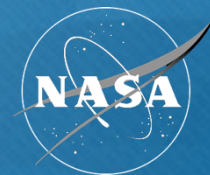


Sargassum Early Advisory System (SEAS)



SEAS

- Purpose
- Components
- SEAS UI/UX
- Evolution
- Acknowledgments





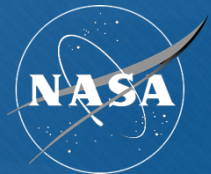
Introduction

Technical

- **Detection**
- **Forecast**
- **Alert**
- **Aid Mitigation**

UI/UX

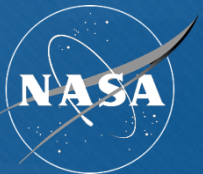
- **Hybridized Web App**
- **Mobile Friendly**
- **Touch Centric**
- **Encapsulate**
- **Automate**





SEAS Components

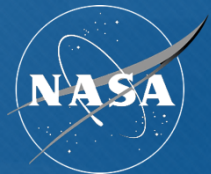
- Imagery
- Processing
- Forecasting
- UI/UX



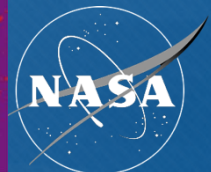
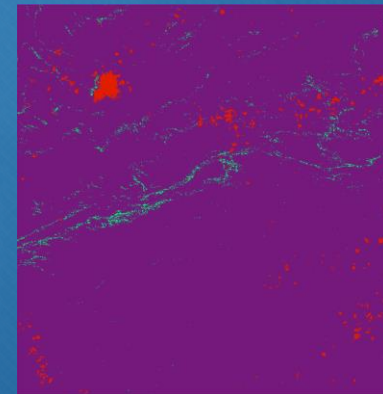
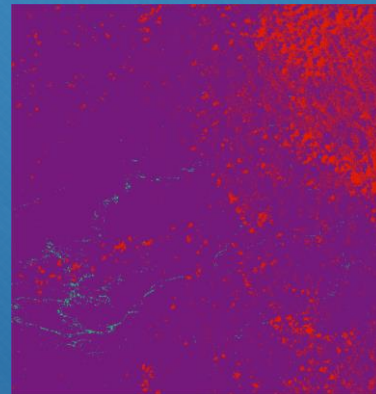
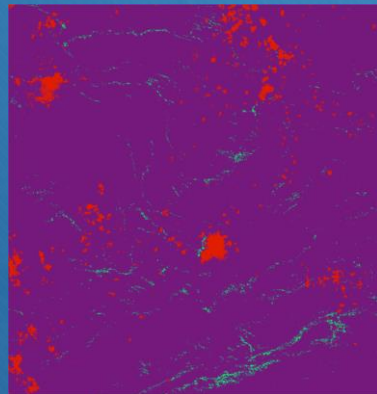
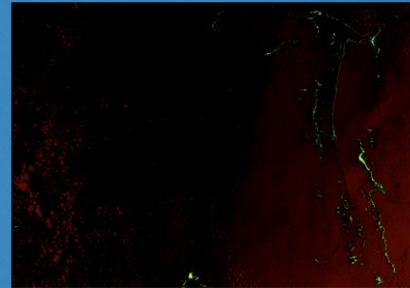
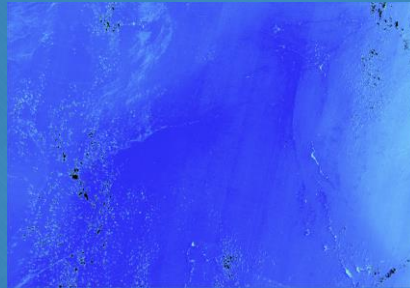
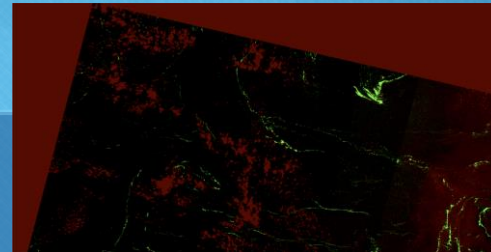
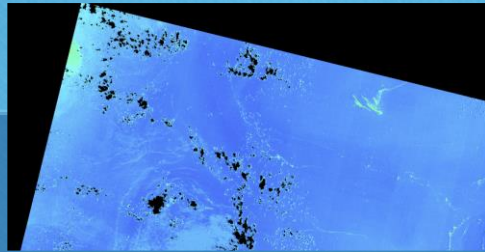
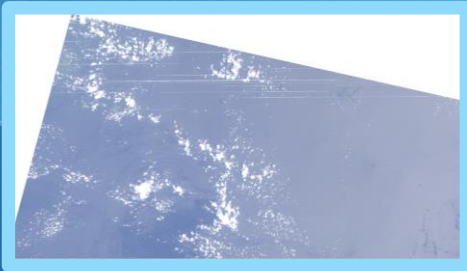


