

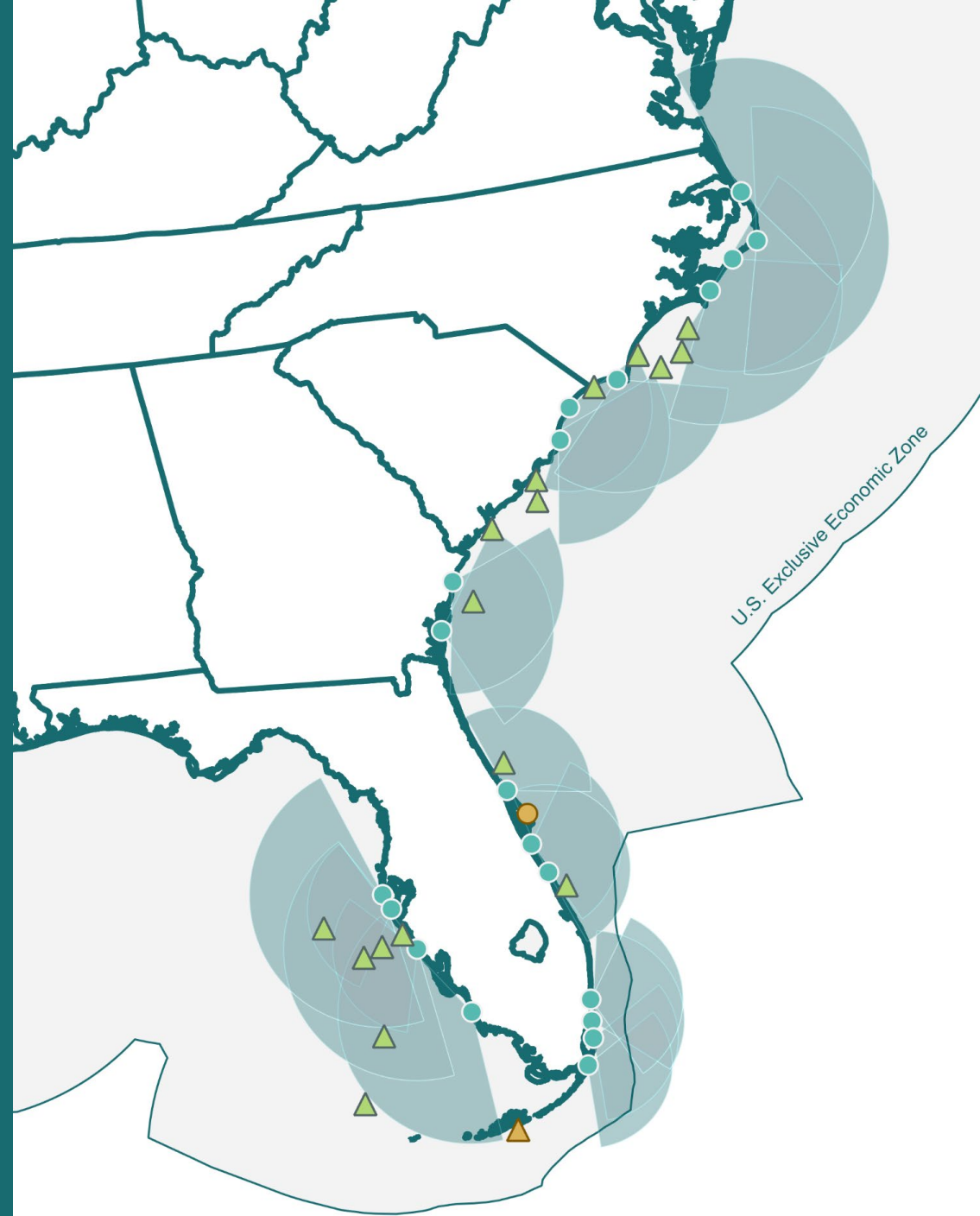
Monitoring and forecasting pelagic *Sargassum* in the South Atlantic Bight

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Presenting: Brian Barnes

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Other team members: Yuyuan Xie,
Yonggang Liu, Sully Sullivan, et al.



