John Blaha - Naval Oceanographic Office

(Used overheads)

Northern Gulf Littoral Initiative (NGLI)

Purpose:
- Develop reliable, multidisciplinary models of the Mississippi Sound and adjoining rivers, bays, and shelf waters through the operation of a sustainable forecasting system.

- Has worked with numerous groups in the past.

- Develop skill toward shore from sea.

- First year was a modeling effort, some RS and in-situ observations, tied into Navy Hub.

- Slide showing map of region.

- Bathymetry is the Navy's business.

- Slide of intrusions map.

- Nested palm 200 to 500 meter mesh.

- Slide of model generation, banding effects of shelf area.

- Slide of basin model.

- Slide In-situ domain (measurement infrastructure).

- Slide of sediment transport.

- Slides of drifter data.

- Slides of ADCP locations.

- Slide of Altimeter Calibration.

- Slide of Local Geoid – SST data.

Question: On what DODS node will data appear?
- Outside of firewall on MEL Server.

John Lever – NAVOCEANO

(Presentation on Power Point)

Possible venues of DODs

Slide - Objective Functional Architecture.

Slide - NAVOceano Data Distribution.
- Web page showing available products.
- Data warehouse.

Slide - Web Server flow chart.
- Access to data warehouse.
- NGLI link.

Slide - Potential DWH Architecture WEB Proxy.

Slide - Dissemination Architecture.
- NAVO LAN.
- Firewall DMZ.
- Internet.

Slide - Master Environmental Library (MEL).
- MEL v3.0.

Slide – MEL Expanded Flow Chart.

Slide - MEL data discovery and delivery.

Slide - DWH Mass Storage.
- Purpose is for service production, processing and selected archiving of NAVOCEANO data sets.

Slide - FY01 Mass Storage Acquisition.
High-Volume Near-line Storage.
On-line Storage.
Network Connectivity Upgrades to Data Servers.
Network Attached Storage.

Slide - High-Volume Near-line Storage.

Slide - Online Storage.

Many other partners involved.

Metadata is FGDC compliant. Metadata not necessarily tagged with data, can be downloaded if desired.

Jim O'Brien - COAPS, Florida State University

(Presentation on PowerPoint)

Modeling the Gulf of Mexico with Satellite Winds

Several slides of example animations:
- Showing Near-real-time Winds and Surface Pressures.
- www.coaps.fsu.edu/~zierden/qscat AND http://www.coaps.fsu.edu/~zierden/qscat/gulf.shtml
- Swath data are used, not gridded data or interpolated fields.

SeaWinds on QuckSCAT Satellite.

SEE http://www.coaps.fsu.edu/cgi-bin/qscat/animations.cgi?request=listr&region=smex

Sea Winds Daily Coverage.

Examples of Sea Winds Overpass.

Two products available:
- Research. SEE http://www.coaps.fsu.edu/scatterometry/Qscat/gridded.shtml
- Operational. SEE http://manati.wwb.noaa.gov/quikscat/

Research Quality Gridded Winds:
- Global, six-hourly, gridded winds.
- Currently 1x1 degree.

Gulf of Mexico Modeling Goals with the NCOM:
- Get a better understanding of meso-scale dynamics.
- Examine two-way ocean interaction between the continental shelf and the Gulf of Mexico basin.
- Model oceanic response to energetic episodic forcing in upper ocean wave stratification.
- Apply improved modeled physics to ocean nutrient distribution.
- Improve ocean prediction capabilities in Gulf using SeaWinds scatterometer data and TOPEX/Poseidon altimeter data.

Have a 6-min. model, currently running with a 3-min. model, eventually will have local model going down to 1 km. Eventually all of Gulf done in 1-km model.

Will deliver half by half degree, every 6 hours gridded winds for the Gulf of Mexico for this project using Seawinds satellite.

Lots of animation on web site.
Web site: http://www.coaps.fsu.edu

Goal is to have very good model runs.

Nan Walker – LSU

(Used overheads)

Main data sources of the Coastal Studies Institute:

1. Real time data.
- Earth Scan Lab satellite imagery.
- WAVCIS wave-current data.
- BAYWATCH physical measurements program.

