NOAA Satellite-Based Oil Spill Detection and Reporting Program

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SAB Marine Oil Spill Program Overview

- The NESDIS Satellite Analysis Branch (SAB) has been analyzing satellite data for unnatural marine oil spills in U.S. Exclusive Economic Zone waters 18 hours a day (24 hours when needed) since 2010.

- SAB's mission is to report oil spills detected in satellite data. Any subsequent response efforts that results from them are handled by USCG, NOAA OR&R, and other responders

Above: Deepwater oil spill in MODIS imagery. Credit: NASA.
Below: A wildlife biologist surveys oiled sargassum in the Gulf of Mexico. Credit: Georgia Department of Natural Resources.

- SAB publishes reports/value-added products publicly on both SAB's website and NOAA's ERMA portal.

- The products are used to assess oil spill extents, identify at-risk habitats, shorelines, and communities, and initiate fate trajectory models.

Routine Satellite Data and Associated Products

- SAB mainly uses free polar data from optical and SAR satellite sensors for monitoring and products: Landsat 8 & 9, Sentinel-2A & 2B, Sentinel-1A, MODIS, VIIRS

- Polar sensors used over geostationary sensors due to higher spatial resolution

- SAB sometimes purchases commercial data to fill temporal coverage gaps

- SAB does not serve as a satellite data repository nor does it share the original satellite data used in its reports, but much of it comes from free sources that are available to the general public
https://earthexplorer.usgs.gov/
https://dataspace.copernicus.eu/

Polar orbiter swath example. Credit: ESA

MPSR Example Based on Optical Satellite Data

Value-added map product in JPG format showing the suspected oil spill. Such products that show imagery are shared publicly when permitted by End User License Agreements (EULAs)

Value-added map product in JPG format showing the oil spill surface area polygon only without imagery. These are the only ones shared publicly when there are value-added product sharing restrictions specified in EULAs

MPSR Web Access

https://www.ospo.noaa.gov/products/ocean/marinepollution/

Environmental Response Management Application (ERMA) hosted by NOAA Office of Response and Restoration, where the JPEG(s) and the shapefile overlay of the reported oil spills can also be found.
https://response.restoration.noaa.gov/resources/maps-and-spatial-data/environmental-response-management-application-erma

Satellite Analysis Branch
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https://www.ospo.noaa.gov/Products/ocean/marinepollution/