



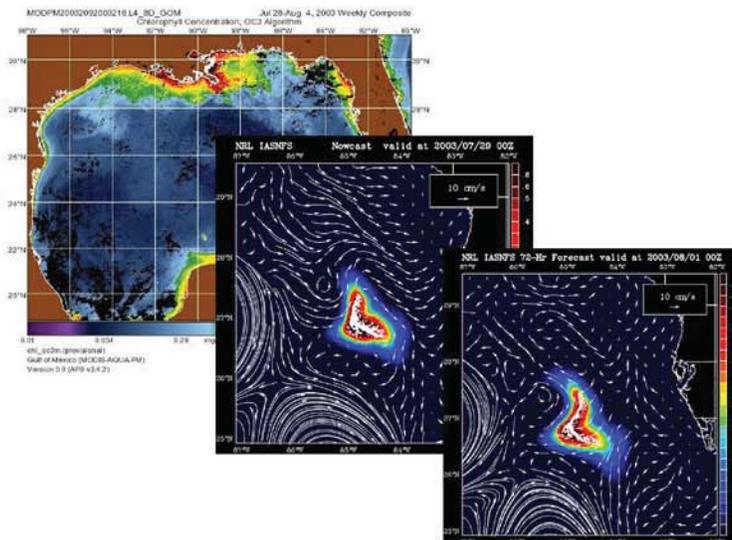
APPLIED SCIENCE AND TECHNOLOGY PROJECT OFFICE

Background

The Applied Science & Technology Project Office (ASTPO) at NASA's John C. Stennis Space Center is charged with the responsibility of extending the use of scientific research results and satellite observations to produce societal benefits. As part of NASA's Applied Sciences Program, ASTPO uses these resources to enhance decision support systems for the Gulf of Mexico coastal management community. Collaborative efforts are underway with the Gulf of Mexico Alliance (GOMA), a regional partnership of five U.S. Gulf states and 13 federal agencies, including NASA. Together, NASA and GOMA are working on priority issues, such as water quality for healthy beaches and shellfish beds; wetland and coastal conservation and restoration; identification and characterization of Gulf habitats; and reductions in nutrient inputs to coastal ecosystems.

Harmful Algal Bloom Forecasting

Harmful Algal Blooms (HABs) have caused an estimated \$1 billion in damage worldwide. HABs are a public health concern, threatening water quality as well as being linked to finfish and shellfish mortality. In 2006, GOMA cited the need for enhanced technology and decision-making capabilities for identifying, monitoring and forecasting HABs. From 2003-08, ASTPO, the Naval Research Laboratory at Stennis Space Center and Applied Coherent Technology worked with the National Oceanic and Atmospheric Administration to validate satellite observations, Earth science models and data fusion techniques for transition to NOAA and GOMA state entities for operational use in HAB monitoring and forecasting. The project team used ocean color and sea surface temperature products from the Moderate Resolution Imaging Spectroradiometer (MODIS) sensors on the Terra and Aqua satellites, wind fields from QuickSCAT and the Navy Coastal Ocean Model to create blended geophysical data products.

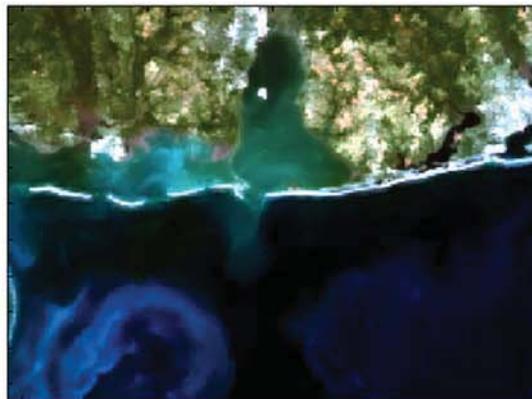
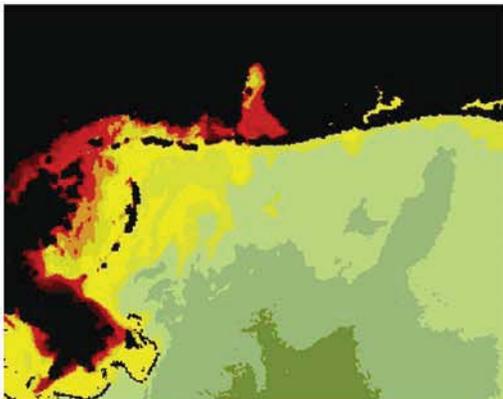


Using images such as these, researchers are able to monitor harmful algal bloom along the Gulf Coast.

