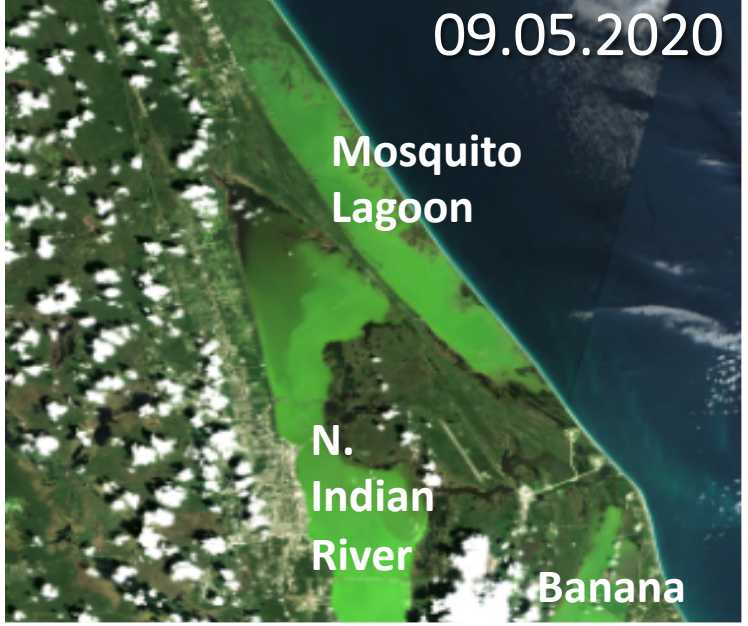
Sanger sequencing - 16S rRNA gene

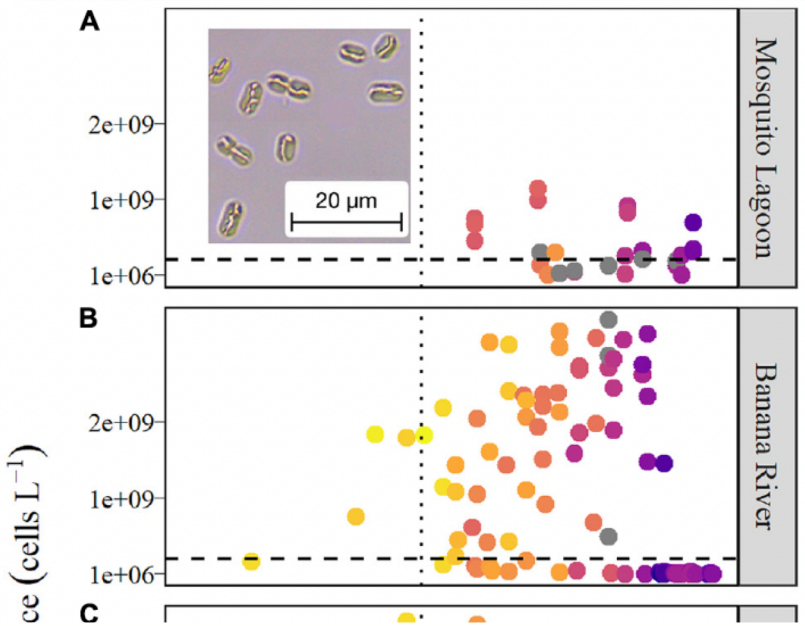
Metagenome sequencing metagenome assembled genome (MAG)
5.8Mbp with rRNA genes



Sentinel 2B (https://www.copernicus.eu/en)
Processed by Tim Moore, FCCHH, FAU







Manatee Mortality Event Along The East Coast: 2020-2021

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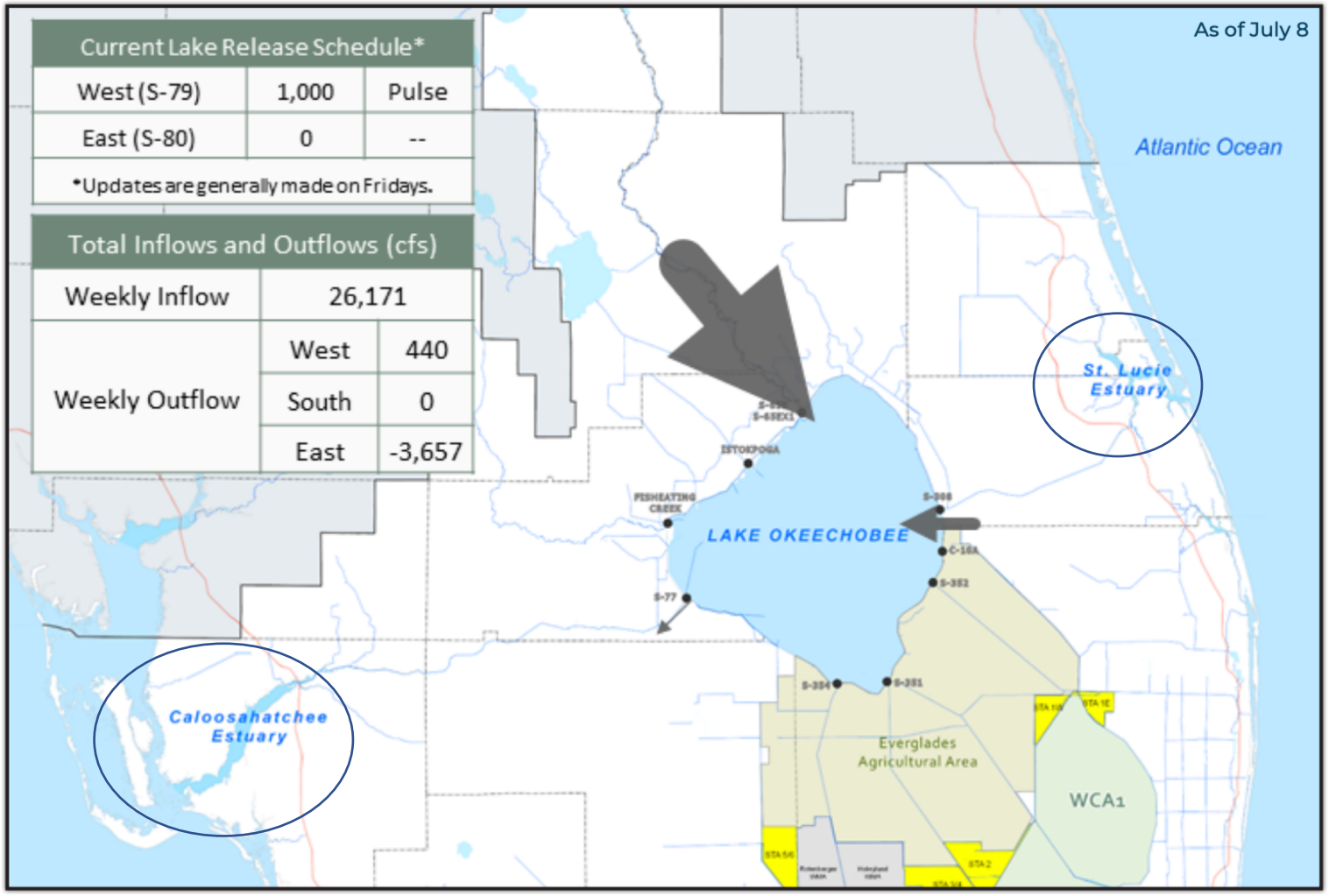
Sentinel 2B (https://www.copernicus.eu/en)
Processed by Tim Moore, FCCHH, FAU

