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SARG'COOP
Programme caribéen de coopération de
lutte contre les algues sargasses



Sargassum Watch from Space

Chuanmin Hu

Professor of Oceanography

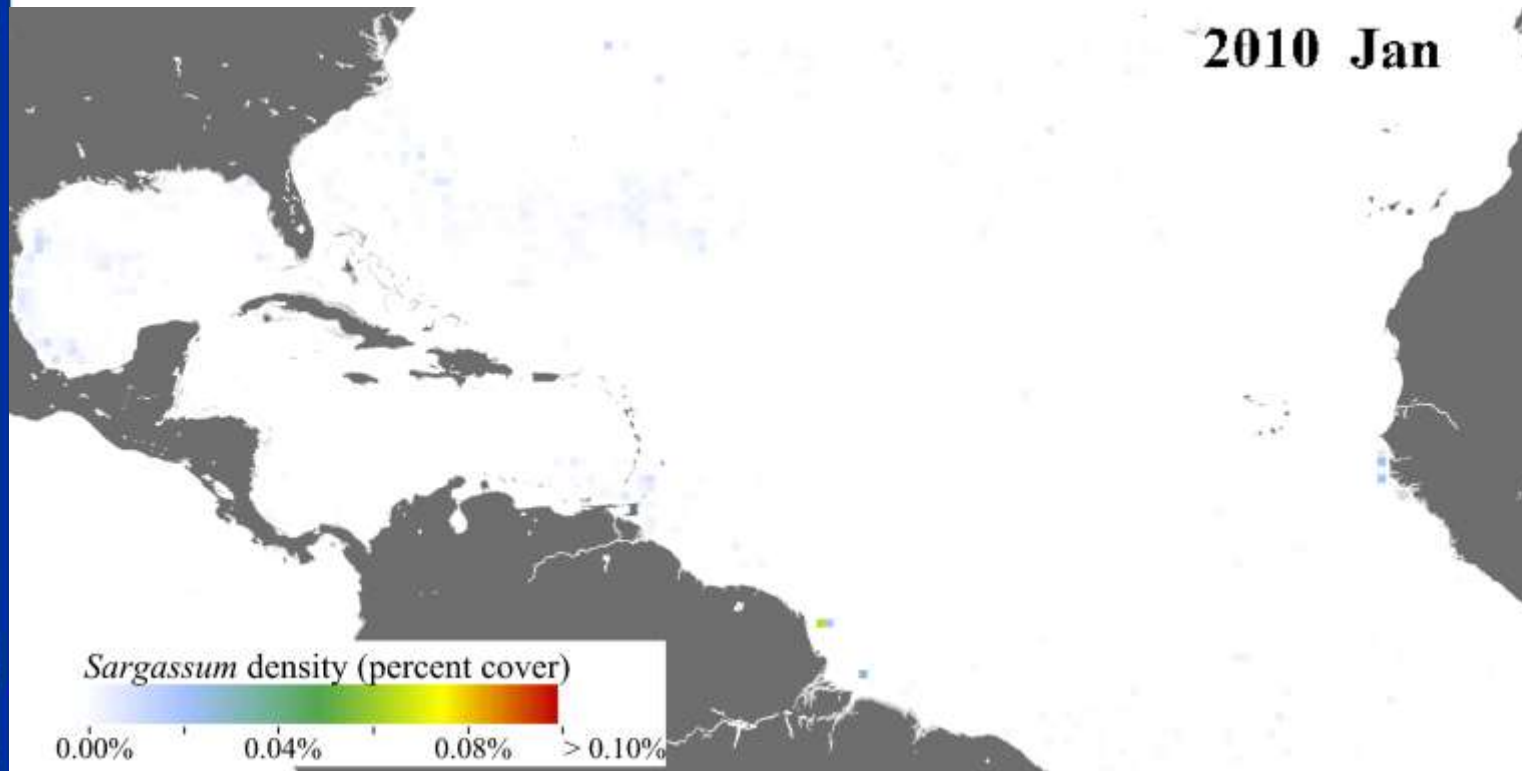
University of South Florida, USA

huc@usf.edu

10/28/2019



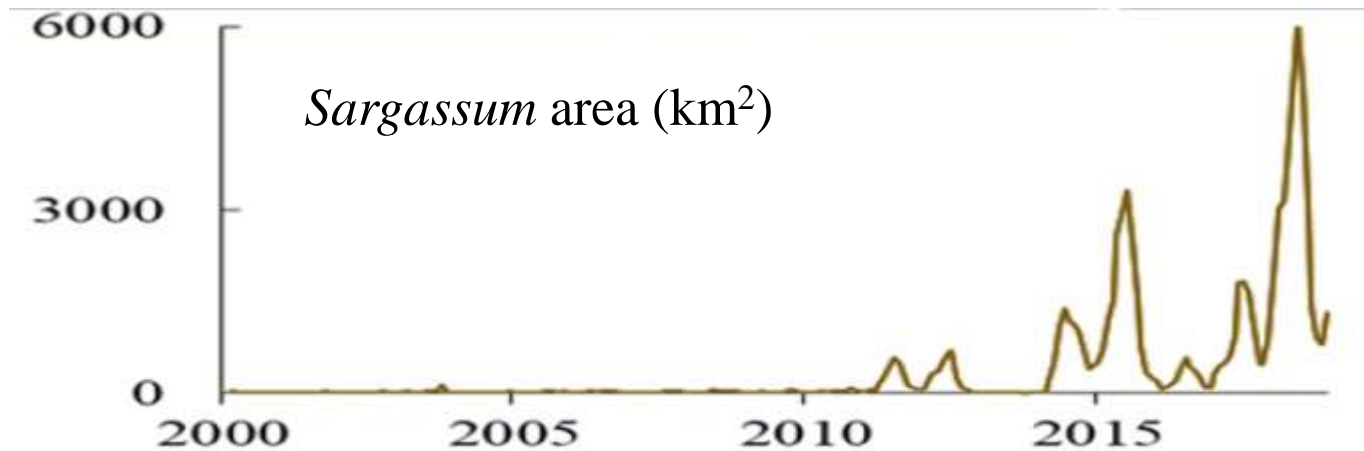
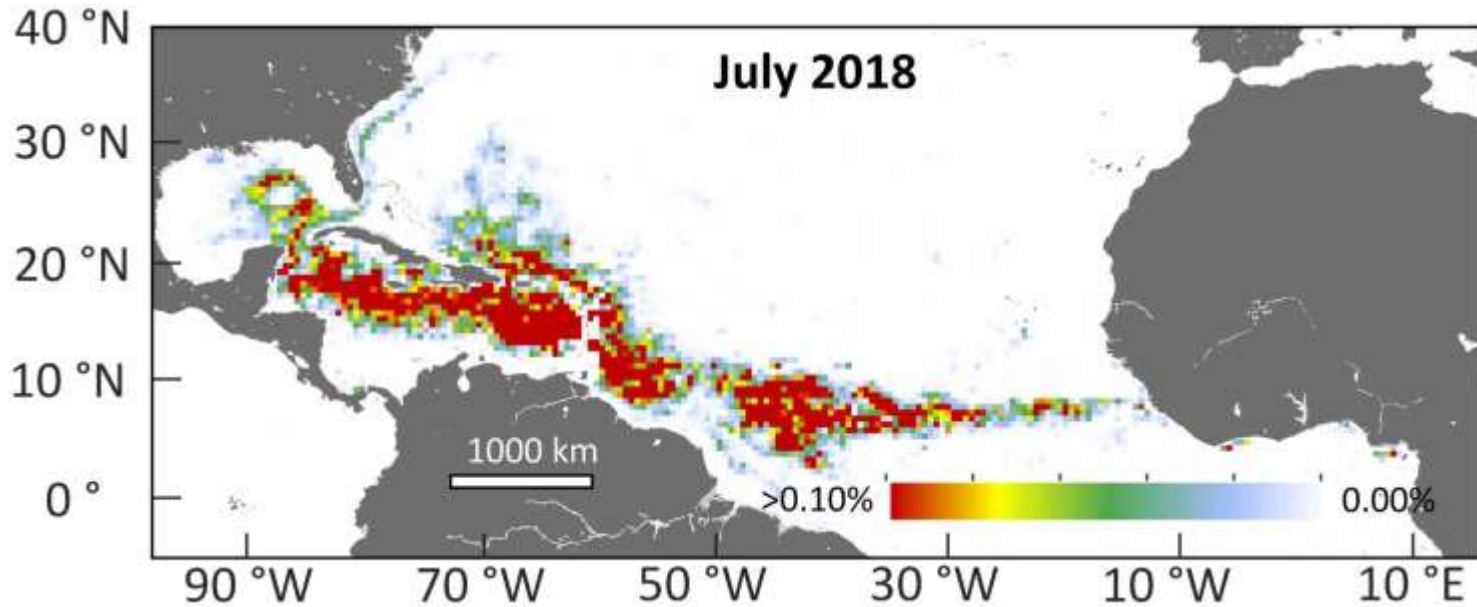
The Great Atlantic *Sargassum* Belt



