Panel 2

Observations Supporting Public Health - IFCB Network

Moderator: Dr. Emily Hall

Panelists: Dr. Darren Henrichs, Dr. Antonietta Quigg, Dr. Michael Wetz



Darren Henrichs
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Individual GCOOS Member

TEXAS A&M UNIVERSITY
Oceanography

Help Guide GCOOS Priorities

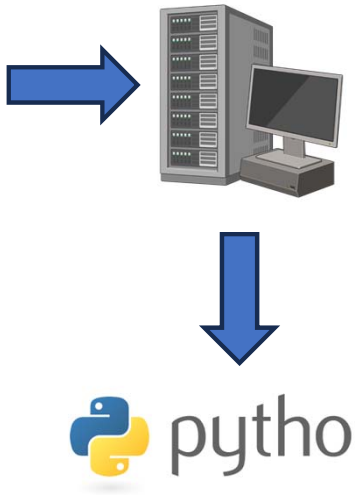
- Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields.

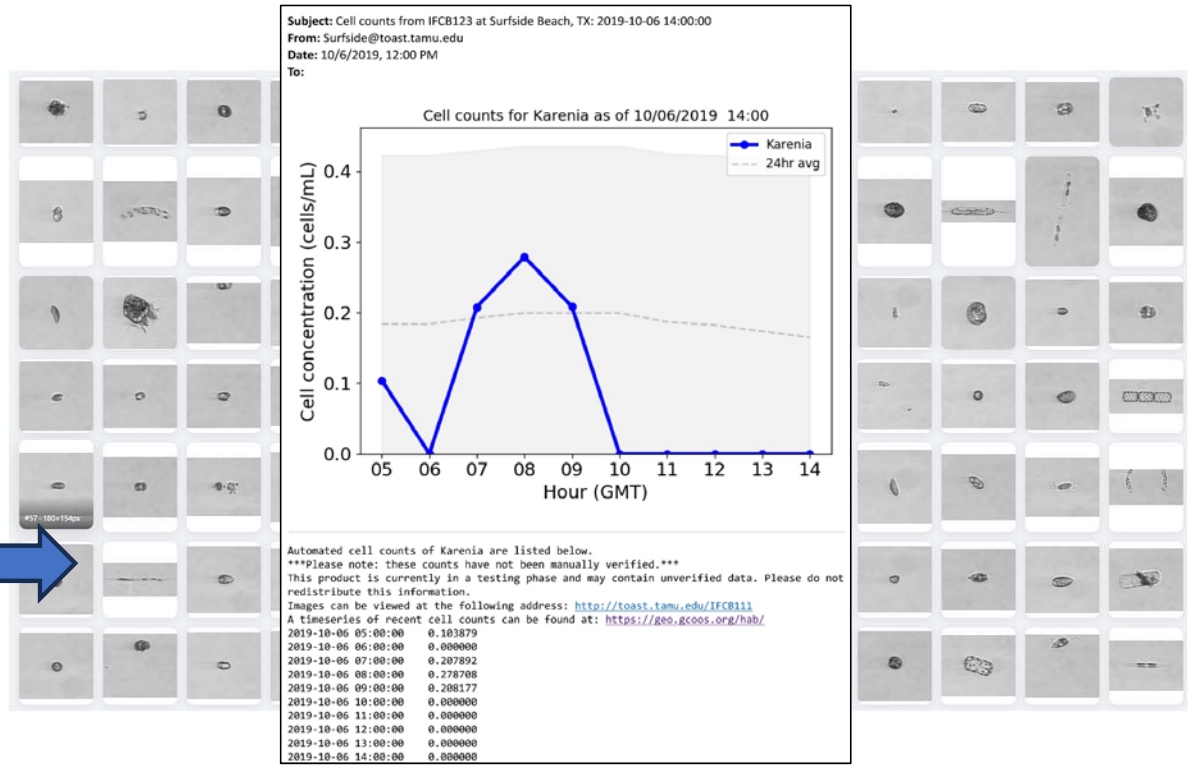
- <u>Continuation project</u>: TIDEPOOLES - Texas IFCB DinoflagellatE and Phytoplankton Observations for Ongoing Long-term Ecological Series
  - Continuing the long-term phytoplankton community IFCB time series
  - Continue to provide early warning notifications of Harmful Algal Blooms and give timely updates to state health managers