Imagery Module

- Landsat – 8 OLI (USGS)
- SeaDas 7.x
- Level 2 Optical Product
- Algorithm
- ...



Imagery: Detection off the E. Coast of Texas and the Caribbean



Components: Processing



- OLI Imagery
- Acquisition
- Parsing
- Integration
- ...

```
lat long
27.0975404049994, -92.0866241438610
27.0975434608853, -92.0866241438610
27.0975464216463, -92.0866241438610
27.0975492872824, -92.0866241438610
27.0975520577937, -92.0866241438610
27.0975547331801, -92.0866241438610
27.0975573134417, -92.0866241438610
27.0975597985 time depth latitude longitude wate
27.0975621885 UTC meter degrees_north degrees_east
27.0975644834 2014-08-07T18:00:00Z 0.0 17.9199981689453
27.0975666834 2014-08-07T18:00:00Z 0.0 17.9199981689453
27.0975687875 2014-08-07T18:00:00Z 0.0 17.9199981689453
2014-08-07T18:00:00Z 0.0 17.9199981689453
8/1/2014 21.75 -86.25 0.77166 103 0.0 17.9199981689453
8/1/2014 27.5 -96.25 7.45938 171 0.0 17.9199981689453
8/1/2014 20.0 -74.0 4.37274 56 0.0 17.9199981689453
8/1/2014 28.75 -94.25 5.91606 182 0.0 17.9199981689453
8/1/2014 18.25 -67.75 3.08664 111 0.0 17.9199981689453
8/1/2014 26.25 -96.25 7.45938 162 0.0 17.9199981689453
8/1/2014 29.0 -87.5 0.25722 194 0.0 17.9199981689453
8/1/2014 28.5 -89.0 2.31498 148 0.0 17.9199981689453
```