From Wang et al. (2019, *Science*)



The Great Atlantic *Sargassum* Belt



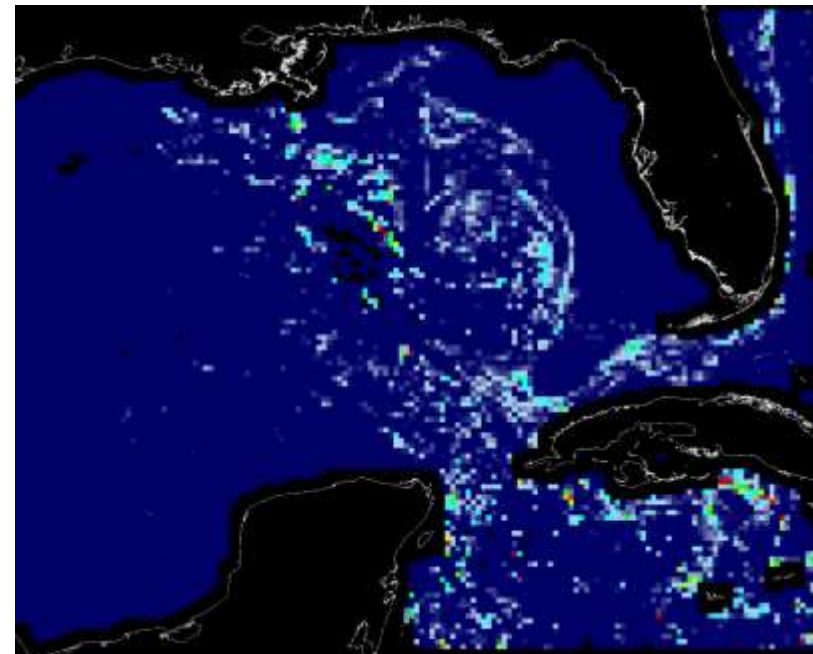
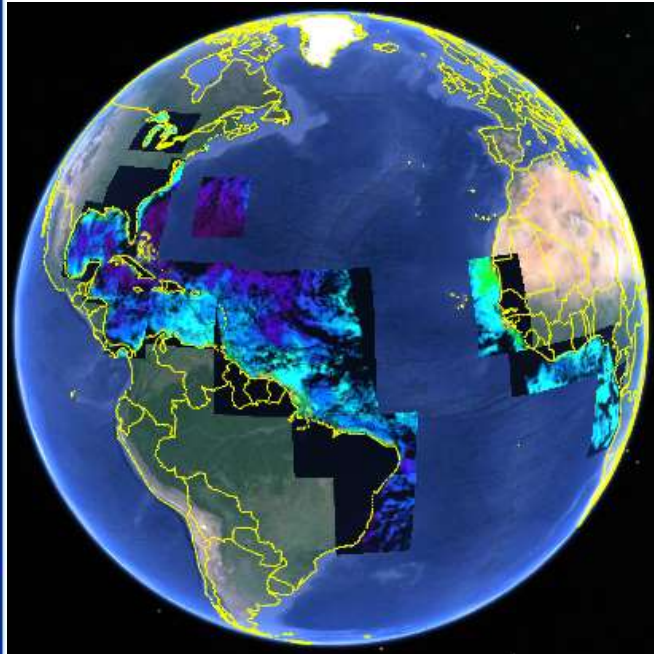
The *Sargassum* Watch System