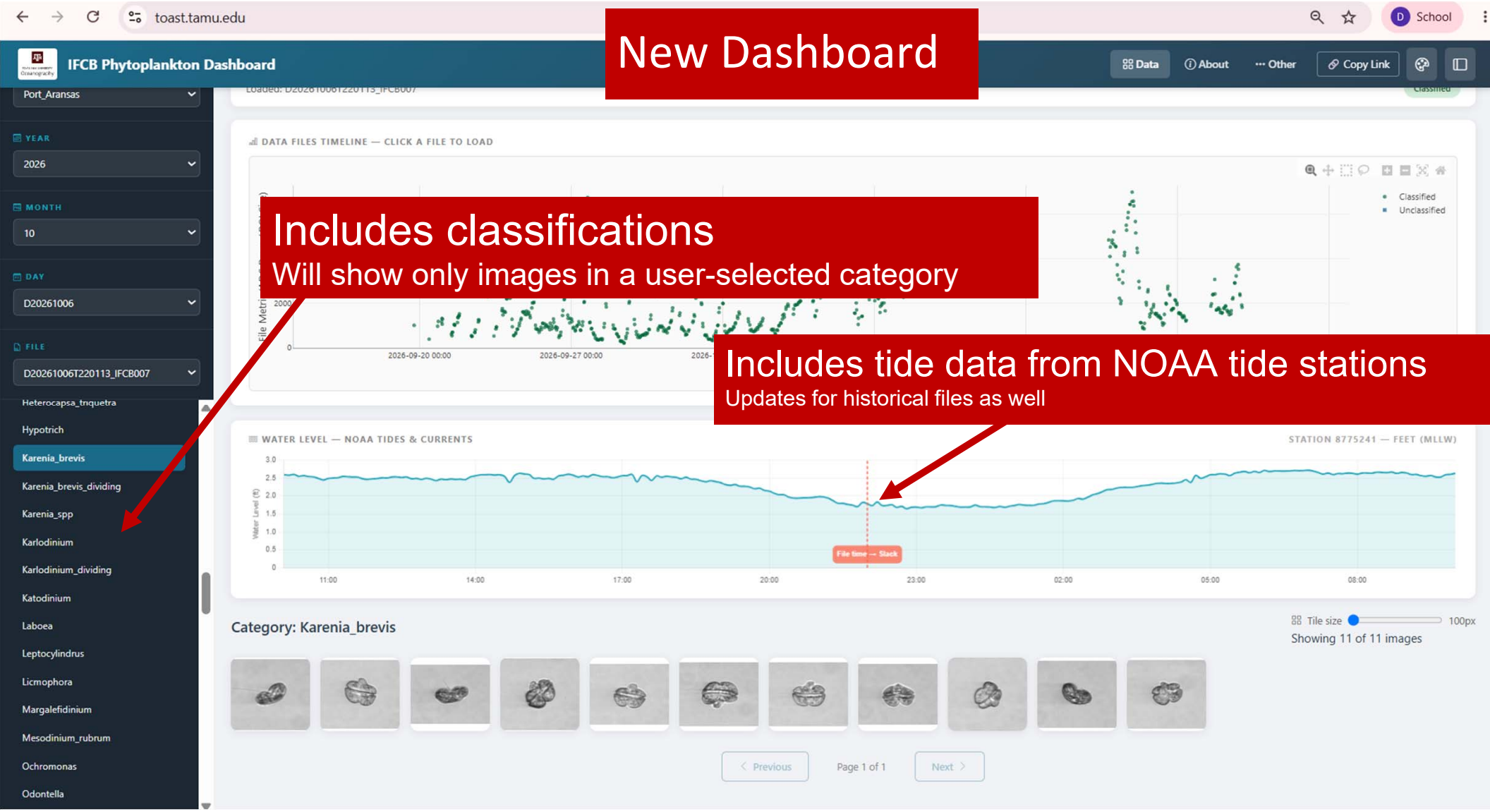
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What type(s) of data does your team generate?









New Dashboard

Includes classifications

Will show only images in a user-selected category

Includes tide data from NOAA tide stations

Updates for historical files as well

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- How are the data applied/who are the primary users of the information?

HABs:

TEXAS PARKS & WILDLIFE

TEXAS Health and Human Services | Texas Department of State Health Services

- Recently included coastal researchers and city administrators

Phytoplankton community data:

Various Researchers

- Do you have an example you can share of a measurable outcome from use of the information you provide?

