

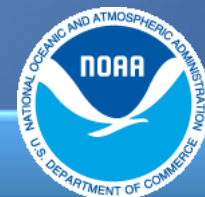
# Marine Spatial Data Infrastructure Working Group

United States of America (USA)  
National Report

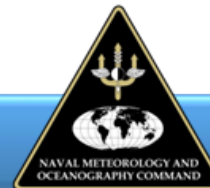
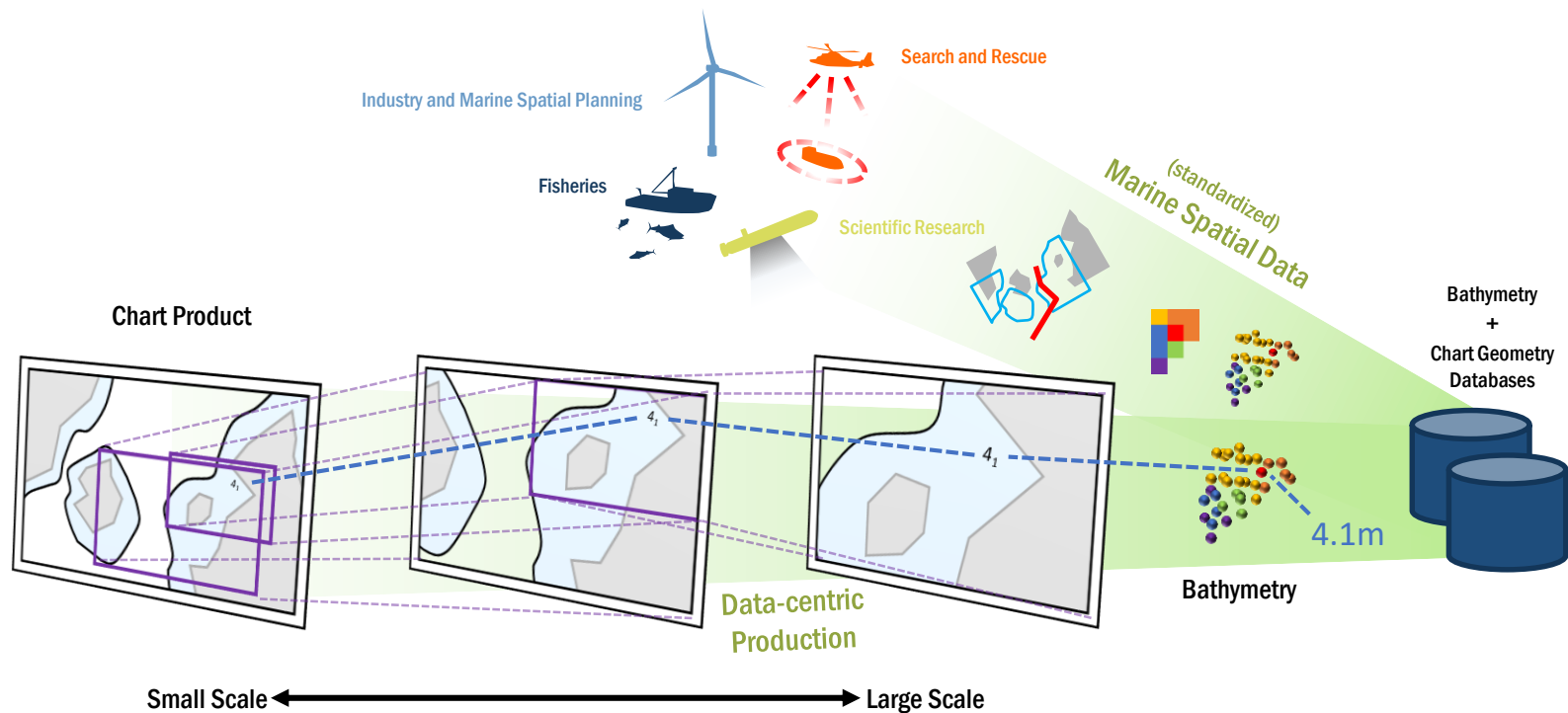


