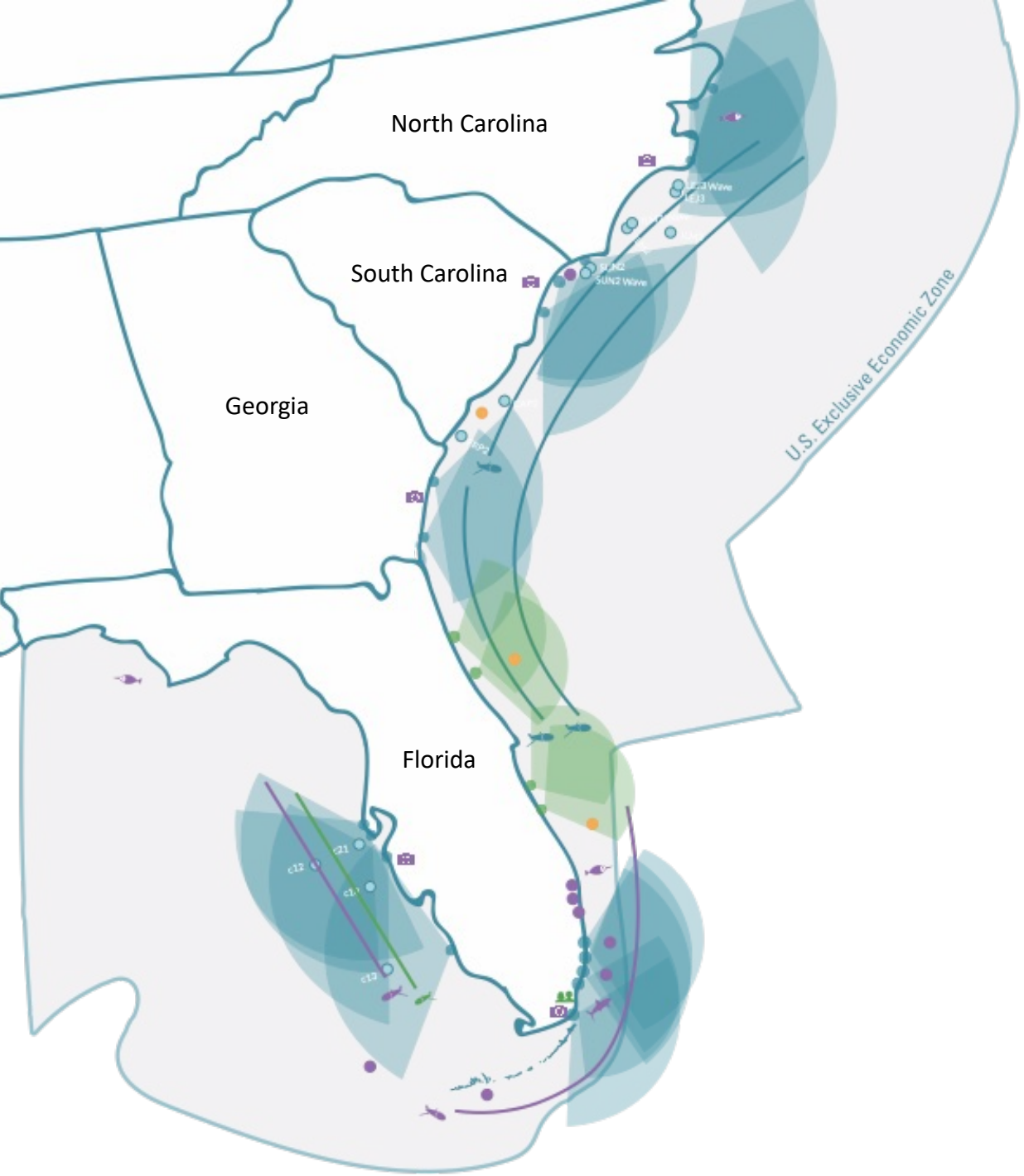


SECOORA
Southeast Coastal Ocean Observing Regional Association

Monitoring and forecasting pelagic Sargassum in the South Atlantic Bight

PI: Chuanmin Hu

Presenting: Yuyuan Xie

University of South Florida

Other team members: Brian Barnes, Yonggang Liu, Ruoying He, et al.