TEXAS Health and Human Services | Texas Department of State Health Services

Status of Shellfish Harvesting Areas on February 1, 2025

Harvest Area	Public Harvest Area Status	Private Oyster Area Status	Reason for Status
TX 1	Closed	Open	TPWD Action
TX 2	Closed	n/a	Rainfall
TX 3	Closed	n/a	TPWD Action; Rainfall
TX 4	Closed	n/a	TPWD Action; Rainfall
TX 5	Closed	n/a	TPWD Action
TX 6	Closed	Open	TPWD Action
TX 7	Closed	Open	TPWD Action
TX 8	Open	Open	n/a
TX 9	Closed	Open	TPWD Action
TX 11	Closed	n/a	TPWD Action
TX 12	Closed	n/a	TPWD Action
TX 13	Closed	n/a	TPWD Action
TX 14	Closed	Open	TPWD Action
TX 15	Closed	Open	TPWD Action
TX 16	Closed	n/a	TPWD Action
TX 18	Closed	n/a	TPWD Action
TX 19	Closed	n/a	TPWD Action
TX 20	Closed	n/a	TPWD Action
TX 21	Closed	n/a	TPWD Action
TX 24	Closed	n/a	TPWD Action
TX 25			
TX 26			
TX 27			
TX 29			
TX 30	Open	Open	n/a
TX 32	Closed	Open	TPWD Action
TX 33	Open	n/a	n/a
TX 34	Open	n/a	n/a

n/a = not applicable

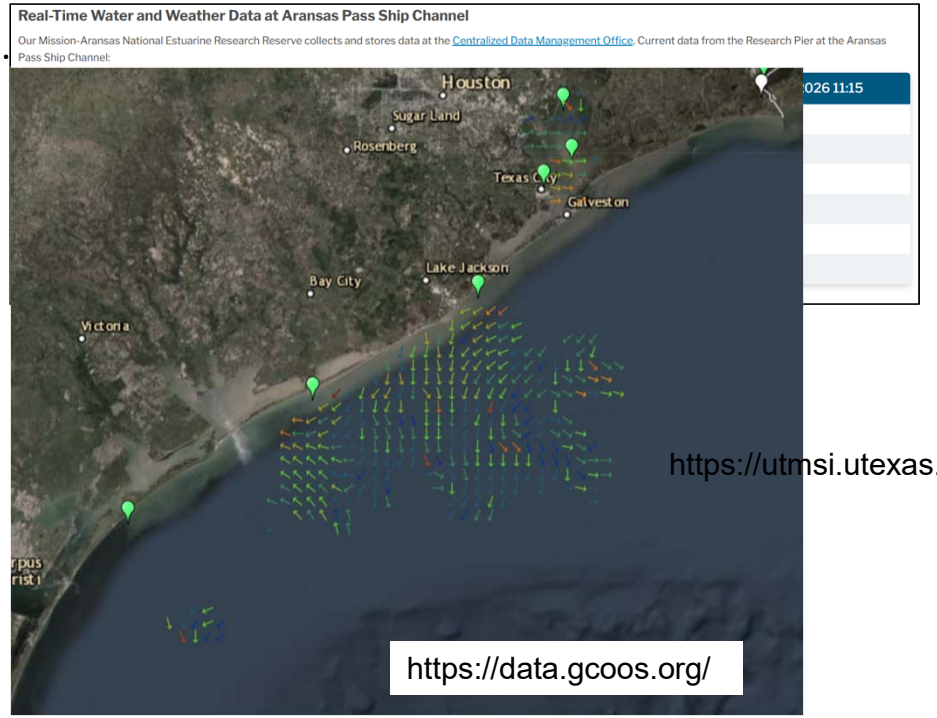
Indirect outcome

Data Products and Information

What are your top two current or emerging information needs to implement your organization's Public Health priorities in the near-term (1-2 yrs)?

1. Concurrent water quality data – UTMSI is coming

2.

