Developing Custom Maritime Products and Tools

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22 June 2010   Modern Navigation Session   1

Overview

- Who is the Coast Survey Development Laboratory
- Highlight Key GIS Products
  - ENC® Direct to GIS
  - Historical Nautical Charts
  - Pocket & Booklet Charts
  - NowCOAST
  - Ocean Modeling
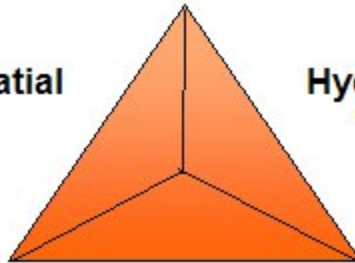- Links to other GIS Products & Future R&D activities
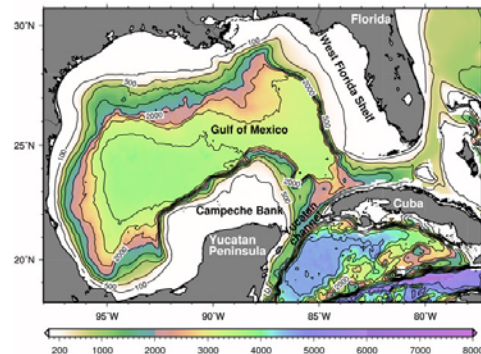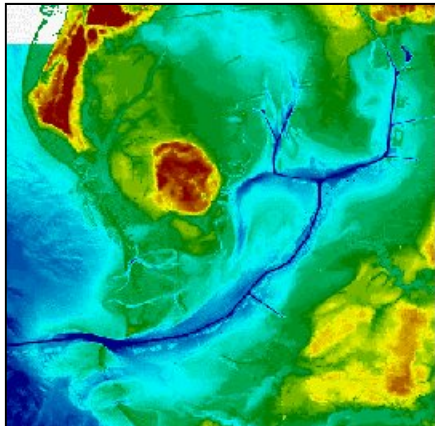- Q&A Period

Cartographic & Geospatial Technology Programs

Hydrographic Systems & Technology Programs

Marine Modeling & Analysis Programs

ENC® Direct to GIS Application

http://ocs-spatial.ncd.noaa.gov/encdirect/viewer.htm

- Provides NOAA ENC data as online GIS
- Uses ESRI ArcIMS internet mapping service
- Data is available for download in GIS multiple formats through Spatial Direct online data transformation
- Download can be customized to fit user requirements
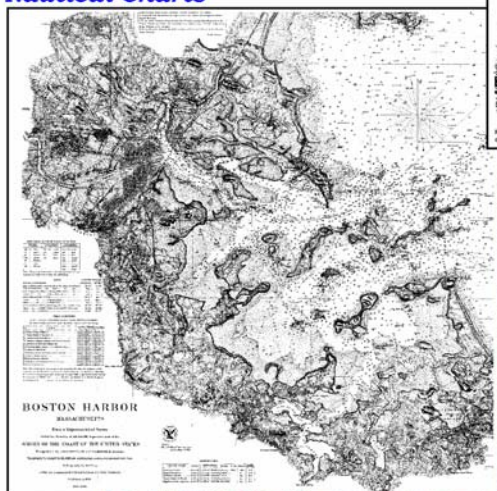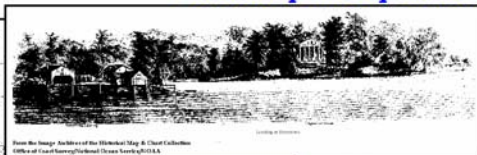- Updated daily to include new coverage and ENC updates
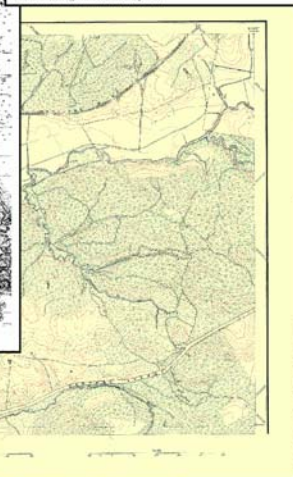
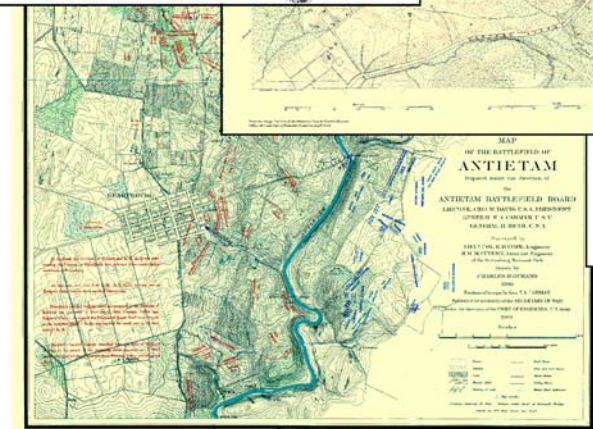# Historical Map & Chart Collection

