

Where Is the Shoreline?

Considerations Involved in Defining the Shoreline

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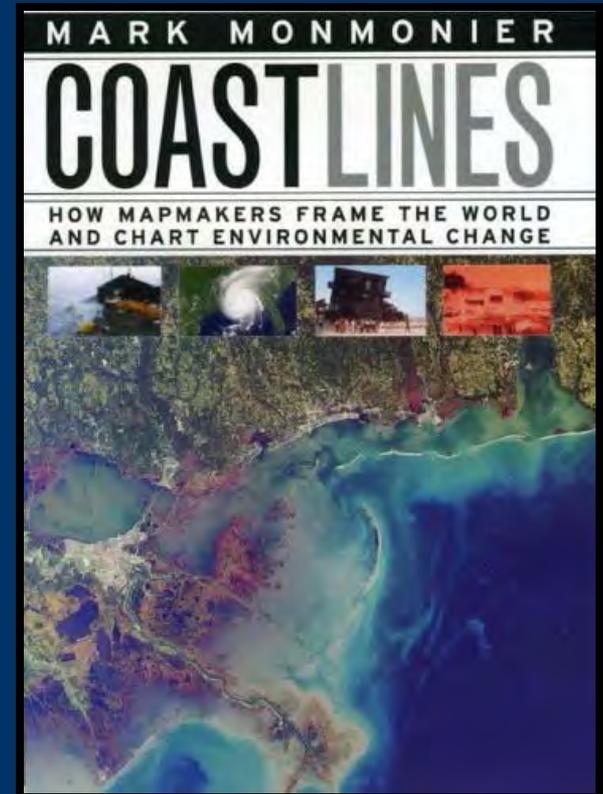
Coastal GeoTools
March 5, 2009



NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

“Different kinds of cartographers map the coastline for different reasons, and each community of mapmakers has developed its own standards to ensure a consistent, reliable product.”

**Mark Monmonier, author of
*How to Lie with Maps and Coastlines***



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Definitions

Coast line

The term used in the Submerged Lands Act to describe the low water line and closing lines across the mouths of inland water bodies. The same as “baseline” in the convention. (Reed, M.W. *Shore and Sea Boundaries, Volume 3*. Washington, D.C.: U.S. Government Printing Office, 2000.)

Coastline

The interface between water and land. The shoreline. A more general term than “coast line.” (Reed 2000)