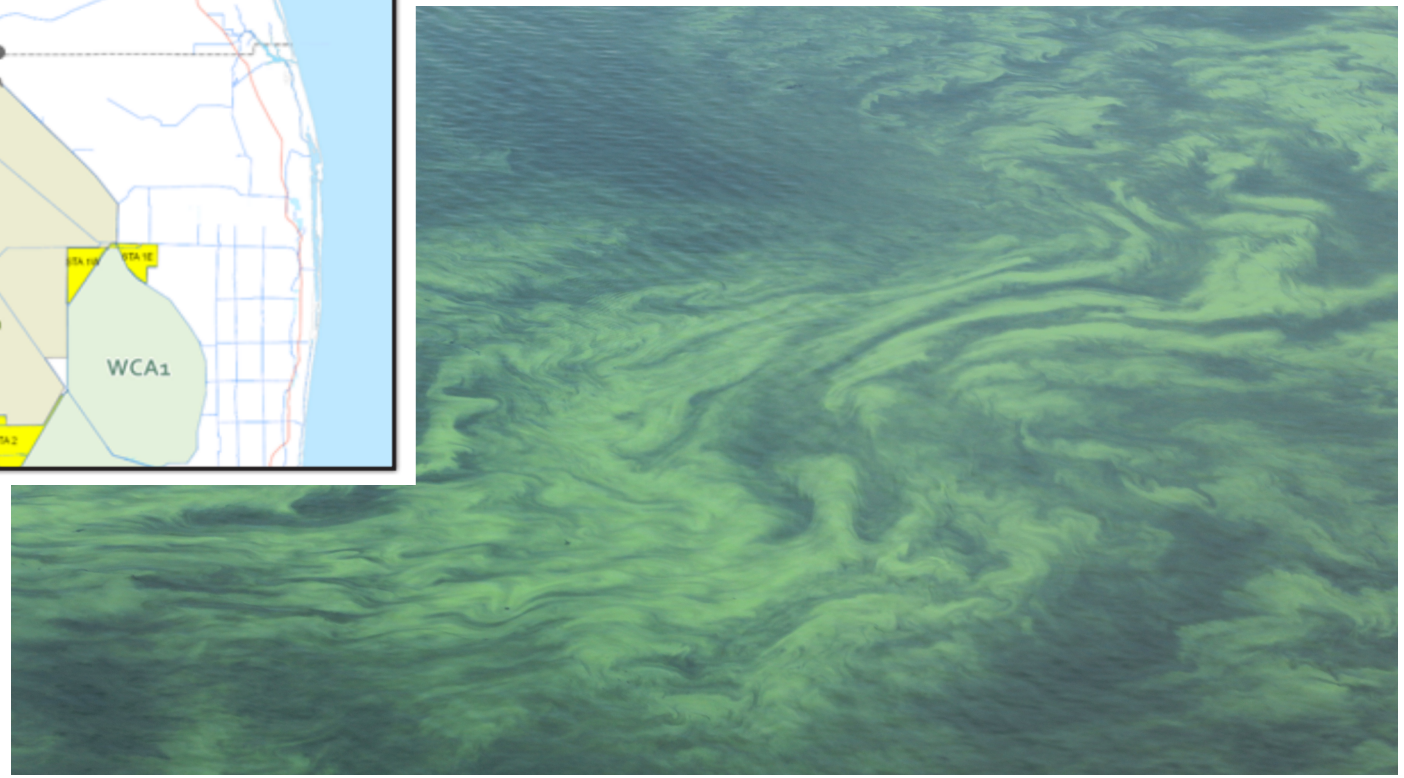
LAKE OKEECHOBEE OUTFLOWS

Current Lake Release Schedule*		
West (S-79)	1,000	Pulse
East (S-80)	0	--
*Updates are generally made on Fridays.		

Total Inflows and Outflows (cfs)		
Weekly Inflow	26,171	
Weekly Outflow	West	440
	South	0
	East	-3,657



Microcystis bloom in 2018



FL DEP