Monitor, track, and forecast

<https://optics.marine.usf.edu/projects/saws.html>

Daily imagery coverage

May 14 – 20, 2019, Gulf of Mexico



From Hu et al. (2016, *EOS*)

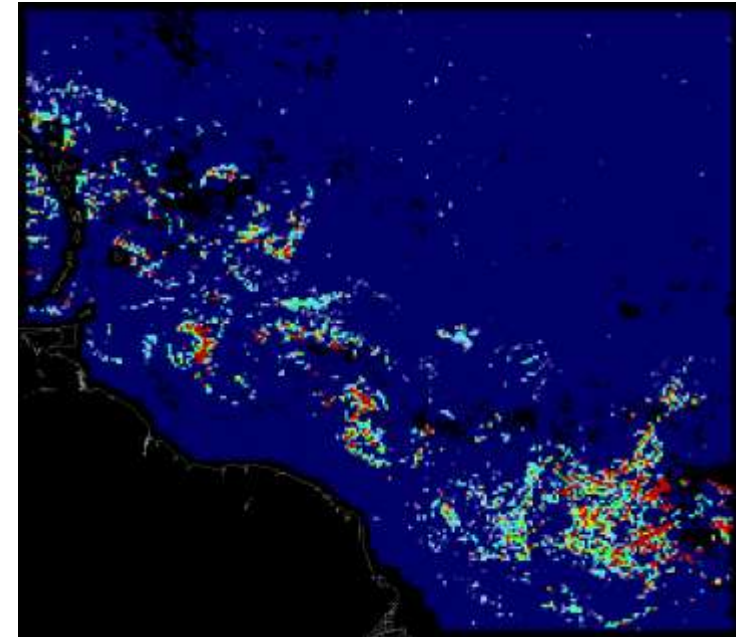
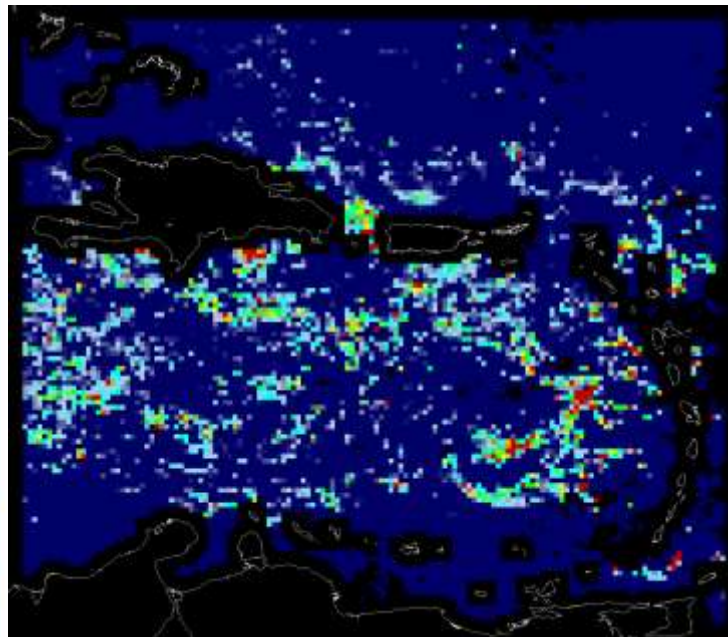
The *Sargassum* Watch System