# POLICY AND GOVERNANCE

United States of America, MSDI

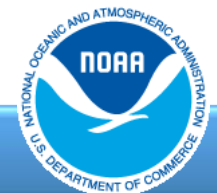
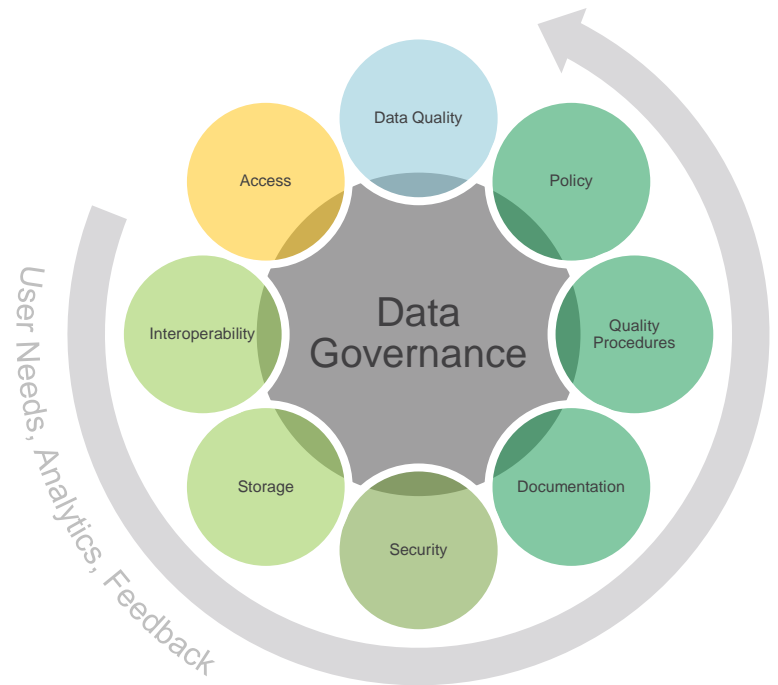


# Data-Centric Production and MSDI



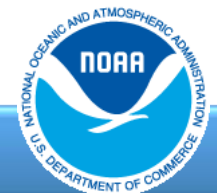
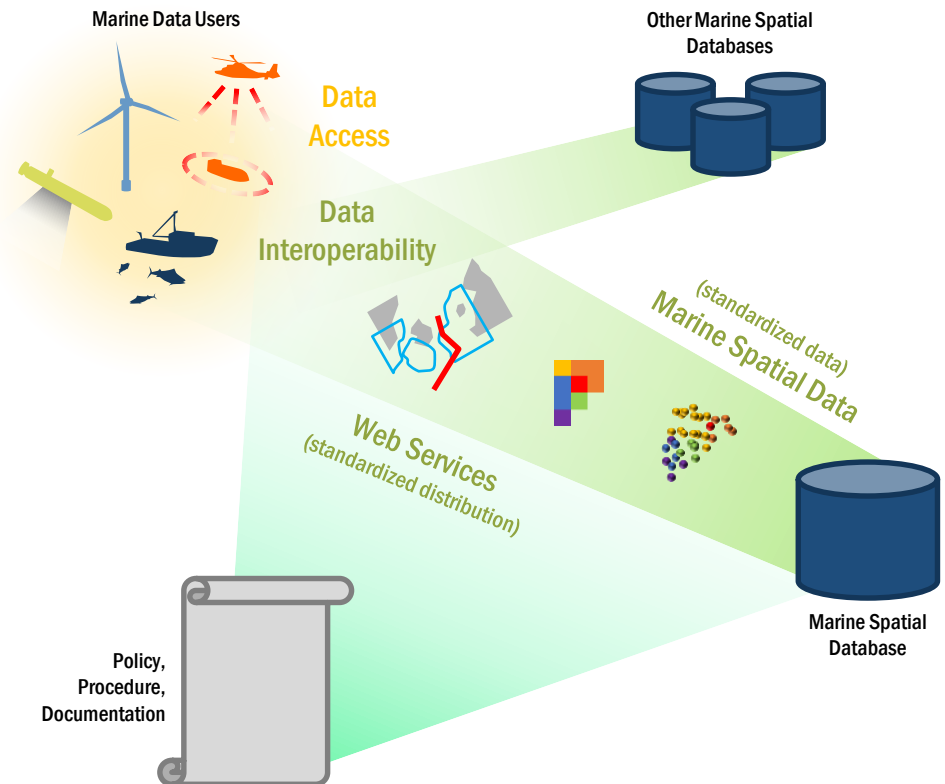
# Data Governance