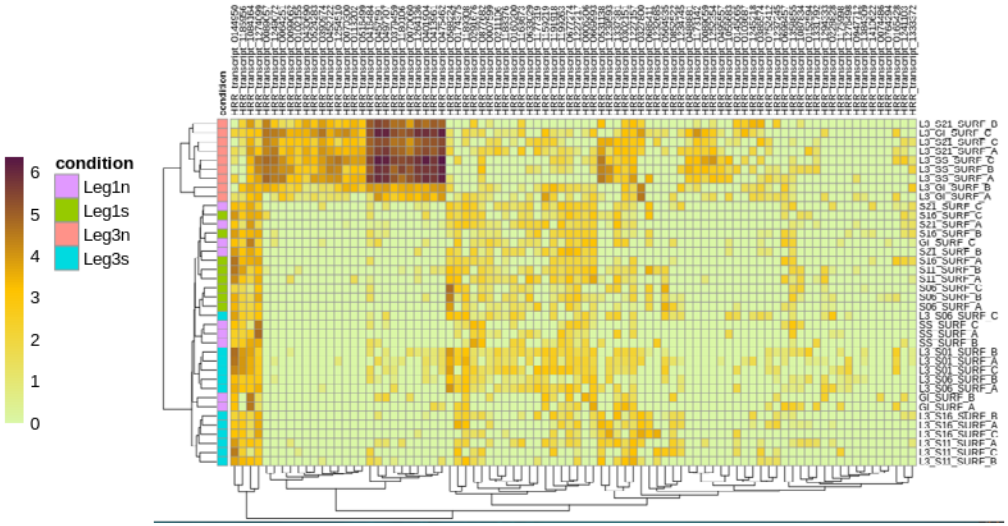


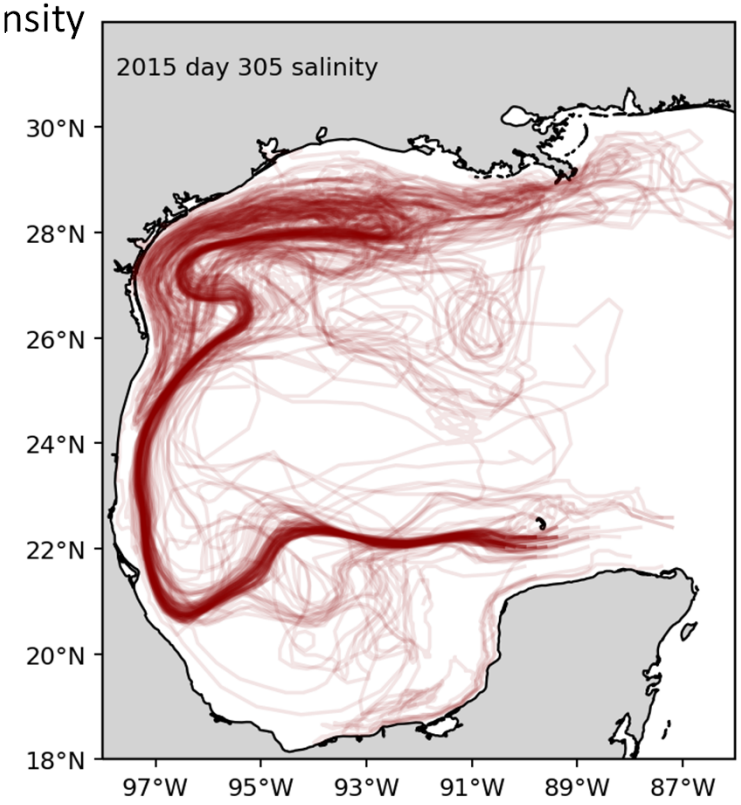


Data Products and Information

What are your top two current or emerging information needs to implement your organization's Public Health priorities in the longer term (3-5 yrs)?

1. Model development for short term forecasts – movement and intensity
   - Satellite data
   - Current data
   - Environmental data
2. Genetic/Physiological – bloom growth/demise





How does/can collaboration with GCOOS help you achieve your organization's mission?

Simply put, GCOOS provides the funding that helps to keep the two field stations operational.



Additionally, GCOOS (Tuomo!) prods me to continue improving the outputs and getting data into the ERDDAP server.

Dr. Antonietta Quigg
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TAMU/G - GCOOS member
Vice Chair – GCOOS board

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What is the primary mission of your organization?

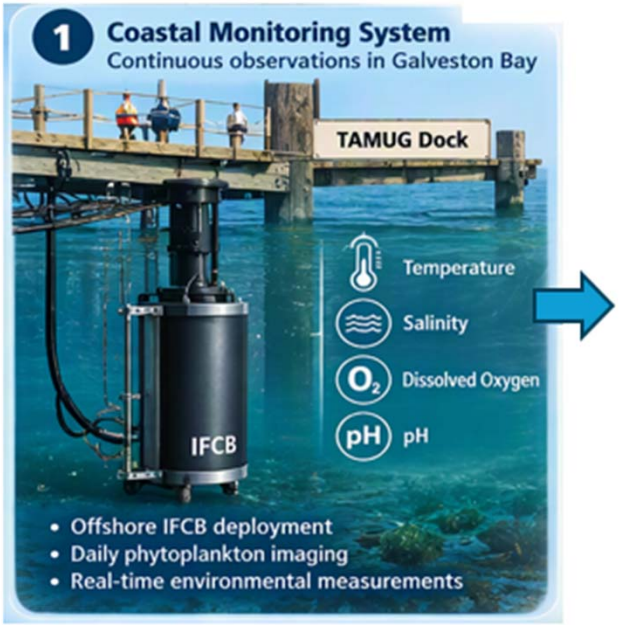
- Texas A&M University at Galveston is a *special-purpose institution* of higher education for undergraduate and graduate instruction in **marine and maritime studies in science, engineering and business** and for **research and public service related to the general field of marine resources**.