Overview

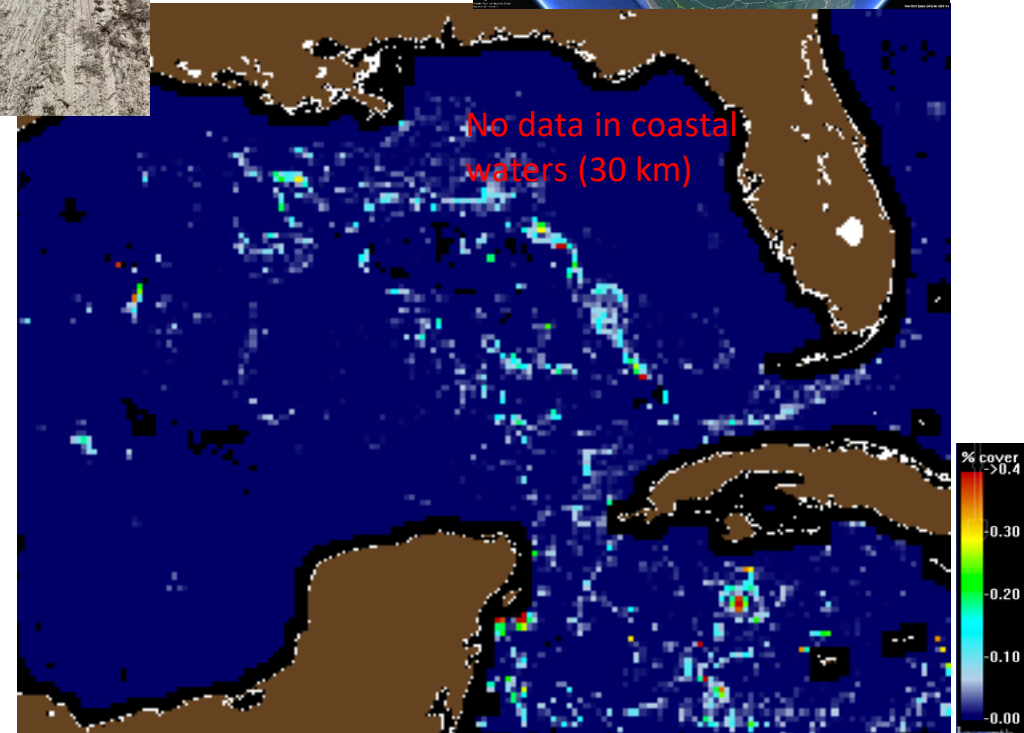
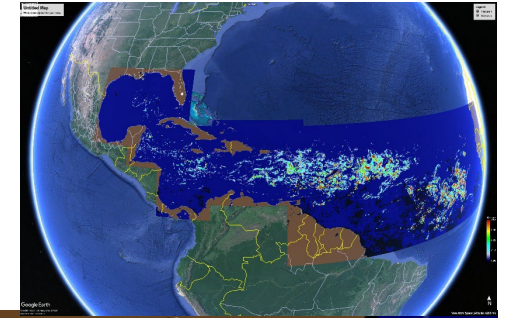
Overarching goal: Develop and operate a high-resolution, Web-based system to monitor and forecast pelagic *Sargassum* in several coastal zones of the Florida Keys and South Atlantic Bight.

Y1-3 objectives:

1. Develop and validate algorithms to map and quantify *Sargassum* from high-resolution satellite data
2. Generate prototype high-resolution *Sargassum* imagery products
3. Test and evaluate algorithms in selected regions, possibly with citizen science data



**Smathers Beach
Key West
3/5/2023**



Week of Apr 19 - 25, 2023



Accomplishments

Sargassum monitoring in offshore waters

- ML algorithm to detect *Sargassum* from coarse-resolution images (e.g., MODIS) (Hu et al., 2023).
- Fills some data gaps in the nearshore environments (10-30 km from shore).

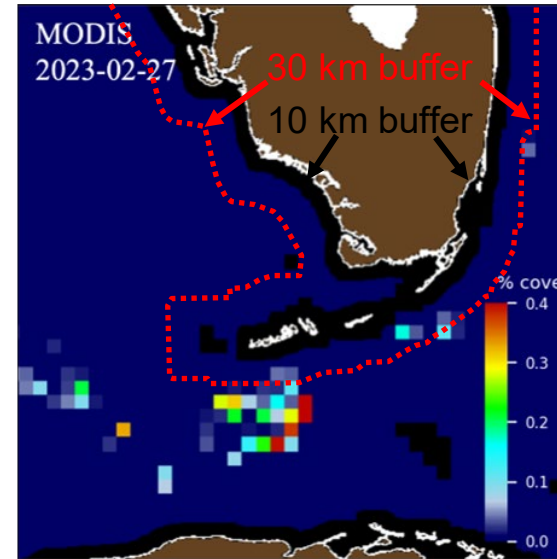
Sargassum monitoring in nearshore environments

