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

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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

Week of Apr 19 - 25, 2023

No data in coastal waters (30 km)

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.).
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