2. Historic data archives.
- Estuarine time series.
- LATEX inner shelf.
- Physical measurement in hypoxia region.
- Satellite imagery.

Earth Scan Laboratory of Coastal Studies Institute was started in 1988.

NOAA AVHRR:
- Detects suspended sediments, temp.
  - Spatial resolution is 1 square km.

Orbview:
- Used for detecting chlorophyll-a suspended, and other suspended sediments.

Projects:
GOES-8GVAR
- Temp @ 4x4 square km. and water vapor @ 8x8 square km.
- Has visible channel @ 1km.

Slide – Composite image.

Project involvement:
EPA EMPACT project.
MODIS Terra and Aqua (will be getting X-Band soon).
RADAR- ERS-2, Radarsat (future).
IRS-P4 Ocean Color (future).

WAVCIS Project (headed by Greg Stone):
  - Focus is on LA shelf in Mississippi Sound.
- Real time, high resolution of waves and currents.
- Wave-current surge information system for coastal LA.
- Good for comparing wave data.
- No conductivity or surface temp. data.
- Using cellular/satellite communication.
- Using acoustic Doppler tech.

Benefits associated with WAVCIS program:
- Directional waves measurement.
- Current velocity.
- Water level storm surge.
- Wind speed and direction.
- Using data with other groups.

Has a website where you can pick parameters and do analyses.

Fundamental research.

BAYWATCH Program:
- Funded by US Army Corps
Measures:

- Currents.
- Water level.
- Turbidity.
- Salinity/Conductivity.
- Wind speed/direction, air pressure/temperature.

Showed a GOES-8 ocean temperature animation loop of circulation in the Gulf of Mexico.

LSU is open to possibility of serving data via DODS.

Frank Muller-Karger and Doug Myhre - University of South Florida

(Used PowerPoint file)

Remote Sensing Capabilities at USF

USF Datasets:
Satellite.
- Remote sensing lab.

Field.
- PORTS
- COMPS
- ECOHAB
- (+ numerous field programs)

Satellite Sensors:
- Current AVHRR.
- NOAA -12
- NOAA-14
- NOAA-15
- NOAA-16
- SeaWIFS
- TERRA/MODIS

Historic (since '93):
- AVHRR
- SeaWIFS
- CZCS (1978-1986)

Coverage:
- Land (southeastern US, Central America, northern South America, and Caribbean Islands).
- Ocean (Gulf of Mexico, Caribbean Sea, eastern tropical Pacific).

Primary Data streams:
- Terascan system (L-Band)
  Orbview –II/SeaWIFS
  POES/AVHRR

- Apogee Solutions (X-Band)
  Terra/MODIS

Volume of Data Collected:
- CZCS ~20 GB
- AVHRR 690MB/day
  (3 satellites, 12 passes/day)
- SeaWIFS 150MB/day
  (1 pass/day)
- MODIS
  (4 passes/day)

Current Products:
See website, http://paria.marine.usf.edu

Secondary data streams, X-Band:
- Long term
  ENVISAT (MERIS)
  ADEOS-II (GLI)
  NPOESS
- (FMK is member of ENVISAT, ADEOS-II Science teams)

Data Archived:
- AVHRR, all raw data and products
- SeaWIFS, all raw data and products
- MODIS, products

Data Archives:
- Data Stored on 12" Worm Optical Disk.
  AVHRR raw data.
- CD-ROM
  600 disk jukebox (300gb Capacity)
  SeaWIFS Raw and LO data.

Other data archives:
- DVD-R
- DLT Tape (future).
- MODIS Raw Data.

Samples shown on overheads

USF requirements:
- Coastal shelf salinity/hydrography.
- Coastal shelf winds.
- Coastal shelf currents.
- Offshore currents for shelf-break force studies.
- River discharge and nutrient concentration.
- Yucatan Strait transport.
- Florida Strait transport.

Possible Cooperative Efforts:
- Integration of FL COMPS/TEXAS and other in-situ observing systems with real-time remote sensing systems.
- Integration of above with regional modeling efforts.

USF Plans:
- NOWCAST circulation model of West Florida Shelf.
- Integrated current, wind field, and real time satellite data product (dynamic vector overlays).
- Surface flux estimates.
- Collect data from future sensors.

