Satellite Data Delivery in the IOOS Era

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Overview

- **Background on IOOS and Remote Sensing**
  - Spatial Scales to be a big deal
- **Data Stewardship at National Level**
- **Data Management at Regional Level**
- **Data Delivery Mechanisms**
- **Illustration by Application**
  - The need for basic (L2) data
  - The need for highly derived properties
  - The need for long-term continuity
Background: IOOS and Remote Sensing

- Initial Workshop in Durham, New Hampshire during October 2006.
- Generally assumed to be a contribution of the “National backbone”. Very few elements of the “backbone” are as yet identified.
- Many requirements request support possible only by airborne sensors.
Higher spatial resolution critical to monitor complex coastal waters

MODIS
1 km
water clarity

Modeled
HES-CW
(250 m)
Non-Chesapeake Bay Image
Data Stewardship at the National Level

- **Maintenance of archives**
  - CLASS (Boulder, CO and Asheville, NC)
  - “Nodes”
- **Reprocessing of climate data records**
  - Scientific Data Stewardship Committee
- **Development of New Products**
  - User driven (e.g., IOOS)
  - “Hey let’s try this”
Regional Development Model

- Form ‘centers of excellence” comprised of regional experts
- Target specific applications
  - Regional algorithms
  - Integrated products
- Develop and deliver experimental products
- Transfer technology to National level for possible implementation elsewhere
Data Availability

- **Standard transport of large files via ftp or similar means**
- **Live Access Server** - browse capability and data delivery of sub-samples in variety of formats
- **Interoperable (machine to machine)**
  - OPenDAP
  - Web Services (WSC, WMS, WFS)
- **Aggregators**
  - THREDDS (inherently supports opendap, wcs)
- **Transition from web-based to client-side data transfers**
Client-side Services

- Client accesses the required data from within their favorite application
  - Matlab
  - IDL
  - ArcGIS
  - Excel (??)
  - R /S+
- All relevant data available by a common interface
- Allows them to integrate their data without sending it into some [non-existent] grand data base.
Heceta Bank HAB: A Juan de Fuca eddy analog?

Courtesy
Peter Strutton
Michelle wood
Olive Ridley Turtles

- Yonat Swimmer, Lianne McNaughton and others (NMFS/PIFSC).
- Mike Laurs (NMFS/SWFS).
Examining Habitat Preferences
Potential Habitat Maps

SeaWiFS data courtesy of NASA GSFC and Orbimage Inc.
Need for Long-term Continuity
Ongoing Efforts

- Learn to handle L1A and L2 swath data with new transport tools.
- Form partnerships with end users to develop appropriate products.
- Develop systematic metadata standards, and the ability to translate between those and various existing standards.
- Develop access tools for common clients.
Concerns for the Future

► Continuity
  - VIIRS (??) - who’ll fix it if it flys?

► Access
  - Would like the DAACS to adopt services such as THREDDS

► Archives
  - CLASS has a LONG was to go, especially with regards to science-quality data records.
  - Will the DAACs be there in the interim, under the new NASA model.

► Advocacy
  - We continue to build advocacy within the Marine resources community; success stories will be shared with NASA as they emerge.
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