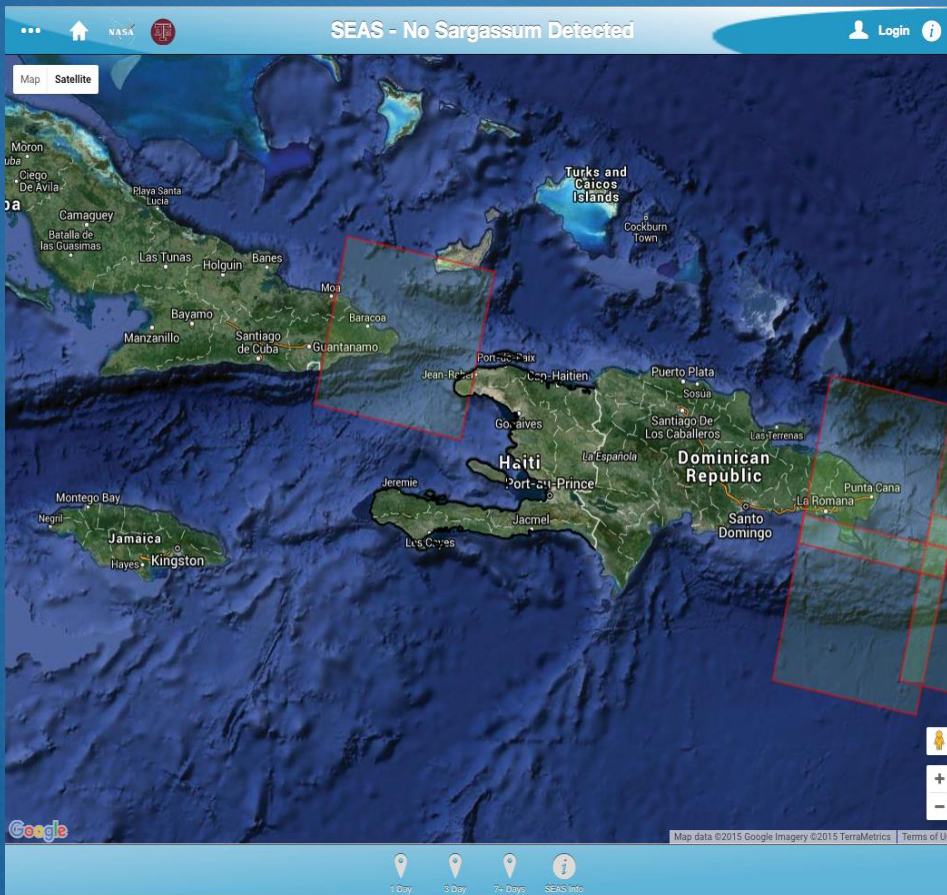


Forecasting module

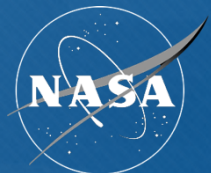
```
Longitude HYCOM Speed HYCOM Direction  
-96.199783 0.217793489113 0.4615  
-96.198868 0.217793489113 0.4615  
-96.199165 0.217793489113 0.4615  
-96.197327 0.217793489113 0.4615  
-96.197319 CLUSTER  
127.7113 28.6185  
-96.196709 END  
-96.197861 CLUSTER  
26.6299 28.782 -95  
24.6924 28.7484 -95  
22.6161 28.7124 -95  
Coordinates>-95.2 END  
CLUSTER  
69.4574 28.575 -96  
73.6916 28.7046 -95  
70.6491 28.6689 -95  
>{Today:0. 65.9763 28.6141 -95  
ion> 63.7049 28.5875 -96  
</styleUrl>#highProb</styleUrl><ring><coordinates>-95.6581,28.7444  
7446,0 -95.6577,28.7448,0 -95.6577  
7452,0 -95.6573,28.7452,0 -95.6577  
7456,0 -95.6567,28.7458,0 -95.6567
```