Worries:
- Nice to have DODS, but where does this take us in the long-term with data that each of us depend on and that are not available via centralized legacy systems?
- DODS effort should focus on a few, select datasets considered critical for long-term archival.

10: George Ioup – University of New Orleans

(Spoke from notes)

Some surveys are site-specific and not very regular. Data for some models are sparse.

1) UNO involved with Lake Pontchartrain Basin Project.

Making data public is the goal, on website at a minimum.

Some data include:
- Water turbidity.
- Conductivity.
- Temperature.
- Chlorophyll A.
- Orleans Parish rain chemistry.
- Circulation models.
- Fecal coliform bacteria.
- Sediment chemistry.
- Lake bathymetry.

Data can potentially go on DODS. Lake Pontchartrain Atlas to be published.

Contacts: Professor Alex McCorquodale, Civil and Environmental Engineering
Professors Mike Porrier and Bob Cashner, Biological Sciences
Professor Shea Penland, Geology and Geophysics

2) Barataria Basin Project

UNO, LSU, LSU-Ag, LUMCON, Tulane, Dillard

Environmental measurements in Barataria Basin related to carbon cycling in a coastal estuary.

Making data public is the goal, on website at a minimum.
Data can potentially go on DODS.

Contact: Professor Ken Holladay, Mathematics

3) Louisiana and Northern Gulf Coast Coastal Measurements

Many measurements made with USGS, Corps of Engineers, National Marine Fisheries, Louisiana Department of Natural Resources, and other sponsorships. Data already available on website. Data can potentially go on DODS.

Contacts: Professors Shea Penland and Denise Reed, Geology and Geophysics

4) Northern Gulf of Mexico Acoustics Data

USM, NRL-Stennis, UNO

Making data public is goal, on website at a minimum. Data can potentially go on DODS.

- Ambient noise measurements.
- Marine mammal acoustic measurements.

- Acoustic propagation, including propagation through fronts and eddys.

Contacts: Professors George and Juliette Ioup, Physics
Professor Grayson Rayborn, Physics and Astronomy, USM

Jim Corbin - MSU ERC/SSC/IDSL

Distributed Marine Environment Forecast System - DMEFS

The proposed DMEFS will be a research testbed for demonstrating the integration of various technologies and components prior to DoD operational use, and an "open" framework in which to operate validated climate, weather, and ocean (CWO) models The focus is:

- To create an open framework for a distributed system for describing and predicting the marine environment that will accelerate the evolution of timely and accurate forecasting.
- To adapt distributed (scalable) computational technology into oceanic and meteorological predictions, especially on the regional and tactical scales
- To shorten the model development time by expanding the collaboration among the model developers, the software engineering community and the operational end-users.
- To provide a system with the look and feel of an operational entity in terms of infrastructure but with advanced computers, software technology and none of the constraints of an operational environment. To provide unique cross-cutting capabilities (i.e., software integration technologies and support resources) to DoD and yet let DoD simultaneously leverage existing internal expertise and investments, including legacy components (e.g., ocean models, atmospheric models, tools, etc.).
- To provide a framework that is extensible and designed for rapid prototyping, validation, and deployment of new models and tools and be operational over evolving heterogeneous platforms distributed over wide areas with web-based access of forecast-derived information.
- Middle tier servers that form a distributed, shared, persistent, collaborative environment for model development, validation, coupling, deployment and operational use. Implemented as a multi-tier, object oriented system. The middle tier components act as proxies of services rendered by the back-end resources.

The Web Portal for DMEFS provides a seamless web access to remote resources through secure kerberized CORBA channels hiding complexity of the high performance, heterogeneous back-end systems:

- Primary operational user is Naval Oceanographic Office
- Primary research user is the Naval research Lab Stennis
- Develop and/or run met/ocean models
- Validate METOC models
- Create METOC support products from model runs and other data

Provides a graphical problem solving environment to do problem solving from workstation, desktop, or laptop. A core set of services will be provided by the DMEFS architecture to support the development of meta computing applications including:

- Resource Management, Discovery, and Access Control
- Security and Access Control
- Transaction Services
- Communication Services
- Event and Notification Services
- METOC Digital Library and Data Services

Web Browser based front end that can:

- Couple models.
- Develop models.
- Visualize results.
- Access external data.
- Deploy models.
- Set schedules.
- Provide operational execution and access operational data.