Shoreline

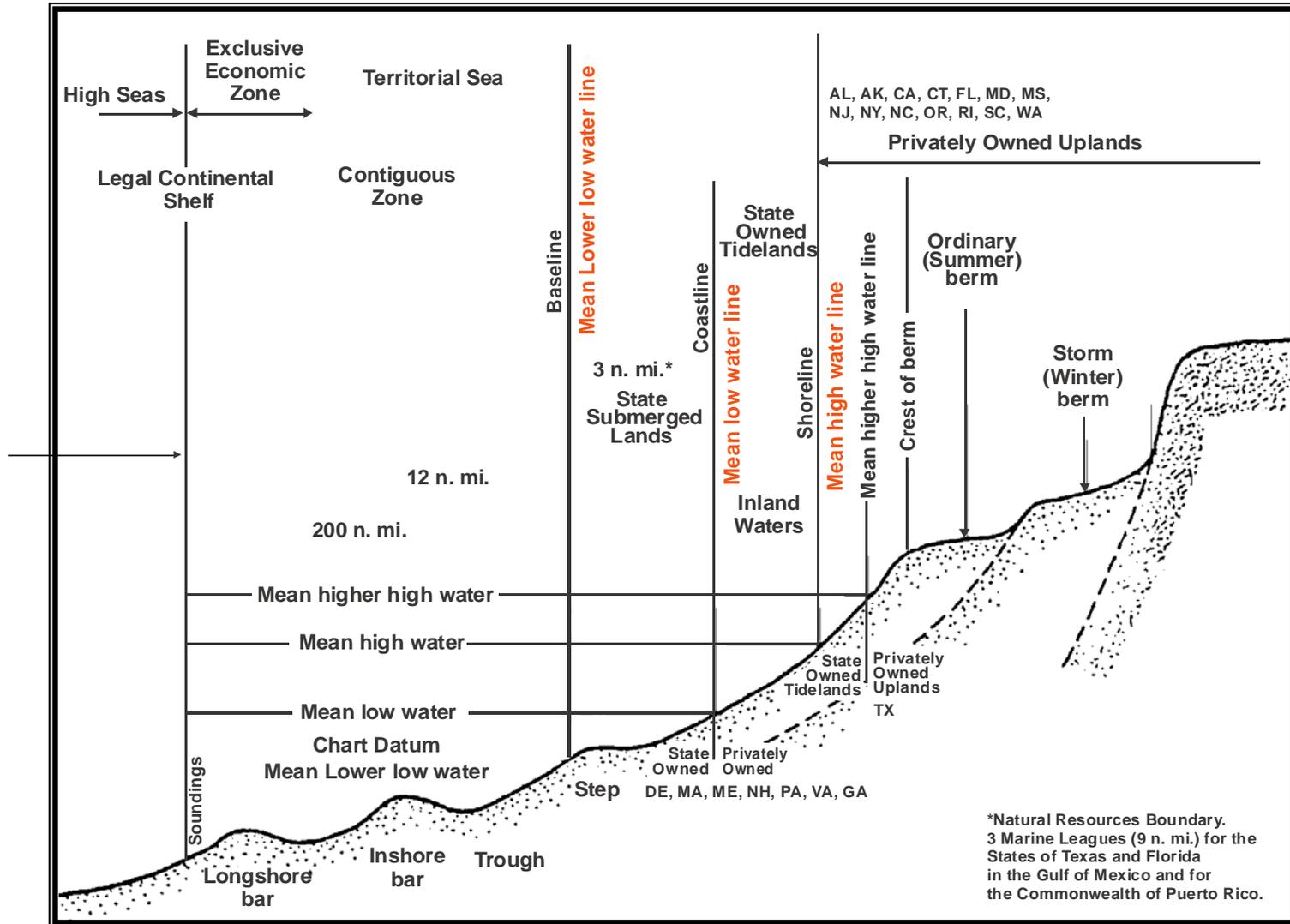
The line of demarcation between the water and the exposed beach. The water’s edge. (Komar, Paul D. *Beach Processes and Sedimentation*. Inglewood Cliffs : Prentice Hall, 1998.)

Shoreline (Coastline)

The intersection of the land with the water surface. The shoreline shown on charts represents the line of contact between the land and a selected water elevation. In areas affected by tidal fluctuations, this line of contact is the mean high water line (MHW). In confined coastal waters of diminished tidal influence, the mean water level line may be used. The shoreline is defined as MHW. (*Tidal Datums and Their Applications*. Silver Spring: NOAA Special Publication, 2000.)



DATUMS



Frequently Asked Questions

Is there a “national shoreline?”

Shoreline data that is generated by the NOAA National Geodetic Survey (NGS) for the purpose of nautical charting is what constitutes the national shoreline. This data set includes both mean high water (MHW) and mean low low water (MLLW). Since it is regularly updated, the national shoreline cannot be accessed as a single discrete data set, but the individual vectors are available.

What is the legal U.S. shoreline?

There is no legal reference that designates one specific shoreline as the legal shoreline. Furthermore, there is no simple answer to this question, as there are many legal, technical, and general uses of the terms related to shoreline (shoreline, coastline, baseline, mean high water line, mean low water line, and others).