Regional Sediment Management

Regional Sediment Management (RSM) focuses on understanding the environmental factors, whether natural or manmade, that can affect the erosion, removal, transport and/or deposition of sediment. Sediment loads can carry harmful substances such as dissolved and particulate organic matter, including pesticides, pathogens, metals and nutrients. As a result, resource managers need relevant information to make environmentally- sound decisions. Several GOMA actions focus on development of effective RSM tools for Gulf of Mexico estuaries and waterways and on the implementation of advanced technology. The primary remote sensing instrument used for RSM is MODIS; however, it is nearing the end of its operational life and is

scheduled to be replaced by the Visible/Infrared Imager/Radiometer Suite (VIIRS). Collaborating with Mississippi State University and Dauphin Island Sea Lab, ASTPO evaluated the use of VIIRS for RSM monitoring in the Gulf of Mexico. In addition, MODIS data was combined with experimental models and in situ suspended sediment concentrations from Mobile Bay, Ala. The team developed techniques to detect, map and track suspended sediments and their resultant effects in the Gulf of Mexico. Results from this feasibility study show that MODIS data products, coupled with in situ data, may be used to generate simulated VIIRS data products for enhanced decision-making for regional sediment and water quality management.

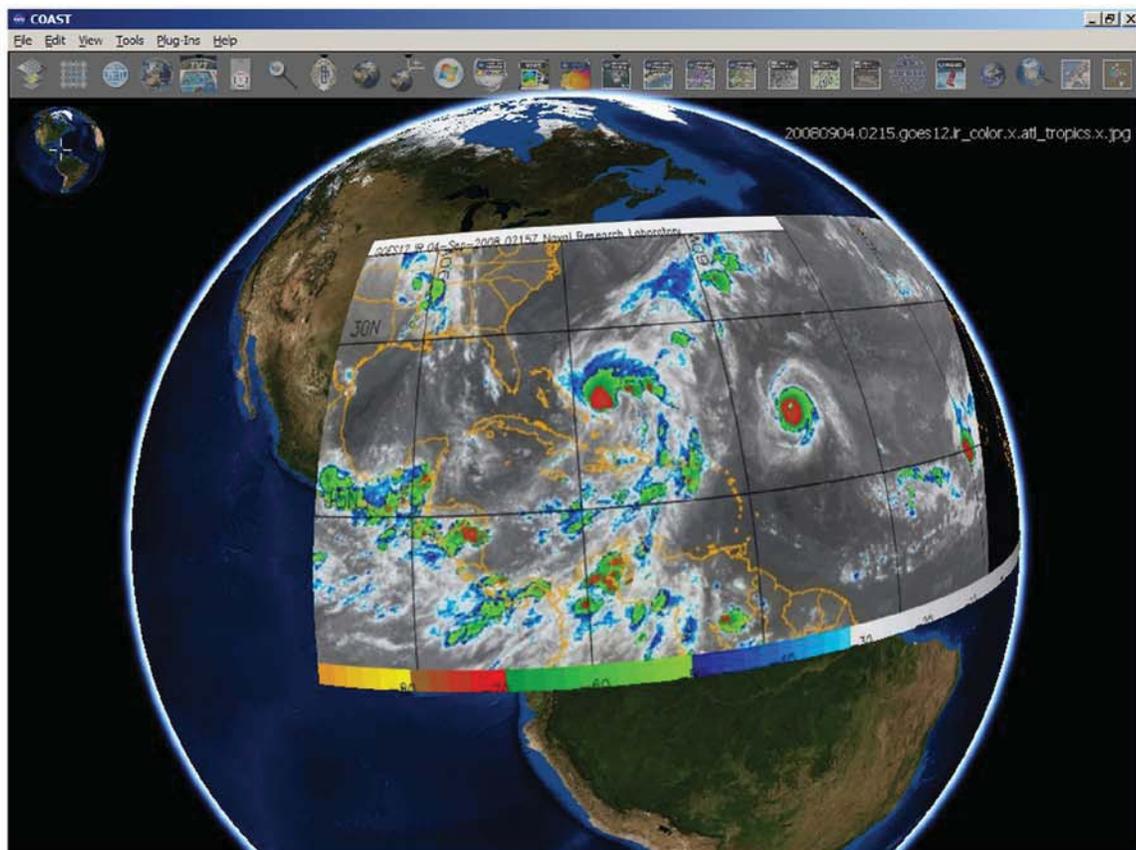


These images show suspended sediment concentrations in Mobile Bay, Ala.

Coastal Online Assessment and Synthesis Tool

The Coastal Online Assessment and Synthesis Tool (COAST) is an open source 3-D geobrowser that drastically simplifies the process of locating and accessing data sources. ASTPO created COAST by leveraging existing NASA open source tools. The geobrowser provides users with insightful new visualization and analysis capabilities, enabling users to integrate previously disparate datasets from NASA and other sources. COAST brings NASA science products, tools and data into the NASA/GOMA collaboration to provide greater insight and integration to the Gulf of Mexico community.

The Coastal Online Assessment and Synthesis Tool allows users to integrate data from other sources and create a visual image of what is happening.



For more information on remote sensing applications, contact the Stennis Space Center Applied Science & Technology Project Office at 228-688-3800, or access the ASTPO Web site at www.coastal.ssc.nasa.gov.