- Objective
  - Facilitate the handling, accessibility, and quality of data.
- General Data Governance Components
  - Data Quality
  - Policy
  - Quality Procedures
  - Documentation
  - Security
  - Storage
  - Interoperability
  - Access



# Policies in a Data Governance Model

- Policies drive the data governance model.
- Policies can be executive in nature or embedded within each component of the model.
- Sound policies and handling procedures lead to high quality and highly accessible data.



# Policy

## National Policies / Legislation

- **Presidential Executive Order 13840** – Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States.
- **Geospatial Data Act of 2018 (GDA)**
- **Foundations for Evidence-Based Policymaking Act of 2017**
  - Title II – Open Government Data Act

H. R. 302

*One Hundred Fifteenth Congress*

*of the*

*United States of America*

AT THE SECOND SESSION

*Begun and held at the City of Washington on Wednesday,  
the third day of January, two thousand and eighteen*

*An Act*

To provide protections for certain sports medicine professionals, to reauthorize Federal aviation programs, to improve aircraft safety certification processes, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

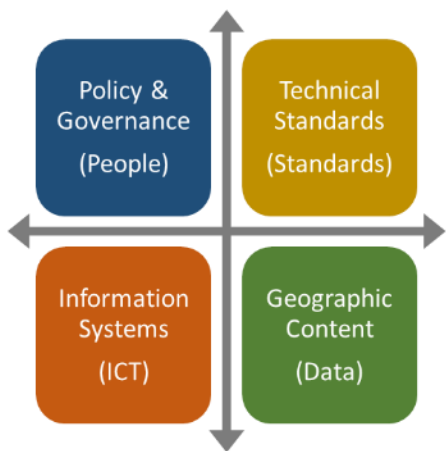
*As amended by the Senate and House of Representatives of the United States of America in Congress assembled,*





## NOAA Office of Coast Survey MARINE SPATIAL DATA INFRASTRUCTURE (MSDI) STRATEGY

**Marine Spatial Data Infrastructure (MSDI)** - From shipping to energy exploration, activities at sea have increased, just as they do on land. In order to ensure sustainable use of the oceans, prioritizing marine activities is essential and relies on a vast amount of Geospatial Information. MSDI is a tool that enables easier and more convenient access to various Marine Spatial Data. It is comprised of data, technical standards, information systems, policy and people. Coast Survey plays a pivotal role in the development of the United State's MSDI.



### Why Marine Spatial Data Infrastructure?

-  **Blue Economy** - Support sustainable use of ocean resources through data access.
-  **Open Data** - Compliance with U.S. Federal Open Data Policies and the G8 Open Data Charter, among others.
-  **Efficiency** - Reduce manual data creation and enable machine to machine analytics to improve timeliness of data delivery.
-  **Decision Making** - Unlock the power of Geospatial Information that exist within Navigational Charts in order to better inform decision makers.

### Coast Survey's MSDI Strategy

- Develop core datasets from the Coast Survey Nautical Information System.
- Deliver core datasets via web-enabled services.
- Collaborate with Federal, State, Local, and Private partners on data dissemination.
- Develop internal Data Policy & Governance to ensure the integrity of core datasets.
- Engage with International partners through the International Hydrographic Organization (IHO) MSDI Working Group (MSDIWG).

### What constitutes an MSDI ?

**Policy & Governance (People)** - Builds a linkage to regional, national, or organizational strategy for sharing and exchanging information.

Requires willingness to cooperate between various organizations that create, share, and use information to implement policy.

**Technical Standards** - International Standards for geographic information exist or are being developed and , in many areas, sector-based standards are being put in place that depend on these over-arching standards.