Worth Nowlin - Texas A&M

MMS-sponsored activities from which data are or will be available include:

- LATEX
- Northeast Gulf of Mexico Chemical and Hydrographic Study
- CHEMO I and II
- MAMES I and III
- Deep Gulf of Mexico Benthic Biology

Also available are archives of:
Ocean station, XBT, MBT, and AXBT data, current measurements (moored, drifters and shipboard ADCP)

Ancillary data archives include:
- Daily river discharge from U.S. rivers
- Surface observations via GTS
- Analyzed surface wind fields.

Additional data sets include:
- EPA EMAP data focused on contaminants
- NOAA Status and Trends data for 14 years
- National Estuarine Product data from Galveston and Corpus Christi Bays

TAMU agrees to set up a DODS server and initially serve data from LATEX A and daily river discharge files.

Norman Guinasso - representing the Texas General Land Office

Texas Automated Buoy System (TABS):
- Initiated as an Interagency Research Contract with Texas A&M University (TAMU) in 1994.
- Work is carried out at GERG and Department of Oceanography, TAMU
- The mission is prediction of oil spill movement along Texas coast.
- First buoys were installed in 1995.
- Currently operate seven buoys with single point current meters and ocean surface temperature sensors.
- Data sampled at 30 minute intervals and served in near real real-time on the Internet
- Fulfills operational need of Texas General Land office.

Operational Elements of TABS with web pages:
- Operation of buoys and data presentation at http://www.gerg.tamu.edu/tglo .
- Continuous assembly of meteorological data for modeling purposes at http://seawater.tamu.edu/tglo/
- Forecasts of ocean currents using POM and Spectral numerical models of ocean currents at http://seawater.tamu.edu/tglo/

How TABS data and predictions are used for tactical oil spill response
http://resolute.gerg.tamu.edu/~norman/TABS-DODS.htm (Slide 1)

TABS data was effectively used to reduce the cost of the response to Buffalo Barge 292 Oil Spill in 1996. Knowledge of ocean currents prevented a massive mobilization of resources along the northern Texas Coast off Sabine and allowed cleanup efforts to be directed further down the coast.
http://resolute.gerg.tamu.edu/~norman/TABS-DODS.htm (Slide 2)

Operate two kinds of buoys, anchored in place by heavy chain.
- TABS I , TABS II

http://resolute.gerg.tamu.edu/~norman/TABS-DODS.htm (Slide 6)

- TABS II with ADCP and meteorological package

http://resolute.gerg.tamu.edu/~norman/TABS-DODS.htm (Slide 7)

<u>TABS buoy data communications.</u>

TABS I or TABS II
- Motorola Integrated by cell phone. Cell phone service provided over most of central GOM shelf by Petrocom

http://resolute.gerg.tamu.edu/~norman/TABS-DODS.htm (Slide 8)

TABS II
- Westinghouse 1000 Satellite Cell Phone at 4800 baud
- Buoys make digital data calls using NorcomNetworks X.25 network connecting to computers at Texas A&M University

TABS data

Available on web page as graphics and downloadable ASCII files. Historical data available as Web CGI enquiries on TABS data base. Historical enquiries produce graphics or downloadable files.

Cost of Data Transmission using Petrocom Cell Phone Network
$1.09 per minute

	Bytes per reading	Reading Interval	Bytes per day	Bytes per month	Data cost per month
Single point current meter	149	30 minutes	7,152	214,560	$196

Cost of Data Transmission using NORCOM Satellite Network
$185 per month for first 500,000 bytes, $0.38 per 1000 additional bytes

	Bytes per reading	Reading interval	Bytes per day	Bytes per month	Data cost per month
Single point current meter	149	30 minutes	7,152	214,560	$185
ADCP	1100	Hourly	26,400	792,000	$296

TABS Future Developments

Winter, 2000-2001

Install TABS II buoy with ADCP at Flower Garden Banks National Marine Sanctuary (FGBNMS)