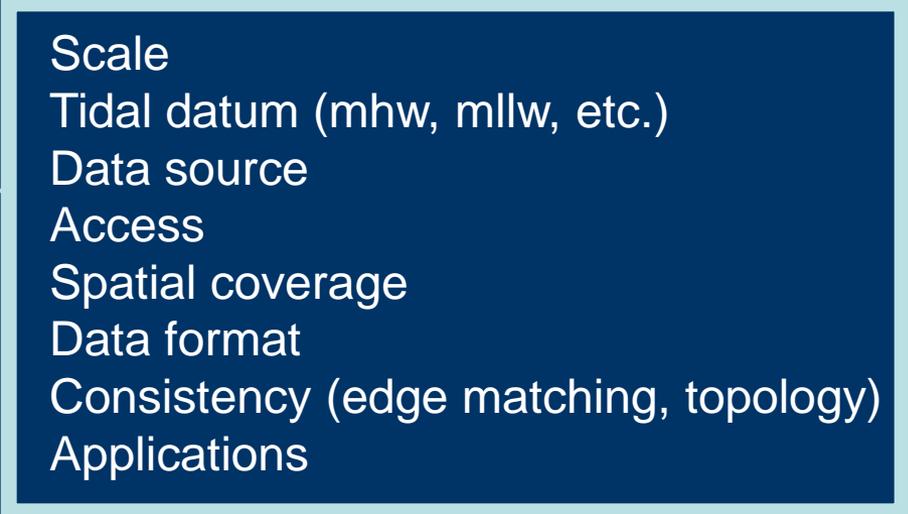


Which Shoreline ??

NOAA Shorelines

- Individual T-sheets
- Center composite
- NGS projects
- Office of Coast Survey extracted vector
- Electronic Navigational Charts
- Hazmat ESI
- NOAA medium resolution
- National Geographic Data Committee

Defining Characteristics



Scale
Tidal datum (mhw, mllw, etc.)
Data source
Access
Spatial coverage
Data format
Consistency (edge matching, topology)
Applications



Data Explorer
(vector, raster,
metadata,
descriptive reports)



Supporting context
(outreach, website,
white paper)

The NOAA Shoreline Website: A Guide to National Shoreline Data and Terms

<http://shoreline.noaa.gov>

- **NOAA partnership**
- **Allows users to compare and access seven federal vector data sets**
- **Provides supporting context**
 - NOAA legacy
 - Applications
 - Reference information



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Policy and Management

Frequently Asked Questions

Glossary and References

Access Data

Data Applications

NOAA Mapping History

NOAA Shoreline Website - Mozilla Firefox

http://www.shoreline.noaa.gov/index.html

NOAA Shoreline Website
A Guide to National Shoreline Data and Terms

Home About FAQs Glossary References

Mapping History Applications Data Access Policy and Management

DOWNLOAD SHORELINE DATA

By Name By Application By Scale

- NOAA National Shoreline
- NOAA Medium Resolution Shoreline
- NOAA OCS Shorelines
- NOAA Composite Shoreline
- USGS Vector Shorelines
- NGA World Vector Shoreline
- NGA Prototype Global Shoreline

SHORELINE APPLICATIONS

- Shoreline Change Analysis
- Cartographic Representation
- Boundary Determination
- Nautical Chart Production

SHORELINE MAPPING HISTORY

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000

Explore the history of shoreline mapping

Frequently Asked Questions

- Is there a "national shoreline?"
- What is the legal U.S. shoreline?
- What is the total length of U.S. shoreline?