Nautical Charts

Landscape Perspectives

Topographic Maps

City Plans

Civil War Maps

• 35,000 + Historical Maps and Charts
• Free and easily accessible
• Lessons learned from digitally archiving

Focus on scanning (1995-2004)

- Rescue from dark storage, various scanning contracts
- Migration of metadata into Excel and Access
- First Internet posting

## Focus on additions and improved metadata (2004-present)

- Continue scanning contracts
- Additional partnerships
- Additional metadata collection for geographic bounding boxes
- Obtain master inventory

Focus on data integrity and sustainability (Future)

- Maintain and archiving the collection
- Fill holes and incorporating future editions
- Expanded Internet posting and search capability

Goals for 2010

- Redesign the website interface
- Reduce duplication
- Additional ways to explore the data
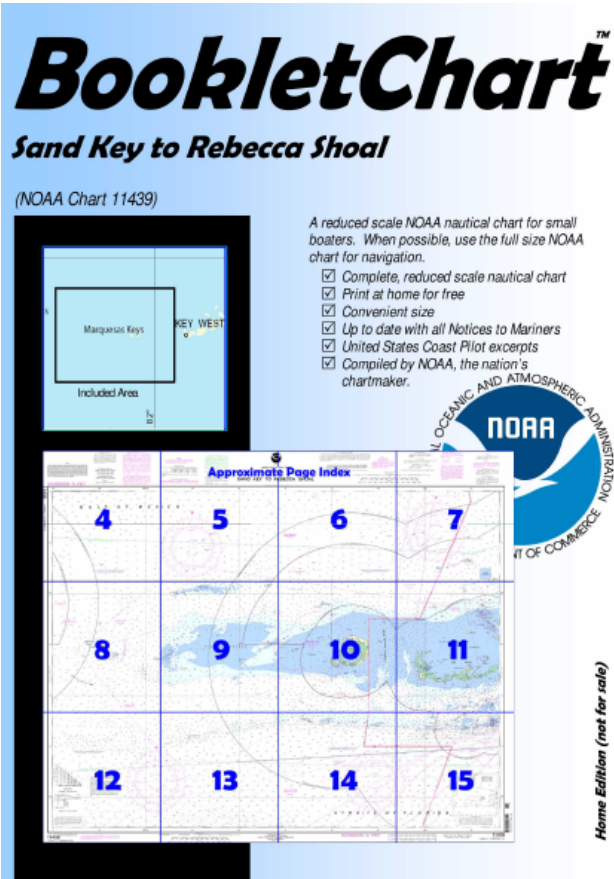- Integrate customer feedback
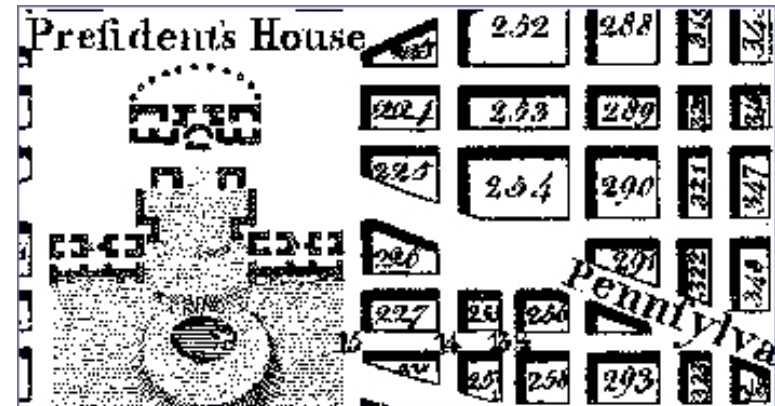
NOAA's Pocket Charts

Answers the Question?
- "Where am I"
- "How do I get to ….."

NOAA's BookletCharts

A BookletChart is available to recreational boaters in most regions of the country. The charts are provided as downloadable Adobe Acrobat files that can be printed at home.

http://www.nauticalcharts.noaa.gov/staff/BookletChart.html

NowCOAST
Overview

- **Purpose:**

- Provide users with situational awareness of recent past, present, and future (-24 hrs to +7 days) environmental conditions for coastal areas in the U.S.