Install 2 TABS II buoys with ADCPs in Mississippi Sound as part of Northern Gulf Littoral Initiative (NGLI)

Install meteorological package on three TABS II buoys

Install SeaBird Micro-Seacat TS sensor on FGBNMS buoy

Spring-Summer 2001

Replace electromagnetic single point current meters with Aanderaa 2D Doppler Current meters
Install and test Falmouth Scientific NXIC conductivity sensor on TABS buoy

2001-2002

Install Bottom mounted packages, that communicate through surface buoys, to measure nutrients, dissolved oxygen, light, and other parameters in near-real-time at two to four TABS sites along Texas Coast.

Ruben Solis – Texas Water Development Board

Estuarine Hydrographic Surveys
(http://hyper20.twdb.state.tx.us/data/bays_estuaries/surveypage.html)

Synoptic measurements collected in Texas bays from 1987 to 1997
Data includes physical (water level, velocity, flow) and quality (salinity, pH, DO, temperature) measurements
Data available through clickable map, in text and graphical format
Metadata included with data files

Coastal Hydrology (http://hyper20.twdb.state.tx.us/data/bays_estuaries/hydrologypage.html):
Historical inflows (1940-1998, and being updated) for Texas bays
Monthly flows available in text format from web site
Rudimentary metadata available with data files

Sonde Data (http://hyper20.twdb.state.tx.us/data/bays_estuaries/sondpage.html):
Continuous sonde measurements of salinity, pH, DO, temperature, and at some sites turbidity, water elevation
Two sondes/estuary typically deployed
Program initiated in 1986
Text data and graphs of data available on web site

Hydrodynamic and Oil Spill Modeling
(http://hyper20.twdb.state.tx.us/data/bays_estuaries/bhydpage.html)
Hydrodynamic models for Corpus Christi and Galveston Bays conducted daily
Animated output displaying currents and water elevations available on web
Short-term (1-day) forecasts displayed

Patrick Michaud – Conrad Blucher Institute for Surveying and Science; Texas A&M University Corpus Christi

Texas Coastal Ocean Observation Network:
- Map of flags collecting data.
- Zoomed on Corpus Christi.
- Showed individual tidal stations.
- Put in for water circulation and property boundaries.
- Collect mean tidal datum.

Entirely Web based.

Web Page of Port Aransas:
- List of station info and latest observations.
- Water level.
- Air temp.
- Wind speed.
- Etc.

Historical data are available.

Quality control done everyday.
- Must have continuous data stream.

Web page of graphs explained.

Data query page, can get station they are interested in:
- Perform sophisticated data retrieval.
- Can make adjustments (feet vs. meters).
- View for mean sea level.
- Compare two stations.

Mainly developed for internal use.

Can provide in raw data format.

Metadata sent back to requestor (cited numerous examples of using metadata).

System does numerous checks and is completely automated.

Produces tidal datum.

Benchmark leveling, dates, equipment, etc.

Moving vector map demo.

Others have asked for tidal datum to be produced by their shop.

Tide gauge point source data is their forte.

Have potential to integrate into DODS.
- Need to produce capabilities to share data but would require significant investment.

Mark Luther – University of South Florida

(Used overheads)

Coastal Ocean Monitoring and Prediction System (COMPS)

Gulf of Mexico Ocean Observing Systems – website

COMPS web site http://comps.marine.usf.edu:
- Map of real time observing sites on west coast of FL.
- Owned and operated by USF or other agencies.
- Four buoys btw. 20 – 50 isobaths, several coastal stations with water level, met, temp/salinity.

Can click on station to:
- Get photos.
- Show metadata on station.
- Shows numerous parameter measurements by variable.

Have data for last 24 hrs in graphical format.
- Line of sight radio and/or GOES satellite telemetry.
- Have a GOES down-link, it's free but slow.

Developed a custom data logger for ADCP, T/S, and met data, with GOES telemetry and spread-spectrum radio.

Overheads of buoys:
- Have full suite of instruments – ADCP (downward-looking), wind speed/direction, air temp., humidity, barometic pressure, precipitation, incoming radiation (SW, LW), MicroCat T/S sensors .
- Held by heavy chain and RR wheels.