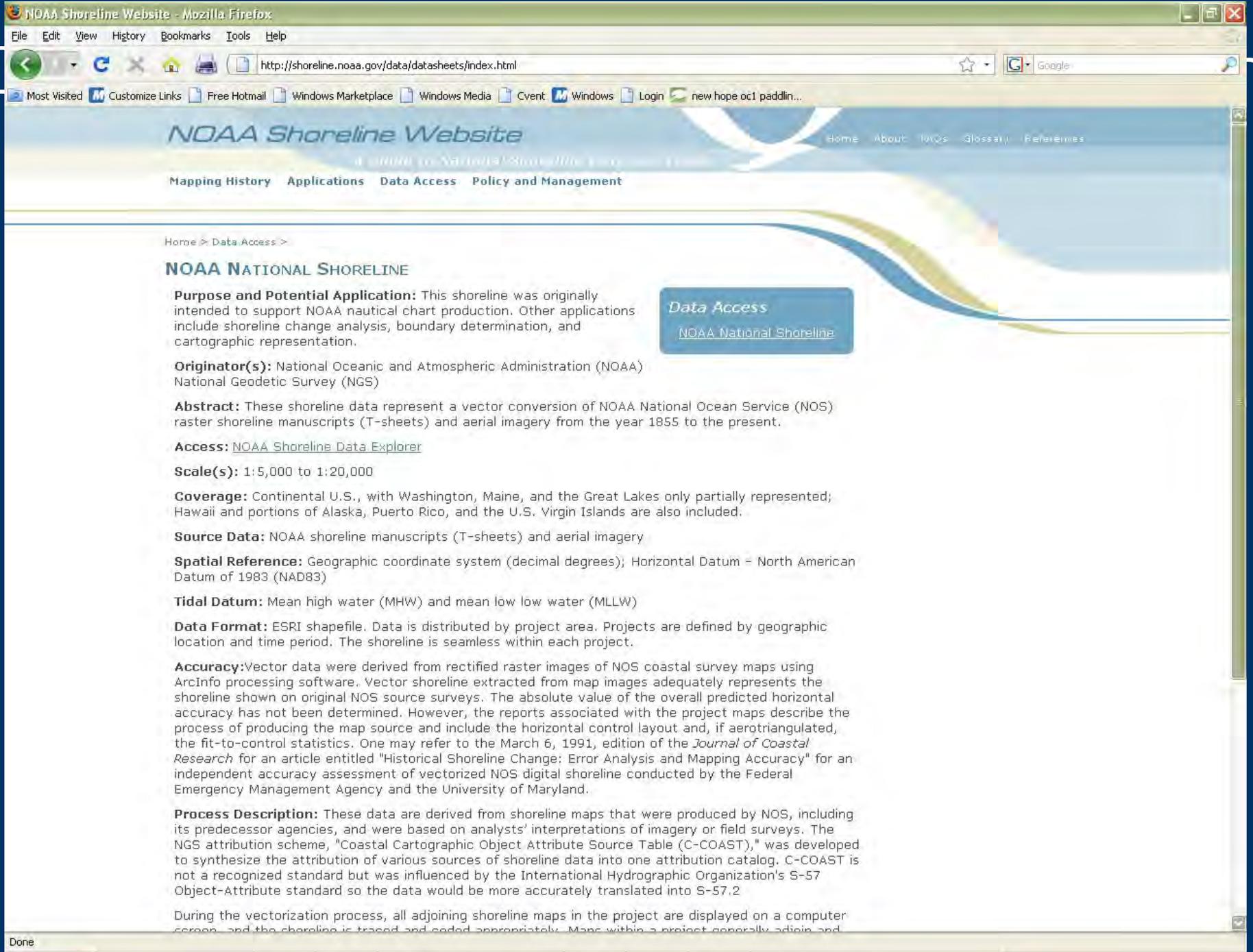
[Read more Frequently Asked Questions](#)

ABOUT NOAA SHORELINE

The purpose of this website is to eliminate confusion about vector shoreline data by providing information about and access to shorelines that are generated by federal agencies. The site was developed and designed by the [NOAA Coastal Services Center](#).

[Read more about this site...](#)

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NOAA Shoreline Website

Home > Data Access >

NOAA NATIONAL SHORELINE

Data Access
NOAA National Shoreline

Purpose and Potential Application: This shoreline was originally intended to support NOAA nautical chart production. Other applications include shoreline change analysis, boundary determination, and cartographic representation.

Originator(s): National Oceanic and Atmospheric Administration (NOAA) National Geodetic Survey (NGS)

Abstract: These shoreline data represent a vector conversion of NOAA National Ocean Service (NOS) raster shoreline manuscripts (T-sheets) and aerial imagery from the year 1855 to the present.

Access: [NOAA Shoreline Data Explorer](#)

Scale(s): 1:5,000 to 1:20,000

Coverage: Continental U.S., with Washington, Maine, and the Great Lakes only partially represented; Hawaii and portions of Alaska, Puerto Rico, and the U.S. Virgin Islands are also included.

