Altimeters for Ocean Prediction

U.S. NAVAL RESEARCH LABORATORY

AT A GLANCE

What is it?

Satellite observation of sea surface height is our key to knowing the internal ocean heat structure.

How does it work?

Automated satellite processing quality controls and corrects the observations for systematic errors. To observe mesoscale eddies, ocean processes such as tides and atmospherically forced water level variations are removed.

What will it accomplish?

At NRL we develop the systems that process incoming satellite data, and these systems transition to operational centers such as the Naval Oceanographic Office which runs the systems daily. The resulting data streams feed the ocean prediction models run operationally at Fleet Numerical Meteorology and Oceanography Center. The NRL research understands the ocean processes, their signatures in the satellite data, and how prediction systems can accurately represent them.
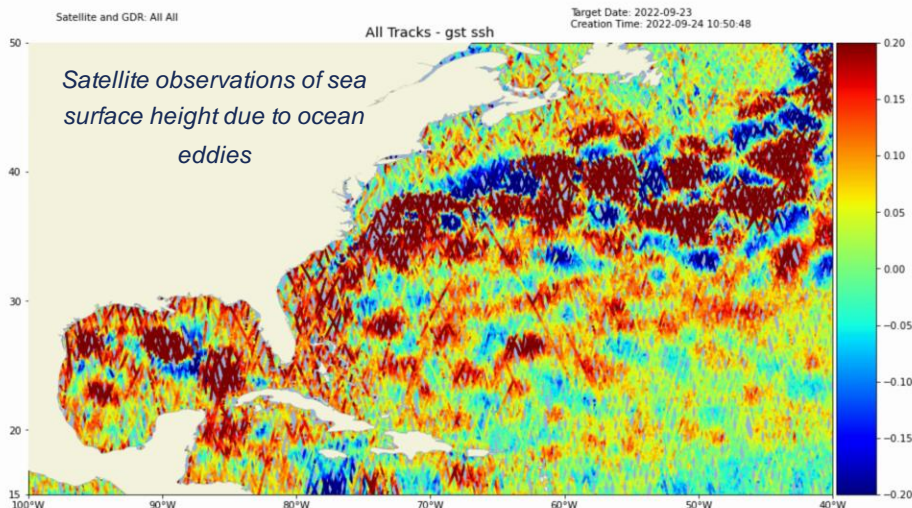
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Satellite observations of sea surface height due to ocean eddies

Satellite altimeter systems measure the ocean surface height with accuracy to a few centimeters. Ocean eddies have scales of tens to hundreds of kilometers, and these features persist for weeks to months. The sea surface height reflects changes in temperature deep within the ocean

Ocean Prediction

Ocean forecasting has progressed in recent decades since the beginning of the Global Ocean Data Assimilation Experiment (GODAE). Global and multiple nested area predictions occur in operational centers around the world. These systems regularly correct a prior forecast with recent satellite and in situ observations. The satellite sea surface height observations are particularly critical for inferring ocean interior thermohaline variability within mesoscale eddies, and the Argo program provides regular observations of the ocean interior. In addition to satellite observations, we regularly us in situ observations from gliders, drifters, and many other platforms.
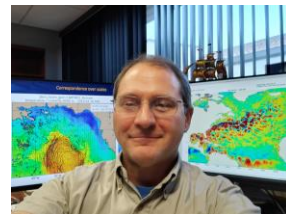
Post-Doc Opportunity

We are currently seeking a post-doctoral applicants with skills in any of: ocean physics, numerical modeling, observation analysis, data assimilation, high performance computing, and many others. For further information, visit our website (https://www7320.nrlssc.navy.mil/jobs.php) or contact us using the information at left.