Monitor, track, and forecast

<https://optics.marine.usf.edu/projects/saws.html>

June 1 – 7, 2019, East Caribbean

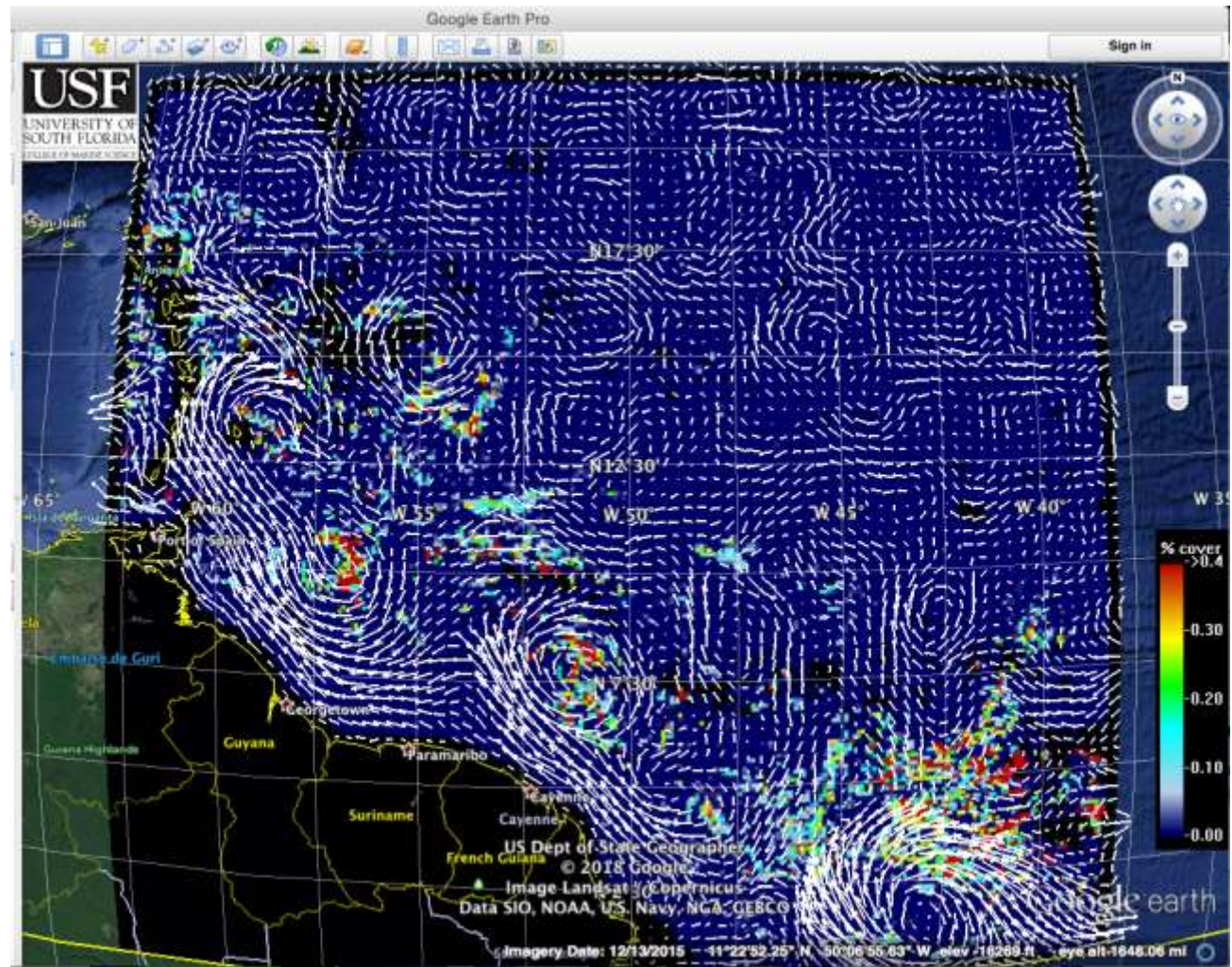
June 1 – 7, 2019, Central West Atlantic



From Hu et al. (2016, EOS)

The *Sargassum* Watch System

Google Earth compatible. Mouse click on arrow shows surface current speed and direction