Source Data: NOAA shoreline manuscripts (T-sheets) and aerial imagery

Spatial Reference: Geographic coordinate system (decimal degrees); Horizontal Datum = North American Datum of 1983 (NAD83)

Tidal Datum: Mean high water (MHW) and mean low low water (MLLW)

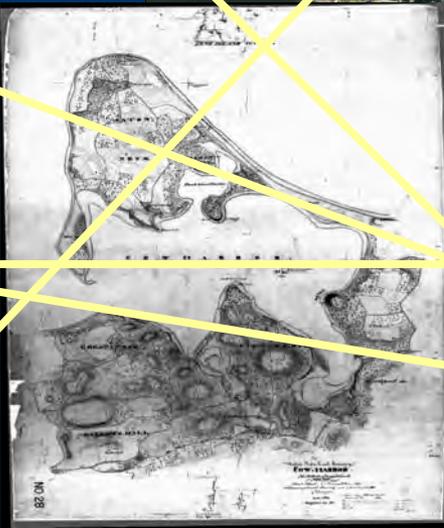
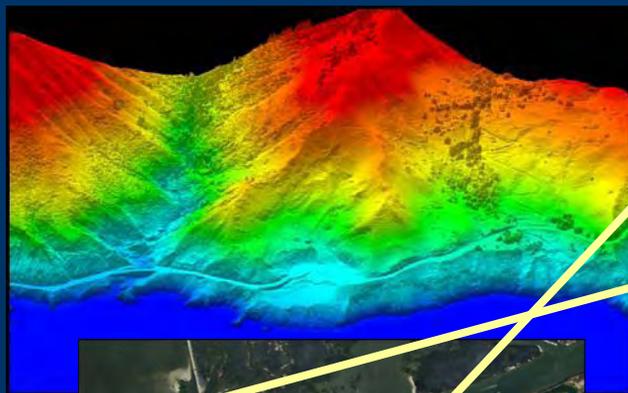
Data Format: ESRI shapefile. Data is distributed by project area. Projects are defined by geographic location and time period. The shoreline is seamless within each project.

Accuracy: Vector data were derived from rectified raster images of NOS coastal survey maps using ArcInfo processing software. Vector shoreline extracted from map images adequately represents the shoreline shown on original NOS source surveys. The absolute value of the overall predicted horizontal accuracy has not been determined. However, the reports associated with the project maps describe the process of producing the map source and include the horizontal control layout and, if aerotriangulated, the fit-to-control statistics. One may refer to the March 6, 1991, edition of the *Journal of Coastal Research* for an article entitled "Historical Shoreline Change: Error Analysis and Mapping Accuracy" for an independent accuracy assessment of vectorized NOS digital shoreline conducted by the Federal Emergency Management Agency and the University of Maryland.

