CEOS Ocean Variables Enabling Research and Applications for GEO (COVERAGE)

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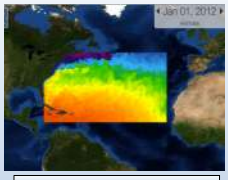
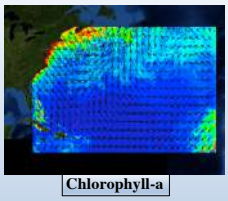
ABSTRACT

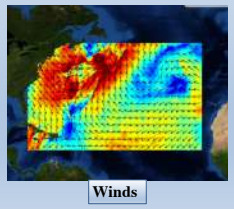
The initiative, CEOS Ocean Variables Enabling Research and Applications for GEO (COVERAGE), seeks to develop a near real time capability for delivering remote sensing data, as well as integrating in-situ and biological data with a focus on applications. The initial phase will be to develop co-located 25km products from the four Ocean Virtual Constellations, Sea Surface Temperature, Sea Level Anomaly Ocean Color, and Sea Surface Winds. This includes stimulating work among the 4 Ocean Virtual Constellations (SST, Sea Level, Color, Winds), while developing products that utilize the Ocean VCs. Such products as anomalies, would build on the theme of applications with a relevance to climate impacts, in line with CEOS/GEO mission and vision. COVERAGE was was recently approved as a new CEOS initiative at the CEOS SIT Meeting in Paris, France

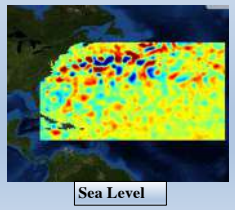
Four Ocean Virtual Constellations



Sea Surface Temperature


Chlorophyll-a


Winds


Sea Level

Planned Functionality

- Multi-parameter Observations
- Advanced Web-based visualization interface
- Data discovery
- Overlay of parameters/layers
- Subsetting/extraction data collocation/matchup
- Other potentially relevant on demand processing capabilities (eg. trend analysis, anomaly detection, regridding)

OVERVIEW

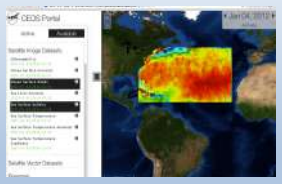
- CEOS – SIT meeting in Pasadena in 2013.
- COVERAGE aims to assemble and present satellite and in situ ocean data in a compelling web-based format to demonstrate the value added of multivariate ocean data integration is support of science, applications, and public engagement.
- Tech. Platform for integrated ocean data access: "fusion environment" for multi-parameter observations, available in near-real-time, collocated to a common grid, thematically organized, including climatologies, and allow for inclusion of emerging in situ data sets (e.g. AIS ship tracking, animal tagging, etc.).
- Build a project to bring together 4 CEOS Ocean Constellations (SST, Ocean Color, Ocean Vector Winds, Ocean Surface Topography), enable broad international participation, enable widespread use of ocean satellite data, and utilize emerging data management and cloud capabilities.
- Broader Vision: International collaboration via CEOS engagement for global extension of COVERAGE involving real-time implementation and a priority-set of use cases. Spinoff is the a global product with near-real-time capabilities.

Implementation:

1) Global 25 product based on 4 Ocean Virtual Constellations
   - Sea Surface Temperature
   - Ocean Color
   - Winds
   - Sea Level
2) Integration of biological and in-situ data
3) Support for GEO-Blue Planet & MBON applications

Examples from Sargasso Sea Commission Pilot Project

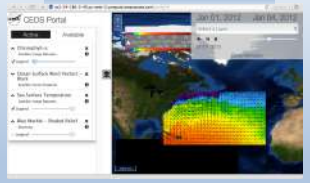
Aquarius Salinity



OSCAR Ocean Currents

Bluefin Tuna Tracks Overlaid on SST Gradients from MUR

Animations of Data Layers



GOALS

Develop a data rich platform for delivery and access to integrated, analysis ready ocean data:

Multi-parameter observations, easily discoverable and usable, thematically organized, available in near real-time (where possible), collocated to a common grid and including climatologies.

Complemented by a set of value-added data services available via the COVERAGE portal including:

-an advanced Web-based visualization interface
-data discovery
-subsetting/extraction
-data collocation/matchup
-other potentially relevant on demand processing capabilities (eg. trend analysis, anomaly detection, dynamic regridding).

Establish technical interfaces and data delivery and aggregation pipelines

Community & Use Case Driven

Leverage relevant existing/emerging technologies (several open source) and a successful project implementation model (eg. NASA Sea Level Change Portal)

Future Steps

- Develop national & international partnerships
- Identify Data Sets for Implementation
- Identify priority set of Use Cases & Requirements
- Improve portal functionality (visualization, analytics)
- Develop near real time capability via automated data pipelines/interfaces to data providers

Feedback

- Data set suggestions
- Tools and Services to support GHRSST
- International partnerships