- Hybrid Coordinate Ocean Model (HYCOM)
- Currents
- Winds
- Weather Buoys

SEAS UI/UX



- Geospatial UI
- Mobile Optimized
- Touch Centric





Profile

CANCEL

Email*

Password*

Confirm*

Alerts

South

Region: South Boca Chica

Region: South South Padre Island

Region: South Padre Island National Seashore

North

Region: North Sargent Beach

UPDATE

+ Landfall Ad... Bea

TX

Last Updated:
 State: TX Region: South End Beach: E

Summary: Many isolated mats of Sargassum approach

Winds: 12 - 14 mph NNW
Current: 0.25 - 0.5 mph W
Net Drift: 0.4 mph SW

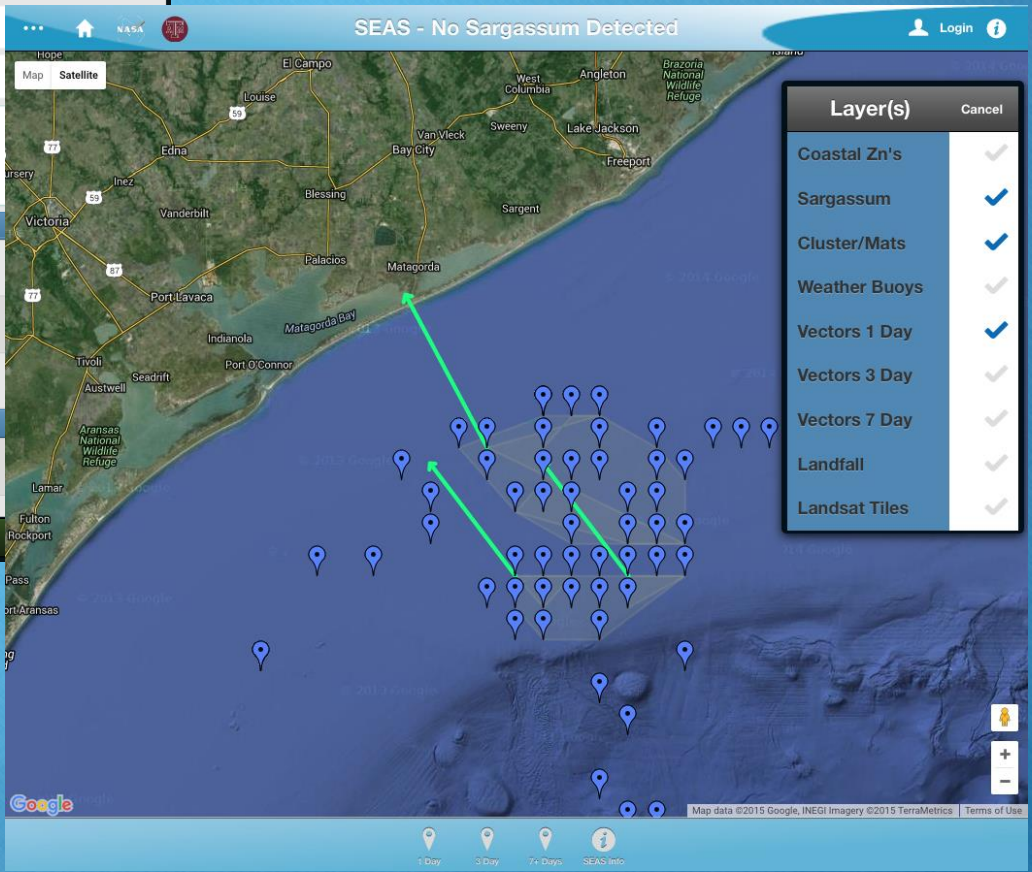
Forecast: Much of the Sargassum located in the southern regions is making its way through a series of gyres and eddies, slowing its approach toward the coastline.

Last Updated:
 State: TX Region: North End Beach: Boca Chita

Summary: Many isolated mats of Sargassum identified as they enter approach

Winds: 12 - 14 mph NNW
Current: 0.25 - 0.5 mph W
Net Drift: 0.4 mph SW

Forecast: Much of the Sargassum located in the southern regions is making its way through a series of gyres and eddies, slowing its approach toward the coastline.



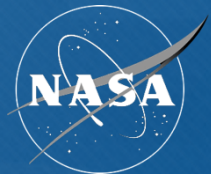
SEAS Evolutionary Potential

○ Backend

- Leveraging MATLAB toolbox
- Image Analysis Algorithm
- Alert Generation

○ User Interface

- Mobile Platform Access
- Searchable Alert Listing
- Point Description Data



Acknowledgments & References

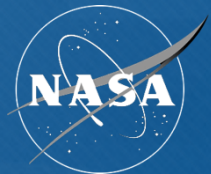
The SEAS web app development is led by NASA, with participation by ASRC Federal/Computer Science Corporation, and the Naval Research Laboratory, all at Stennis Space Center, and Texas A&M University at Galveston.

[1] Hu, Chuanmin. A novel ocean color index to detect floating algae in the global oceans. Remote Sensing of Environment 113 (2009) 2118-2129.

[2] SeaDAS home page. <http://seadas.gsfc.nasa.gov>

[3] McCarthy, S. and Gallegos, S. Automated Sargassum Detection for Landsat Imagery Conformed to the HYCOM Grid User Manual. NASA Sponsor Report.

We would also like to thank and remember Captain Webster from Texas A&M Galveston for his help with this effort.



SEAS Release 1.0

○ Features

- Accessible via Desktop or Tablet
- Sargassum Cluster Identification based on the latest Landsat 8 Imagery
- Forecasting using a 24, 72 and 168 hour predictive model
- Registration
- Feedback