**Information Systems** - Technical Infrastructure (both hardware and software) enable the delivery of data and services to allow the viewing, sharing, transformation and downloading of data.

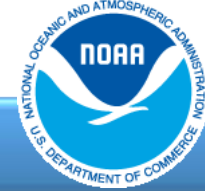
**Geographic Content** - Arguably the most important component of MSDI. Data can be broken into two main categories: **Reference Information** including any geographic feature that is used as a location reference for other information (often referred to as the data that "most people use most of the time") and **Application Information** known as the outer layer information which is generally application or business specific.



Office of Coast Survey  
NAUTICALCHARTS.NOAA.GOV

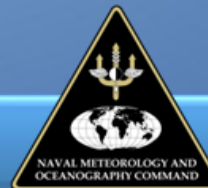


Office of Coast Survey  
National Oceanic and Atmospheric Administration



# INFORMATION SYSTEMS

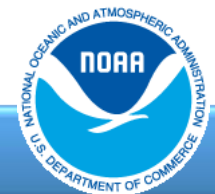
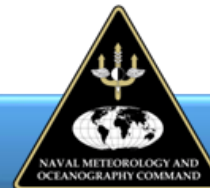
United States of America, MSDI





# Information Systems

- Charting Information / Production Databases
  - National Bathymetric Source (NBS)
  - Nautical Information System (NIS)
- Server Infrastructure
  - GIS Servers (Internal & External)
  - Database Servers (Internal & External)
  - Physical vs. Virtual....
- Software
  - Esri
  - Caris
  - Seven Cs
  - Etc.



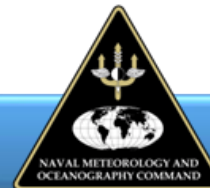
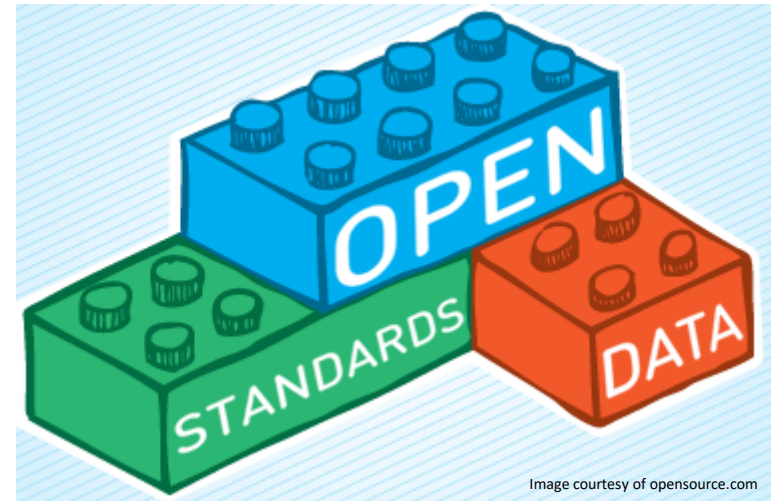
# TECHNICAL STANDARDS

United States of America, MSDI



# Technical Standards

- *IHO S-100 Standard*
- *Open Geospatial Consortium (OGC) Standards*
- *Federal Geographic Data Committee (FGDC) Metadata Standards*



# GEOGRAPHIC CONTENT

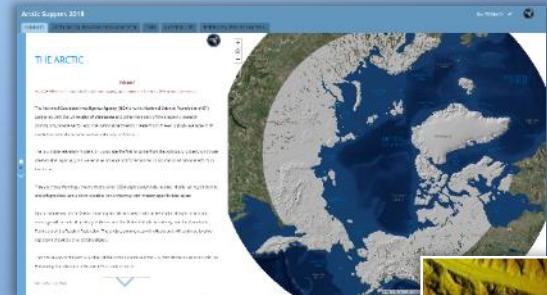
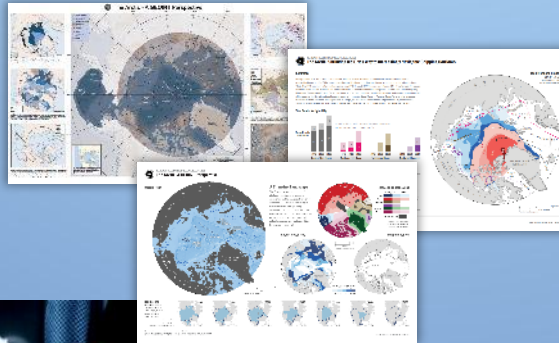
United States of America, MSDI