- **Goals:**

- Integrate near-real-time ocean, weather, river, water & air quality data and forecasts from across NOAA, federal & state agencies, and regional ocean observing associations

- Provide the information via

  - interactive map viewer utilizing geo-referenced hyperlinks & on-map products

  - web mapping services (WMS, WFS, ArcIMS Image Service)

http://nowcoast.noaa.gov
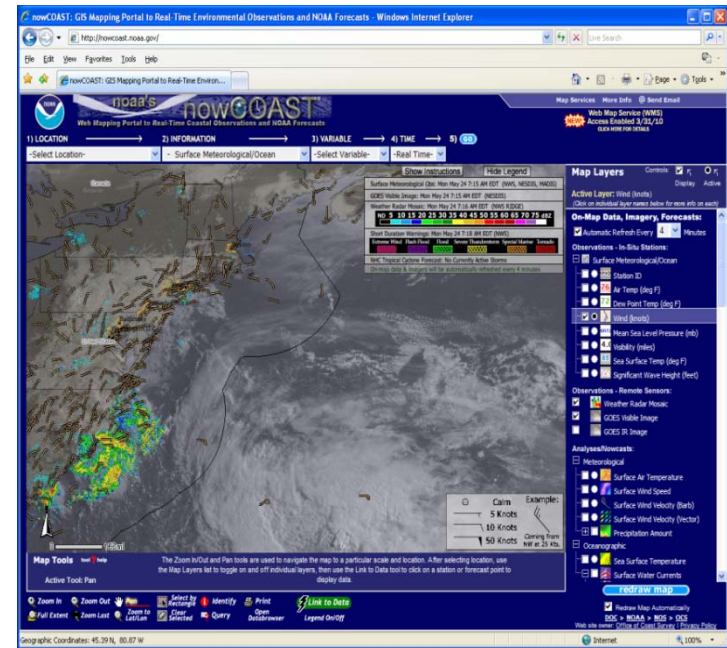
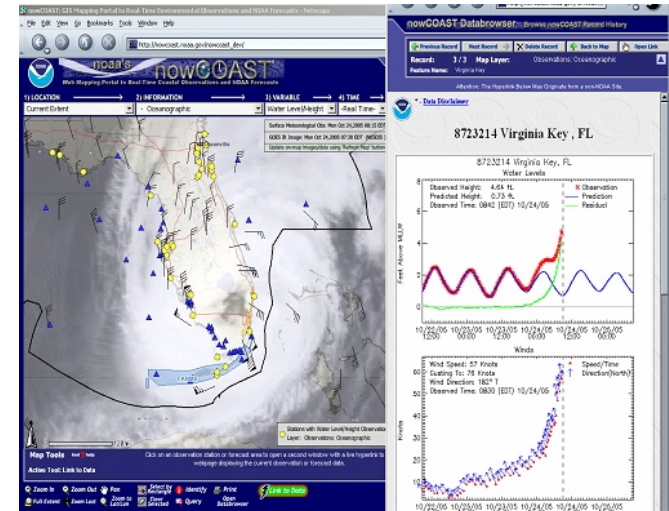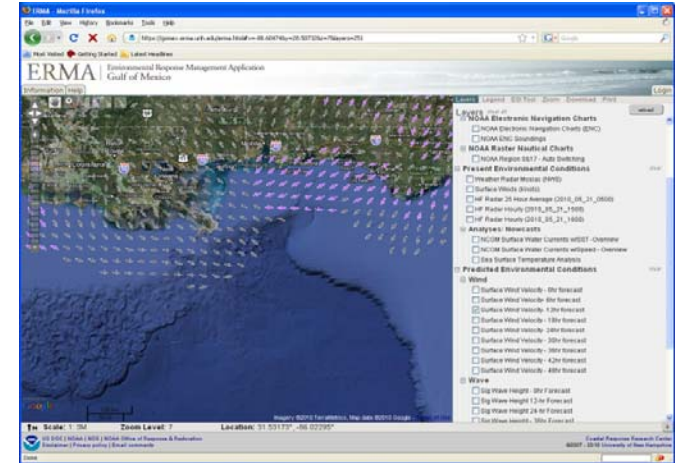Geospatial:

    WMS

    WFS

Others:

    XML for providing layer information

    FGDC Metadata
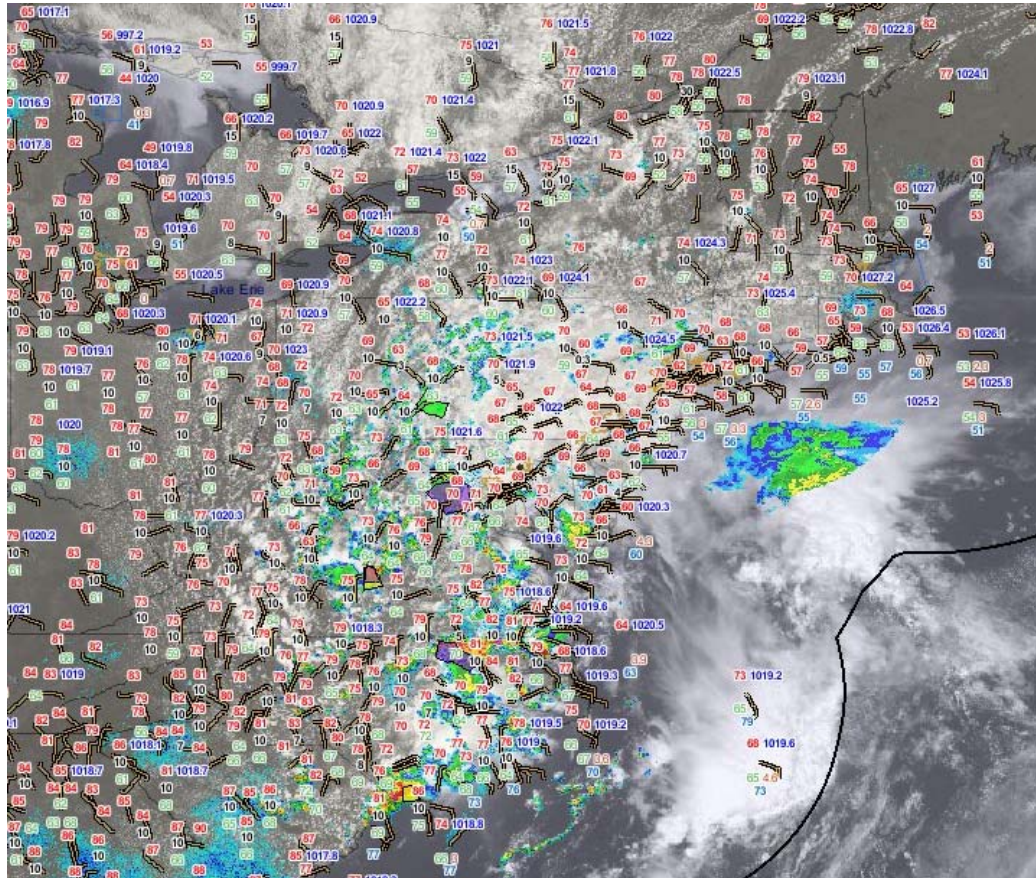
    WMO Meteorological Station Model for obs display

NowCOAST

Can be used to introduce students to Geographic Information Systems by outlining the web portal's real-life application in marine navigation

Hydrodynamic Modeling

- Providing forecasts of 3-D water levels, salinity, currents, trajectories, inundation (2-D and 3-D)

- **Community Approach**: Working with partners in academia and federal agencies to provide a national backbone of coastal ocean modeling services

- **Newest Model Areas**: Delaware Bay, Chesapeake Bay, Tampa Bay

- **Community Models in Use:** FVCOM, ROMS, ADCIRC

- **Applications:** Marine navigation, ecological forecasting, storm surge
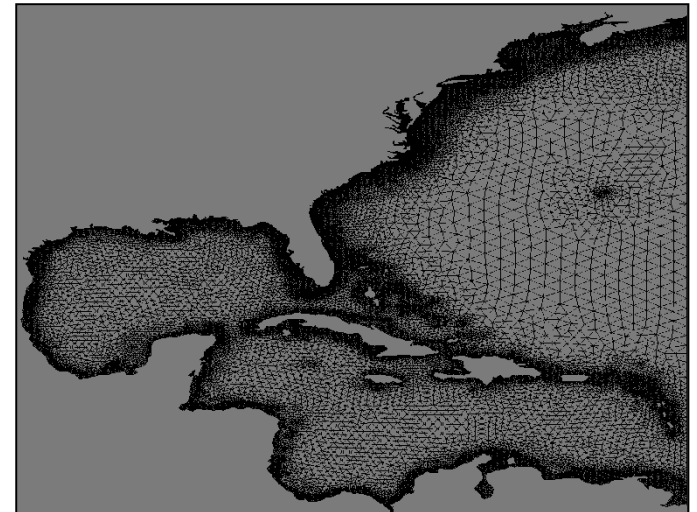
Other Services provided on the OCS website