Two types:
1. Low-cost – telemeters met only via single GOES ID
2. Cadillac – telemeters ADCP and T/S data and met data on Dual GOES ID's.

Graphs from individual buoys during a storm.
- Various measurements from a meter below surface.

Began in 1997:
- Data archived in ASCII flat files.
- Developing searchable database system

Tampa Bay PORTS, a sub-system of COMPS (http://ompl.marine.usf.edu/PORTS.

Suite of Models based on Princeton model.
- Overhead showing models.

Oil spill trajectory modeling is also done.

Data is delivered from PORTS to harbor pilots via a Vessel Traffic Information System (http://www.rossdsc.com/ais.htm)

Overhead of Tropical Storm Josephine (Oct. 1996), color showing non-tidal component – simulated storm surge from numerical model of West Florida Shelf .
- Extensive flooding in Tampa Bay region from modest storm

- See http://ocg6.marine.usf.edu/WeisbergSite/StormSurgePlot.ppt for detailed storm surge study

Have some COMP sites in Cuban waters.
Developing coastal ARGO drifters/profilers

Text from flyer:

Coastal Ocean Monitoring and Prediction System

Florida is the United States' fourth most populous state, with 80% of the population living in a coastal county. Several recent storms have brought large, unpredicted flooding to Florida's west coast. The coastal sea level response to tropical and extra-tropical storms results from wind forcing over the entire continental shelf. Much of the local response may be due to storm winds quite distant from the local area of concern, a case in point being tropical storm Josephine, a modest storm that nevertheless caused extensive flooding in the Tampa Bay area.

The University of South Florida has implemented a real-time Coastal Ocean Monitoring and Prediction System (COMPS) for West Florida. COMPS provides additional data needed for a variety of management issues, including more accurate predictions of coastal flooding by storm surge, safety and efficiency of marine navigation, search and rescue efforts, and fisheries management, as well as supporting basic research programs. COMPS consists of an array of instrumentation both along the coast and offshore, combined with numerical circulation models, and builds upon existing in-situ measurements and modeling programs funded by various state and federal agencies. In addition, COMPS links to the USF Remote Sensing Laboratory, which collects real-time satellite imagery via its HRPT and X-Band receivers. This observing system fulfills all of the requirements of the Coastal Module of the Global Ocean Observing System (CGOOS). Data and model products are disseminated in real-time to federal, state, and local management officials, as well as the general public, via the internet (URL http://comps.marine.usf.edu). COMPS is designed to support a variety of operational and research efforts, including storm surge prediction, environmental protection, coastal erosion and sediment transport, red tide research (ECOHAB - Ecology of Harmful Algal Blooms), and hyperspectral satellite remote sensing of coastal ocean dynamics (HYCODE). A precedent for this system already exists in the form of the Tampa Bay PORTS (Physical Oceanographic Real-Time System) - itself a first for monitoring estuaries.

The majority of COMPS stations are fully operational, with additional stations planned for the near future. An array of offshore buoys measure current, temperature, salinity, and meteorological parameters, with satellite telemetry of the data to shore. Additional buoys have been deployed off Sarasota as part of the ECOHAB and HYCODE efforts. Buoy observations are augmented by a network of coastal towers that are instrumented with water level, temperature, salinity, meteorological, and bio-optical sensors. Many of these sites are operated in collaboration with the United States Coast Guard, the Citrus County Office of Emergency Management, and the Pasco County Office of Disaster Preparedness. Additional instrumentation will be installed at Boca Grande, Cedar Key, Keaton Beach, and near the mouth of the St. Marks River, enhancing existing stations operated by partner agencies.

A numerical circulation model, based on the Princeton Ocean Model, has been developed for the entire West Florida Shelf, with an offshore boundary stretching from the Mississippi Delta to the Florida Keys. This model has been successful in simulating past storm surge events and will be coupled to the COMPS real-time data stream to be run in a nowcast/forecast mode. Sea surface temperature and ocean color data from the West Florida shelf routinely collected by our Remote Sensing Laboratory can be combined with in situ data and model output to provide a comprehensive analysis of oceanic conditions.