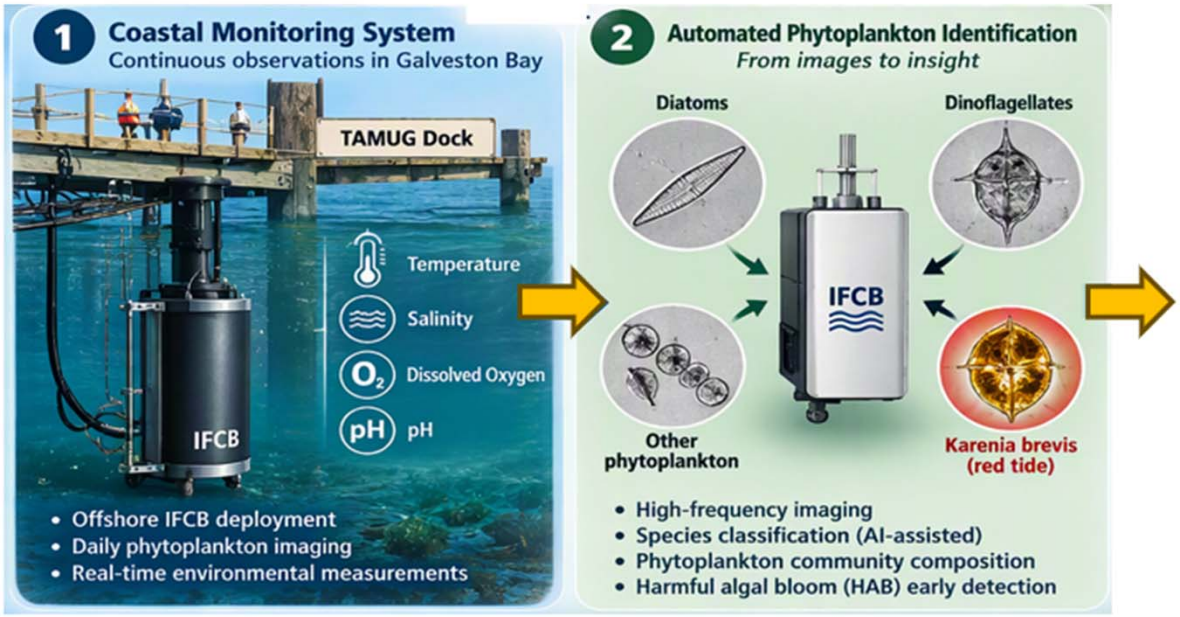
What is your project focus?

- Utilizing data from and Imaging flow Cytobot (IFCB) to provide monitoring and information on harmful bloom species
- Respond to state agencies, non-profits, public needs for information concerning blooms, toxin effects and best practices
- Participate in IFCB Network(s) – planning and development