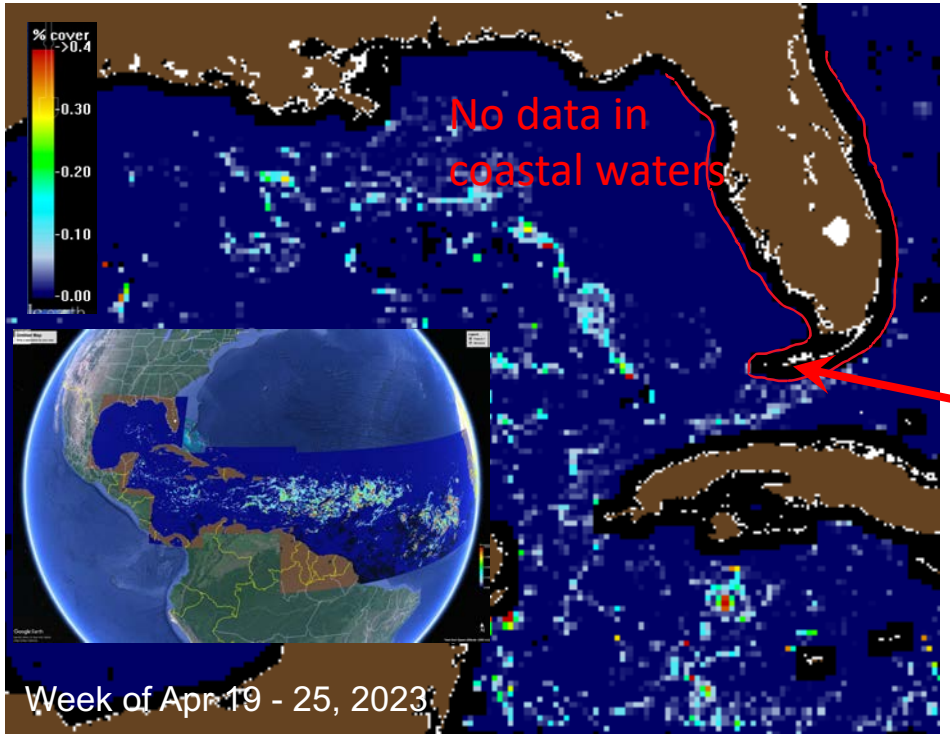
IOOS
Integrated Ocean Observing System

Overview of the Project

Overarching goal: to develop and operate a high-resolution, Web-based system to monitor and forecast pelagic Sargassum in several coastal zones of the Florida Keys and South Atlantic Bight.

Y1 and Y2 objectives:

1. to develop and validate algorithms suitable for high-resolution satellite data to map and quantify *Sargassum* distribution and abundance
2. to generate prototype high-resolution imagery products to map and quantify *Sargassum* distribution and abundance

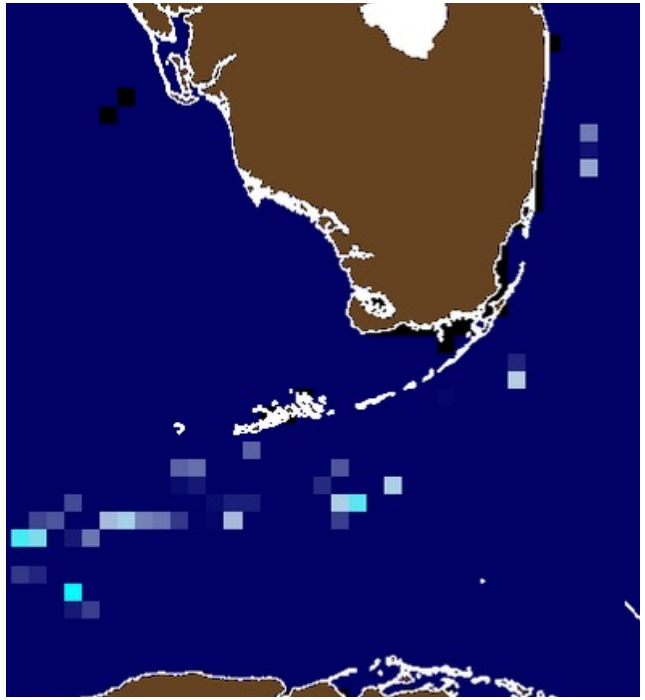


Smathers Beach, Key West, 3/5/2023

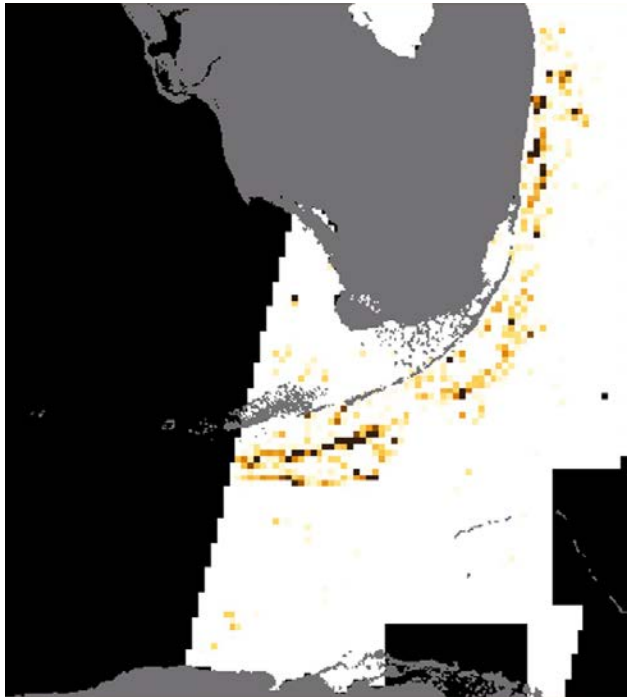
Accomplishments

- Developed a machine learning algorithm to detect *Sargassum* on beaches and in nearshore waters from high-resolution (3-4 m) satellite imagery (Zhang et al., 2022). This will make it possible to monitor *Sargassum* in nearshore environments.
- Developed a machine learning algorithm to detect *Sargassum* from coarse-resolution images (e.g., MODIS) (Hu et al., 2023). This will make it possible to fill some of the data gaps in the nearshore environments (> 10 km from shore).
- Implemented infrastructure for automatic download and processing of Sentinel-2 data for selected areas (e.g., Florida Bay)

MODIS (1 km)
Apr 9 – 15, 2023 (SaWS)



MSI (10 m)
Apr 15, 2023 (offline)



Challenges and Looking Ahead

Challenges:

- More evaluation and improvement of algorithms and data products for automatic and operational production
- Near real-time satellite data stream from the data provider (e.g., PlanetScope)
- Implementation of algorithms and data products for automatic production on the Web
- Integration with numerical models

Plans for next year:

- Finish algorithm development, and make robust data products
- Finish computer programs for automatic satellite data downloading and processing in near real-time
- Start integration with numerical models