The COMPS data archival and distribution system will collate data streams from the USF-operated sites with those from sites operated by other agencies into a seamless web-based interface. We have multiple satellite downlinks (both DRGS and DOMSAT) for receiving GOES data telemetry from remote sites. We are collaborating with the NOAA National Ocean Data Center, the NOAA Coastal Services Center, and the National Ocean Service to develop a comprehensive data base management system for the acquisition, archival, quality assurance, and distribution of these data.

Collaborating Agencies: Florida Dept. of Environmental Protection, Florida Marine Research Institute, Florida Institute of Oceanography, Citrus County, Pasco County, United States Geological Survey, National Oceanic and Atmospheric Administration, United States Coast Guard, Office of Naval Research, Minerals Management Service, U.S. Environmental Protection Agency.

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Bob Molinari - NOAA/AOML

Global Ocean Observing System

NCEP
- Both real time and delayed mode data.

Whats available:
Drifter Data:
- Lots available in Gulf of Mexico.
- Recent in nature.
- 1996, '97
- 1998 had a large deployment.
- 1999 had good coverage in Caribbean.
- Jan to May 2000.

Overhead of 1968 data.
Overhead of 1970 data.

How do they get data out?
- Takes a month for delayed drifter data.
- Can also get raw data.
- Both historical and real-time.

Would like to put other data on-line:
- Some data in Yucatan.
- Has hurricane slice data.
- Florida Bay data.

Data available from other sources as well.

Question as to whether AOML should be a DODS site.

The data to be served by AOML comes under the purview of the NOAA Global Ocean Observing System Center established at the laboratory. The objectives of the Center are to provide to NOAA and to other users the data needed to initialize weather and climate forecast models (in real-time) and to increase our understanding of the coupled climate system (in delayed-mode). The GOOS Center manages:

- The Global Drifter Center which provides surface current, SST and some meteorological data. These data are presently available at the AOML web page and we would be willing to serve these data as part of DODS.

° The US VOS XBT network which provides temperature profiles. Both historical and recent data are available at the AOML web page and we would be willing to serve these data as part of DODS.

We can also provide histroical CTD data collected in the Gulf of Mexico by AOML. These data are presently not available on the Web. Finally we can serve the data resulting from NOAA's Florida Bay project. Both real- and delayed mode-data can be provided to DODS.

Tony Amos - University of Texas – Marine Science Institute (UTMSI)

Using slides, Amos showed the setting of the UTMSI and some of the projects that might provide data for a DODS site.

- UTMSI is located on the north end of Mustang Island, Texas, one of a series of barrier islands bordering the Gulf of Mexico on the ocean side and Corpus Christi Bay on the landward side. UTMSI is a graduate research unit of the University of Texas' College of Natural Sciences with a faculty of 13 and 25 graduate students. In addition, two six-week upper level summer courses are given each year. The research interest is primarily in bays and estuaries, and mostly biological, with research projects in mariculture, harmful algal blooms, macro-algae and phytoplankton, fish endrochronology, early life history of fish, predator/prey relationships, benthic ecology, and physical oceanography. The physical setting is ideal with the large range of marine environments nearby, ranging from the Gulf to the hyper-saline Laguna Madre. There are several data sets that could be posted on a DODS server.
- The R/V Longhorn is UTMSI's main research vessel. This 105-ft R/V has made several hundred short cruises into the Gulf since 1972. From the late 1970's onward, CTD stations have been made on most of these multi-purpose cruises. The data would need standardizing as they have been made with evolving STD/CTD instruments. For the past decade, Sea-Bird 911/Plus CTDs have been used. Also, meteorological and surface oceanographic data are routinely measured throughout every Longhorn cruise.
- Current meter data from the continental shelf area in the Gulf, and from passes and bays are available
- Continuous meteorological, tide and current data have been collected at the Pier Laboratory in the Aransas Pass Ship Channel (main entrance to Corpus Christi Bay from the Gulf)
- Amos would make a twenty-two-year time series of surf zone sea temperature and salinity available.
- Real time data is available on the UTMSI webs site (http://www.utmsi.utexas.edu). Click on Weather and Tides (demonstrated) to get current and previous day's sea, tides and weather data in graphic or spreadsheet form.
- Overheads showing important recent storms: Hurricanes Allen, Gilbert and last year's Brett, Tropical Storm Josephine and Francis. Data depicting real and predicted tides. Could make tidal predictions for different Texas locations available for DODS.
- Other data sets at UTMSI may be available. These include time-series of dissolved oxygen in the Laguna, benthic data, and beach erosion information.