- ML algorithm to detect *Sargassum* on beaches and in nearshore waters from commercial high-resolution (3-4 m) satellite imagery (Zhang et al., 2022).
- Refined ML-based detection algorithm for Sentinel-2 MSI data

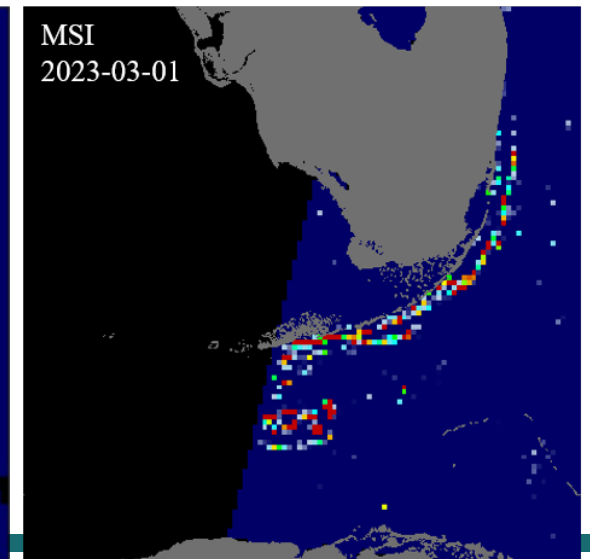
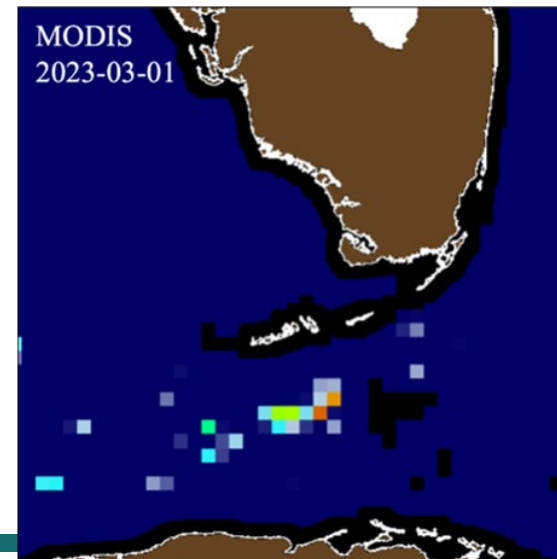
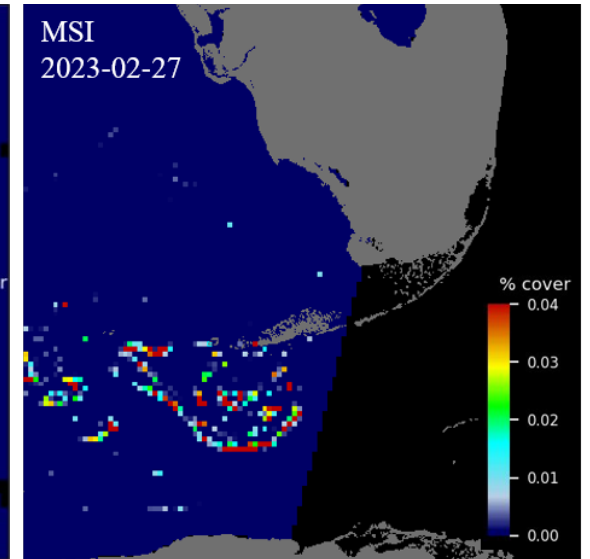
Data distribution

- Implemented automatic download and processing of Sentinel-2 data for selected areas (Florida Bay, Indian River Lagoon, etc.).

10 km resolution



4 km resolution



Looking Ahead

Challenges:

- More evaluation and improvement of algorithms and data products for automatic and operational production
- Near real-time satellite data stream from commercial data providers (e.g., Planet)
- Implementation of algorithms and data products for automatic production on the Web
- Validation with limited citizen science data
- Integration with numerical models

Plans for next year:

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