www.nauticalcharts.noaa.gov

GIS & Other Products

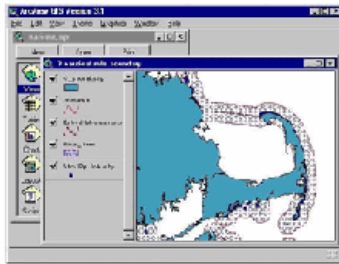By using technological advances that have occurred during the last decade, marine data, products, and tools can now be offered to a multitude of customers to assist them in decision making on a local, regional, and global basis. NOAA has expanded its suite of products derived from chart data to include those that are geographic information system (GIS) user-friendly for the non-navigational user group. These data are important for many applications besides charting. For example, coastal zone managers are requesting these data to evaluate the impacts of growing coastal communities, determine the influence of pollutants, and appraise beach replenishment. The data are also used by government agencies and the academic community in the modeling of tides and currents, predicting hazardous algal blooms, responding to disasters, and assisting in fisheries research and monitoring.

Products for GIS

- NOAA ENC®Direct to GIS
- Digital Hydrographic Survey Data
- Raster Navigational Charts: NOAA RNCs
- Vector Shoreline
- U.S. Coastal Maps
- U.S. Maritime Zones/Boundaries
- nowCOAST

Historical Products

- Historical Maps and Charts

GIS Services and Tools

- VDatum Transformation Tool
- Web Mapping and Feature Services
- ENC Handler for Arc /View
- RNC Handler for Arc /View
- North Amer. Horiz. Datum Conversion Utility

Learn About

- Law of the Sea
- Differences Between ENC and ENC®Direct to GIS
- Maritime Limits White Paper
- Datums and Transformations
- Geospatial Applications of Hydrodynamic Models
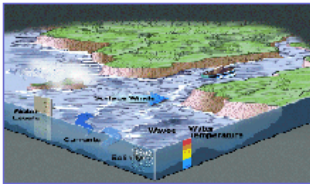
Data Portals

- nowCOAST: Real-Time Coastal Data Map Portal
- NOS Data Explorer
- NOAA's National Geophysical Data Center
- NOAA's Coastal Service Center

Resources

- Technical Reports & Publications
- Coast Survey Partners

16

Future Initiatives

Research & Development

NOAA's Coast Survey Development Laboratory explores, develops, and transitions emerging technologies and techniques of charting, hydrographic, and oceanographic systems used by the Coast Survey and NOAA to support safe and efficient marine navigation and a healthy and sustainable coastal environment. From looking at new methods of obtaining accurate depth data using autonomous underwater vehicles and interferometric side scan sonars to the development of models that provide forecast guidance to the Nation's shipping community and others, a variety of interesting projects and experimental products are available here for review.

Experimental Products / Prototypes

- BookletChart™ (Experimental)
- Water Level and Current Forecast Guidance

Hydrographic Support

- Autonomous Underwater Vehicles (AUV)
- Remotely Operated Vehicles (ROV)
- Phase Differencing Bathymetric Sonar (PDBS)
- Sound Velocity Profiler
- Tidal Corrector Application (TCARI)

Products and Database Development

- Bathymetric Warehouse
- Coast Pilot Relational Database
- VDatum Enhancements
- Coastal Digital Elevation Models
- Operational Data Acquisition & Archiving System
- Live Access Server for Hydrodynamic Model Output
- nowCOAST

Coastal & Estuarine Ocean Modeling

- Forecast System Modeling
- Inundation Modeling
- Ecological Modeling Applications
- Community Modeling & Standards
- Model Evaluation Environment

Learn About

- Coast Survey Development Laboratory
- Hydrographic Survey Equipment
- Datums and Transformations
- How Hydrodynamic Models Are Used

Resources

- Technical Reports & Publications
- Coast Survey Partners
- Standards and Requirements

Data Portals

- nowCOAST: Real-Time Coastal Data Map Portal
- Tides and Currents (General)
- Physical Oceanographic Real-Time System (PORTS)
- Operational Forecast Systems
- Sea Nettle Forecast Guidance
- North Amer. Horiz. Datum Conversion Utility
- Univ. of New Hampshire Joint Hydrographic Center

Question?

NOAA Ship Mount Fairweather