Amos also posed the question; would it be feasible to post Gulf of Mexico bathymetric and shoreline data on a DODS site.

Susan Starke – NOAA/National Coastal Data Development Center

(PowerPoint Demo)

NCDDC Phase 0 Goals:
- Develop mission statement staffing plan.
- Initiate Phase I planning process.
- Implement initial proof-of -concept.
- Establish facility at Stennis Space Center & hold NCDDC dedication.

Mission Function:
- Provide archive and access for the long-term coastal data record.
- Includes data cataloging/data mining, data access, data QC/Integration, archiving, and new product development.

Phase I Planning:
- Concept of operations (CON-OPS) by 10/00.
  documents "nuts and bolts" of phase 0 operations.
- Phase 0 to Phase 1 Transition Plan by 10/00.
- Phase I requirements documentation by 12/00.
  - Includes feedback from phase 0 operations.
- How to validate requirements.

Richard Campanella - Tulane–Xavier Center for Bioenvironmental Research - Long-term Ecosystem Assessment Group (LEAG)

The Long-term Ecosystem Assessment Group (LEAG) was organized in 1999 by a consortium of academic/research institutions and NAVOCEANO. The goals of LEAG include:

- Establish a cooperative effort between the government (Naval Oceanographic Office), academia (CBR), and private industry (COTS Technology)
- Use the Mississippi River and areas of the Gulf of Mexico as a natural laboratory to conduct research to evaluate the extent of ecological and economic impacts of nutrient over-enrichment in this region
- Create a biotechnology corridor between Louisiana and Mississippi for codevelopment of biosensors, Autonomous Underwater Vehicles (AUV's), models for major river and gulf systems, and deep sea monitoring and communication technologies

The Center for Bioenvironmental Research constitutes the lead academic entity of the Long Term Estuary Assessment Group (LEAG), a collaboration of government, academic and private organizations that is conducting research on river-ocean interactions and coastal oceanographic processes. LEAG's goal is to develop effective management strategies to deal with environmental issues related to rivers and their interactions with coastal margin and ocean ecosystems. One issue of interest is the coastal eutrophication caused by excessive introduction of nutrients into an aquatic ecosystem, leading to increased algal production and increased availability of particulate organic carbon. The effects of eutrophication, hypoxic dead zones, harmful algal blooms, ad changing fisheries populations can have global economic and biological implications.

The partnership established with LEAG will utilize some of the best minds in the fields of biology, geology, engineering, chemistry and oceanography. It will enable research discoveries and new technological developments that would not be possible if the participating organizations were not working in unison. Through its Mississippi River Interdisciplinary Research (MiRIR) Program, the CBR is conducting scientific and cultural research and education programs on the river. The Naval Oceanographic Office is an accomplished oceanographic operations facility that is uniquely qualified to support data management, modeling and AUV development activities. COTS Technology specializes in the acoustics, robotics and optics of marine research, and will provide technical, financial and operational background for the development of AUV's for data collection. Through the Office of Naval Research (ONR), LEAG is fostering what is anticipated to be the first living biosensor that will be deployed on a autonomous underwater vehicle.

Additional partners that have joined LEAG include the Louisiana Universities Marine Consortium (LUMCON); the University of Southern Mississippi; Woods Hole Oceanographic Institute (WHOI) in Massachusetts; and the U.S. Army Corps of Engineers' Waterways Experimentation Station (WES), Vicksburg, MS.

By utilizing the Mississippi River and the Gulf of Mexico as a natural laboratory, the LEAG program will improve the capacity of the United States to monitor the risk of exposure to defense related toxicants in other systems throughout the world.

LEAG is interested in seeing what it can offer to the DODS, and what it can utilize from the DODS.