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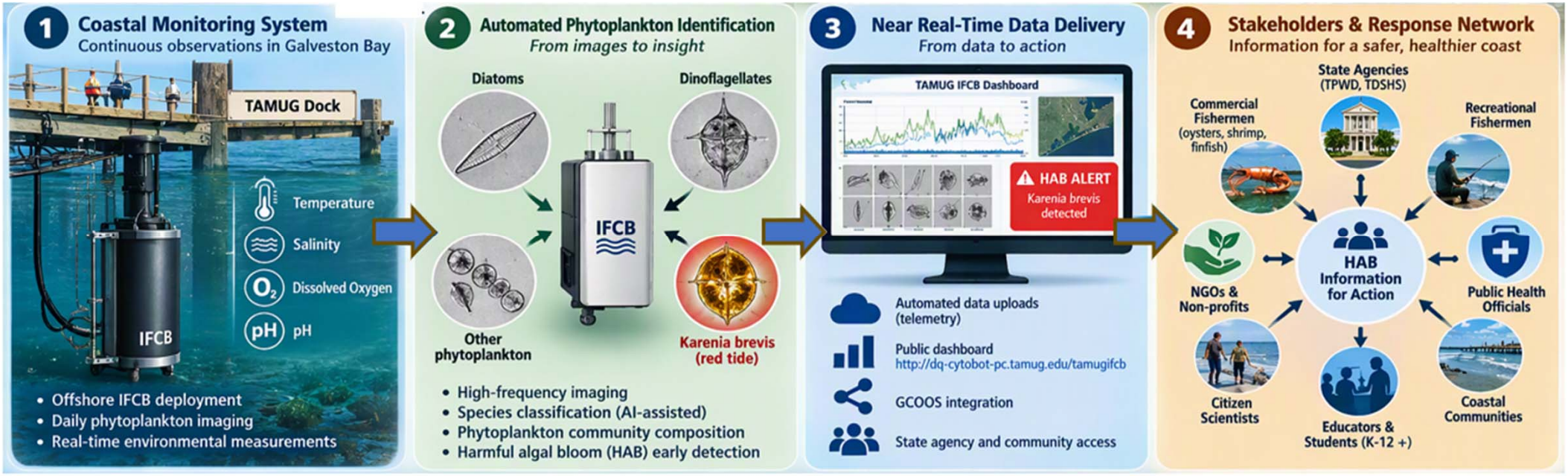
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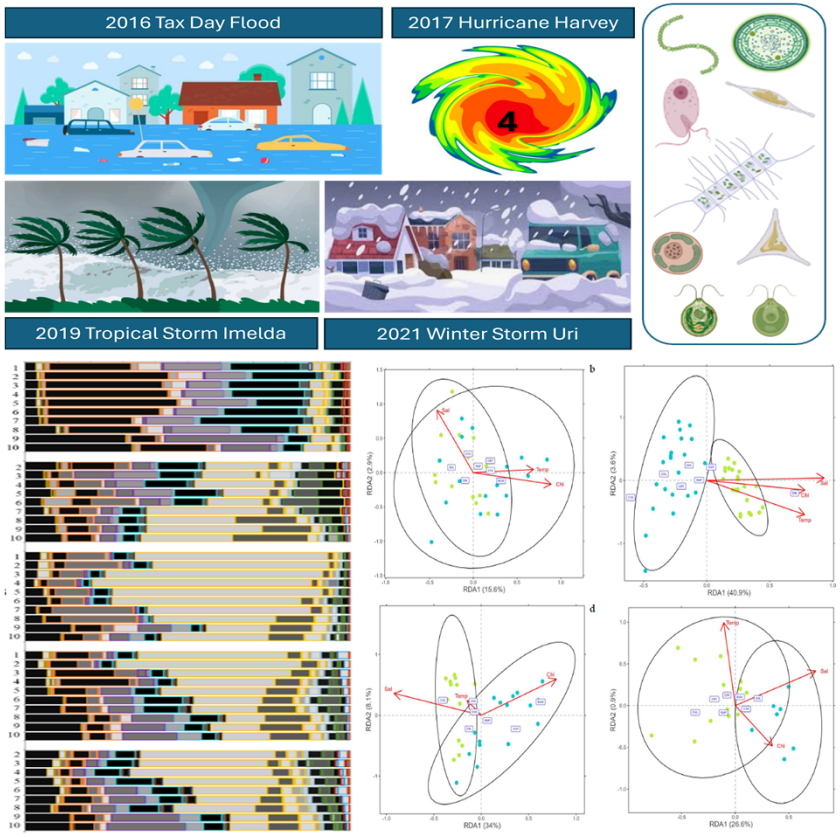