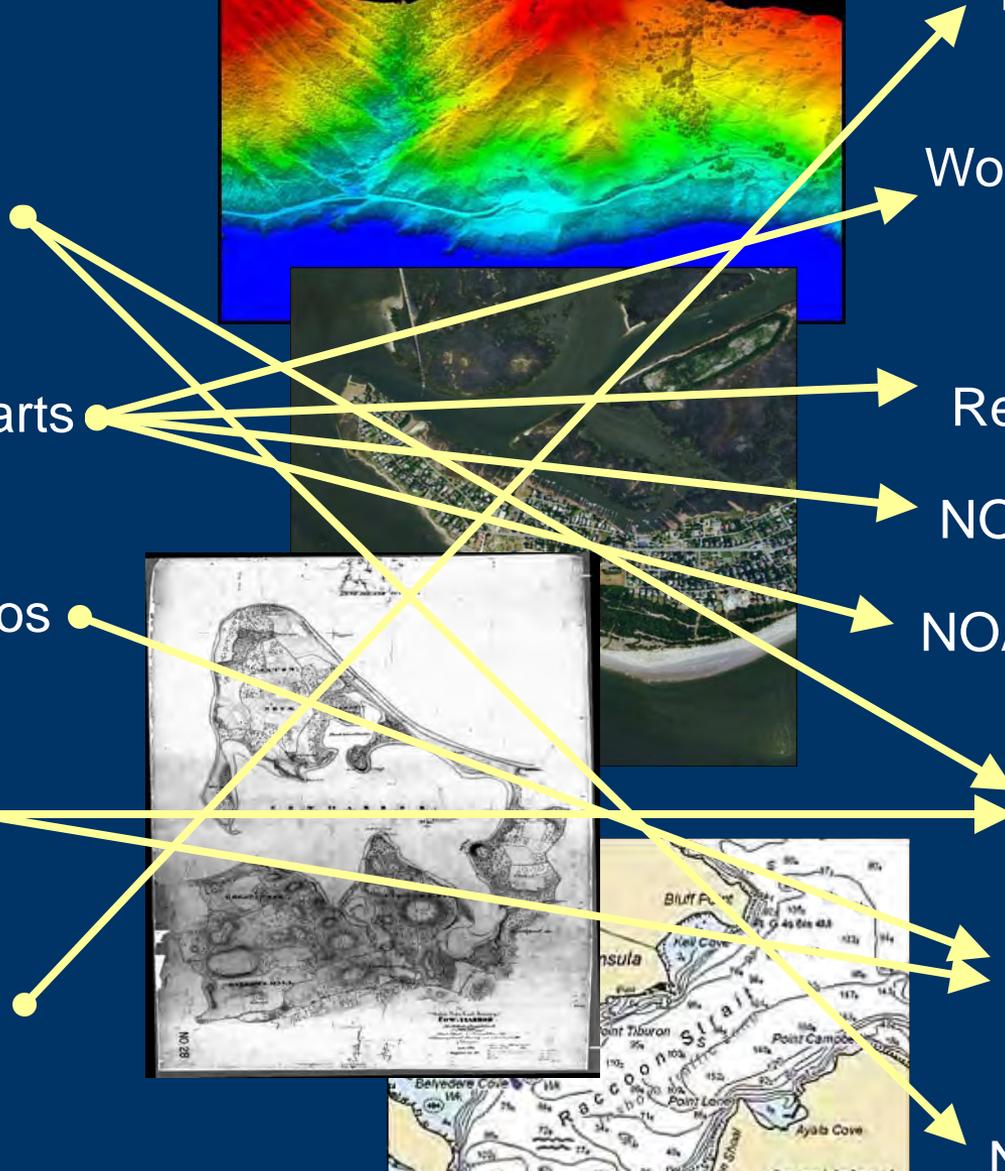
Process Description: These data are derived from shoreline maps that were produced by NOS, including its predecessor agencies, and were based on analysts' interpretations of imagery or field surveys. The NGS attribution scheme, "Coastal Cartographic Object Attribute Source Table (C-COAST)," was developed to synthesize the attribution of various sources of shoreline data into one attribution catalog. C-COAST is not a recognized standard but was influenced by the International Hydrographic Organization's S-57 Object-Attribute standard so the data would be more accurately translated into S-57.2

During the vectorization process, all adjoining shoreline maps in the project are displayed on a computer screen, and the shoreline is traced and coded appropriately. Maps within a project generally adjoin and

T-sheets
Nautical Charts
Aerial Photos
Lidar
Satellite



Prototype Global Shoreline
World Vector Shoreline Plus
NOAA Medium Resolution Shoreline
NOAA ENC Shoreline
NOAA Extracted Vector Shoreline
USGS Vector Shoreline
NOAA National Shoreline
NOAA Composite Shoreline





World Vector Shoreline
Plus

Prototype Global
Shoreline

NOAA Medium
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NOAA ENC
Shoreline

NOAA Extracted Vector
Shoreline

USGS Vector
Shorelines

NOAA National
Shoreline

NOAA Composite
Shoreline

S



SCALE



Which Shoreline??

**The choice comes down to the best fit,
a combination of:**

Scale

Tidal datum

Coverage

Format



The NOAA Shoreline Website

<http://shoreline.noaa.gov>

“The site is a fantastic resource, because it introduces users to mapping technologies and sources while also placing them within a historical context.”

Mark Monmonier

“Wow. This is the most informative website I've seen all month.”

Jeanne Whittler

National Park Service

“Searching through the site for just a few minutes, it was clearly evident just how much valuable information it contained... and how little I knew about our shorelines.”

Mike Schuler

gCaptain (a daily blog for maritime professionals)

Questions?

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