Monthly *Sargassum* outlook bulletins

Every month since February 2018. All available at SaWS



Outlook of 2019 *Sargassum* blooms in the Caribbean Sea and Gulf of Mexico*

September 30th, 2019, by University of South Florida Optical Oceanography Lab
(huc@usf.edu)



The maps below show *Sargassum* abundance, with warm colors representing high abundance. During September 2019, *Sargassum* amount has decreased significantly from August 2019 in the Gulf of Mexico (GOM), Florida straits, Caribbean Sea (CS), and Central West Atlantic (CWA). The reductions are more than our August 2019 prediction, at rates higher than previous bloom years. In all regions combined, the total *Sargassum* amount is estimated to be ~3 million metric tons, lower than in September 2017 (5M tons), September 2015 (6.1M tons), or September 2018 (6.3M tons). The amount is much lower in the last week of September than in the first week of September, indicating a continuous reduction.

Looking ahead, because the *Sargassum* amounts in all regions above in the last week of September 2019 have decreased significantly from August 2019 and because the transported amount from the CWA to the CS is also expected to decrease, we project that all regions will experience minimal or no beaching events in October 2019. November and December 2019 may continue this trend. However, because there is still moderate amount of *Sargassum* in the east tropical Atlantic (not shown in the images below), there is a slight chance of increased amount in the CWA. We will keep a close eye on how *Sargassum* in the east tropical Atlantic may influence the CWA in the coming months.

More updates will be provided by the end of October 2019, and more information and near real-time imagery can be found under the *Sargassum* Watch System (SaWS, <https://optics.marine.usf.edu/projects/saws.html>)





Summary

- *Sargassum* blooms now occur not just in the Sargasso Sea and Gulf of Mexico, but also in the tropical Atlantic and Caribbean – GASB observed every summer since 2011 (except 2013). Possibly a new normal
- Infrastructure for near real-time monitoring, tracking, and routine forecasts of bloom likelihood has been established through SaWS
- Further research is required to 1) understand what caused the inter-annual changes at different locations, 2) predict the future, and 3) develop localized monitoring and forecasting using fine-resolution imagery and numerical models



USF OOL Publications on *Sargassum*

- Wang, M., C. Hu, B.B. Barnes, et al. (2019) The Great Atlantic Sargassum Belt. *Science*, 365: 83 – 87.
- Wang, M., C. Hu, J. Cannizzaro, et al. (2018). Remote sensing of Sargassum biomass, nutrients, and pigments. *Geophys. Res. Lett.*, 45 doi:10.1029/2018GL078858
- Wang, M., and C. Hu (2018). On the continuity of quantifying floating algae of the Central West Atlantic between MODIS and VIIRS. *Int. J. Remote Sens.* 39:12, 3852-3869
- Wang, M., and C. Hu (2017), Predicting Sargassum blooms in the Caribbean Sea from MODIS observations, *Geophys. Res. Lett.*, 44, 3265–3273, doi:10.1002/ 2017GL072932.
- Marechal, J-P., C. Hellio, and C. Hu (2017). A simple, fast, and reliable method to predict Sargassum washing ashore in the Lesser Antilles. *Remote Sensing Applications: Society and Environment.* 5:54-63.
- Hu, C., B. Murch, B. B. Barnes, et al. (2016). Sargassum watch warns of incoming seaweed, *Eos*, 97(22):10-15
- Hu, C., R. Hardy, E. Ruder, et al. (2016). Sargassum coverage in the northeastern Gulf of Mexico during 2010 from Landsat and airborne observations: Implications for the Deepwater Horizon oil spill impact assessment. *Marine Pollution Bulletin*, 107:15-21.
- Wang, M., and C. Hu (2016). Mapping and quantifying Sargassum distribution and coverage in the Central West Atlantic using MODIS observations. *Remote Sens. Environ.*, 183:356-367.
- Hu, C., L. Feng, R. F. Hardy, et al. (2015). Spectral and spatial requirements of remote measurements of pelagic Sargassum macro algae. *Remote Sens. Environ.* 167:229-246.
- Hu, C. (2009). A novel ocean color index to detect floating algae in the global oceans. *Remote Sens. Environ.* 113 :2118-2129.