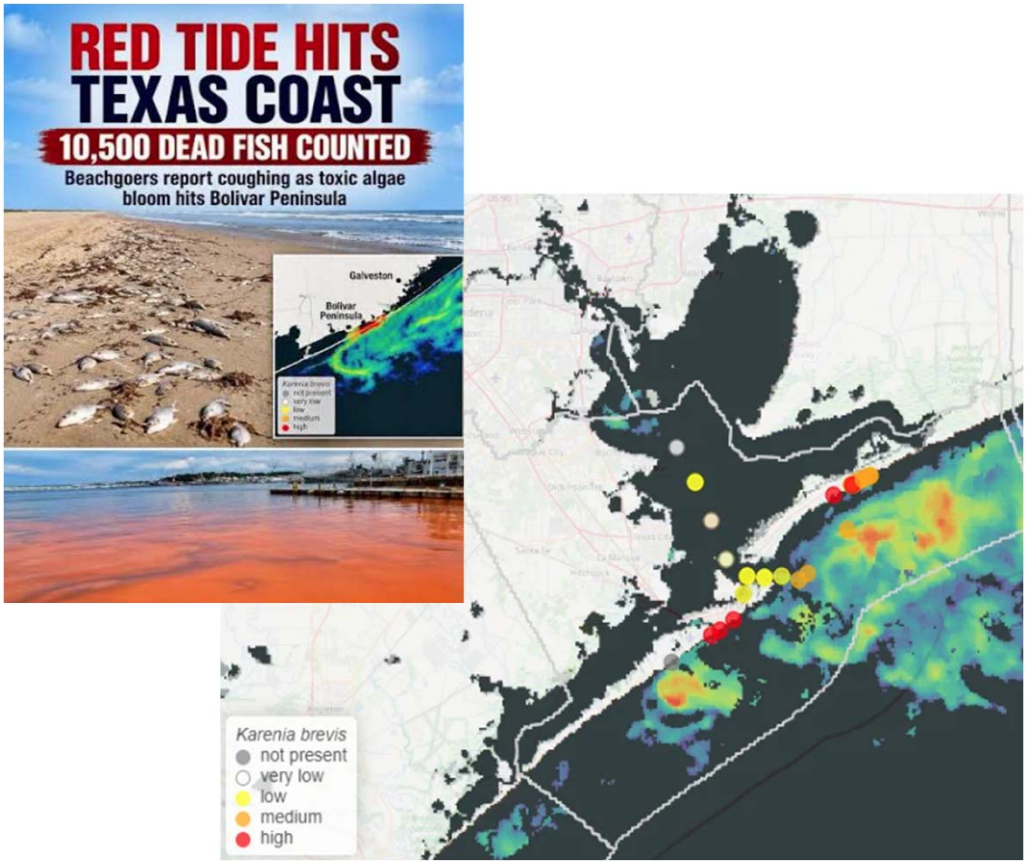
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- Example of a measurable outcome from use of the information you provide:





Data Products and Information

- **What are your top two current or emerging information needs to implement your organization's (Healthy Ecosystems, Public Health, Coastal Resilience) priorities in the near-term (1-2 yrs)? (3-5 yrs)?**

- Dashboard to present data collections in near real time
- ML-AI tools to speed up the classification process/identify phytoplankton
- Trained workforce

How does/can collaboration with GCOOS help you achieve your organization's mission?







Acknowledgements

Amazing crew of students, postdoctoral fellows, colleagues and peers !

Michael Wetz, Laura Beecraft, Felimon Gayanilo
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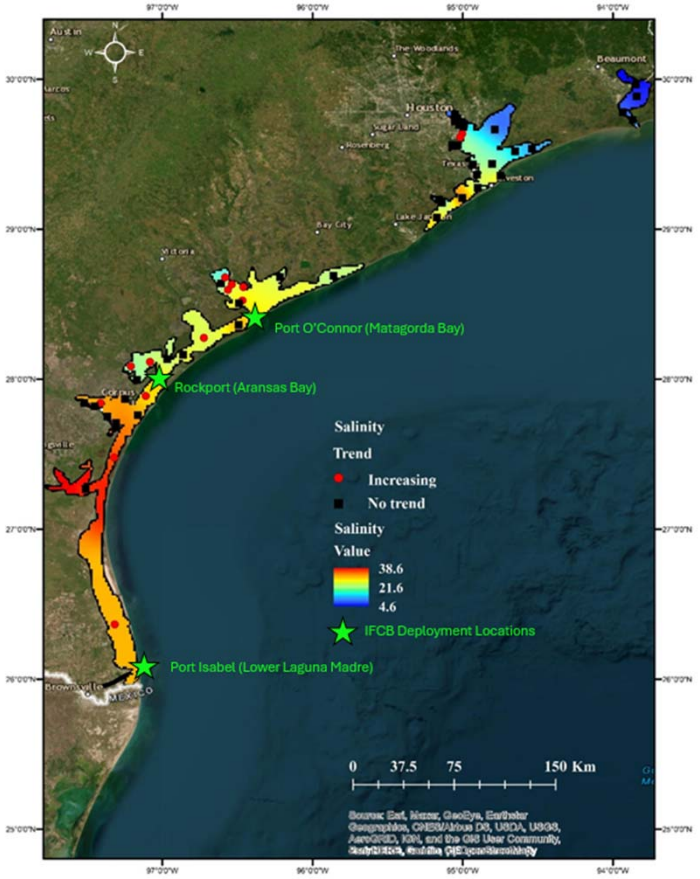
**Voting member of GCOOS*

GCOOS Members Meeting, November 5, 2026

Primary Mission & Project Focus

Coastal Water Health Lab **<u>Mission</u>**: Provide a scientific basis for stakeholder-led efforts aimed at solving coastal water quality challenges.

