



## Ocean Science and Technology Applications (OSTA)

### Project Highlights

#### Societal Impacts

- Tracking of coastal and inland flooding
- Better forecasting using ocean surface winds
- Tracking of phytoplankton for improved fishing practices
- Data-based governmental decision-making
- Improved near-real-time forecasting

#### Significant Accomplishments

- Creation of global oceanographic environmental products using data from multiple satellites
- Reprocessing of oceanographic environmental variables to produce high-quality science products

#### Services and Support

- Water Surface Conditions Algorithm/Product Research, Development, and validation
- Ocean Vector Winds Science, and Engineering Support
- Ocean Surface Altimetry
- Ocean Color Remote Sensing Research and Applications
- Ocean Color Algorithm Development and Cal/Val
- Sea Ice and Polar Dynamics
- Polar and Geostationary Sea Surface Temperature (SST)
- Cross-cutting research for all previous teams

### GST Supports NOAA Satellite Oceanography & Climatology

GST supports NOAA's Satellite Oceanography and Climatology Division (SOCD) in scientific analysis of global oceanic remote sensing data; calibrates and validates space-based data using in situ instrument measurements from ocean-going vessels, dropsondes, and buoys; and creates products to meet the needs of users for satellite oceanic environmental data. We transform satellite data into high-quality, high-resolution products and information on the oceans using data from multiple US and international satellites. We create many useful products, including ocean color that help locate phytoplankton, sea-surface roughness to identify sea ice and oil spill extent, ocean surface vector winds in support of weather forecasts, and sea surface temperature and sea surface height for weather and climate studies.

GST works with SOCD teams to establish science and data requirements for satellite data acquisition and ingest, to analyze metadata and processing needs for near real-time, to improve science quality, and to reprocess ocean science data. GST performs statistical analyses and generates plots and visualizations of product performance, as well as inter/intra-sensor and in situ comparisons, for improved cal/val and quality assessment. GST also brings unparalleled experience in computational and algorithmic procedures, thereby enabling reprocessing of large volumes of satellite data.

GST supports SOCD's unique data oceanic and coastal data products for governmental decision-making, climatological research, and near real-time forecasting.

GST also works with the science teams to:

- Configure and customize the production system to process new data streams, emphasizing code reuse to the fullest extent
- Define the data formats, metadata, and ingest schedule that will enable timely ingest into data processing systems
- Obtain draft science algorithms and test data early in the process to make unit and system testing as realistic as possible
- Provide test and operational data and reports for scientific validation at frequent intervals
- Ensure proper data versioning to avoid potential loss of scientific information
- Ensure complete production history to enable full recreation of all datasets

*S-NPP Sea Surface Temperature of the Mid-Atlantic Coast, US*