<u>Project focus</u>: Operation of existing (2; HRI) and new (1; UTRGV) Imaging FlowCytobots for continuous real-time harmful algal bloom monitoring on Texas coast.

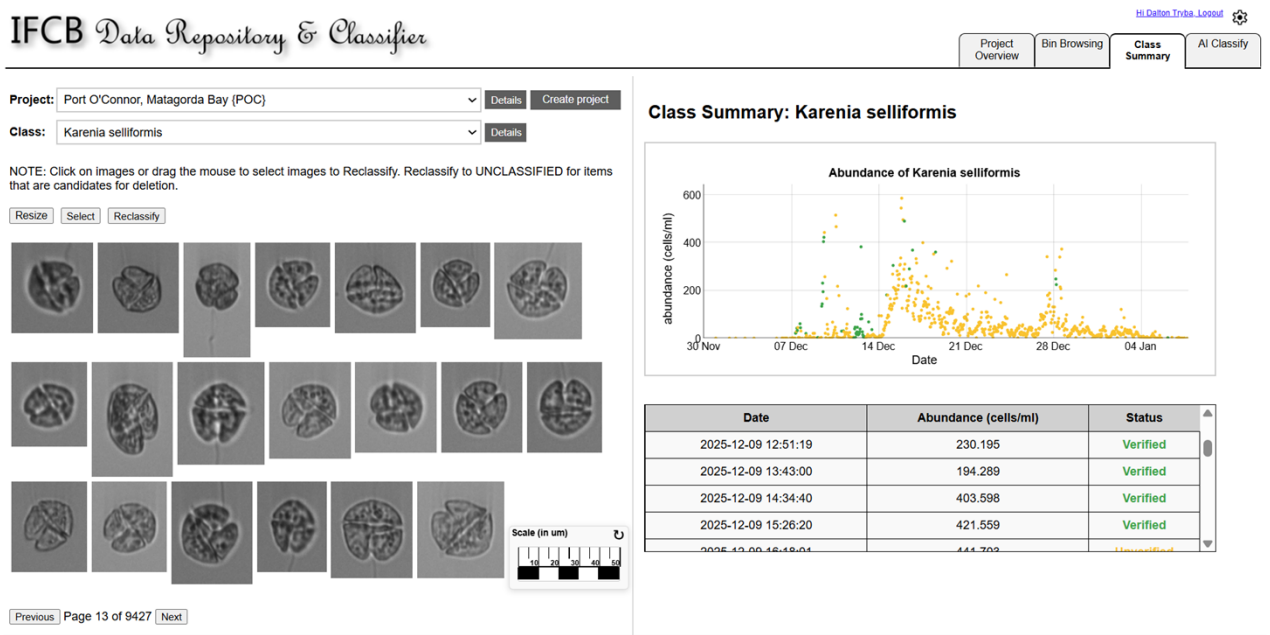


Data Generated

- Project generates near real-time data on phytoplankton species abundances.
  - Immediate relevance: HAB detection and early warning
  - Long term relevance: Changes in phytoplankton community composition as indicator of environmental change

    How will future environmental changes on Texas coast affect HAB prevalence?

- Real-time alerts are generated when HAB species detected above threshold abundance.



Data Application & Outcomes

Data application:

1. Research: Quantify patterns and trends in phytoplankton/HABs
2. HAB awareness: Resource managers/first responders (TPWD, TDSHS) & site partners (TX State Aquarium, oyster farm, CCA/CPL Marine Development Center hatchery) – utilize real-time HAB alerts to mobilize and/or adjust operations

Outcomes (*note GCOOS funding has not started yet*):

1. 2026 Texas Coast *K. brevis* bloom: Provided alerts to TPWD and TX HAB partners; streaming data to NOAA NCCOS Gulf Coast HAB Forecasting team
2. First observations of recurring winter blooms of *Karenia selliformis* on Texas coast

Information Needs

Short term:

- Access to physical oceanographic/atmospheric data & models to better understand HAB events.

Long term:

- Sustained monitoring data (temperature, salinity, water levels, nutrients, etc.) from estuaries and nearshore waters to understand how the environment is evolving.

  Ph.D. student Susana Gonzalez is building habitat suitability models for several HAB species to understand future HAB prevalence; long-term data on many relevant environmental variables is lacking.

Benefits of GCOOS Collaboration

GCOOS & HRI share a common goal: providing data from the Gulf's coastal and ocean waters that is accurate, reliable and ***benefits*** people and ecosystems.

Collaboration with GCOOS is expected to assist in the dissemination and utilization of HAB data to the benefit of coastal communities and ecosystems.