# NGA GEOINT Services – Arctic Support



## Map Products

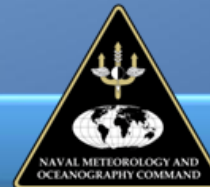


ArcticDEM

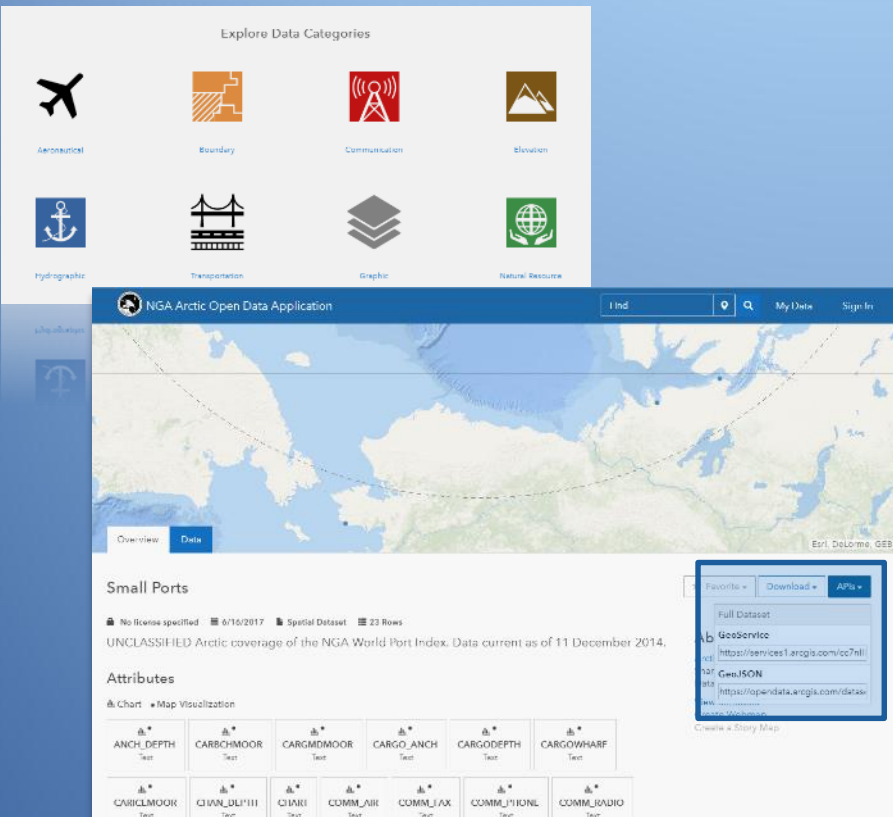


https://nga.maps.arcgis.com

Data Discovery & Download



# NGA Arctic Open Data



- **Downloadable and Service-Enabled**
  - Airfields
  - Maritime Boundaries and Submissions
  - Sea Ice Extents
  - Search and Rescue Zones
  - Energy Resource Potential from USGS
  - Natural Earth Features
  - Natural Resource Potential
  - NAVTEX Sites
  - Shipping and Hydrography
  - World Port Index



# Reference Elevation Model Antarctica (REMA)

Reference Elevation Model Antarctica (REMA)

SUMMARY REMA DOWNLOAD TOOL by NGA DEM REVIEWER By ESRI HILLSHADE VIEWER REFERENCE & RESOURCE MATERIAL

The Reference Elevation Model of Antarctica (REMA) is a high resolution, time-stamped Digital Surface Model (DSM) of Antarctica at 8-meter spatial resolution.

**Polar Geospatial Center**  
University of Minnesota

**Purpose**

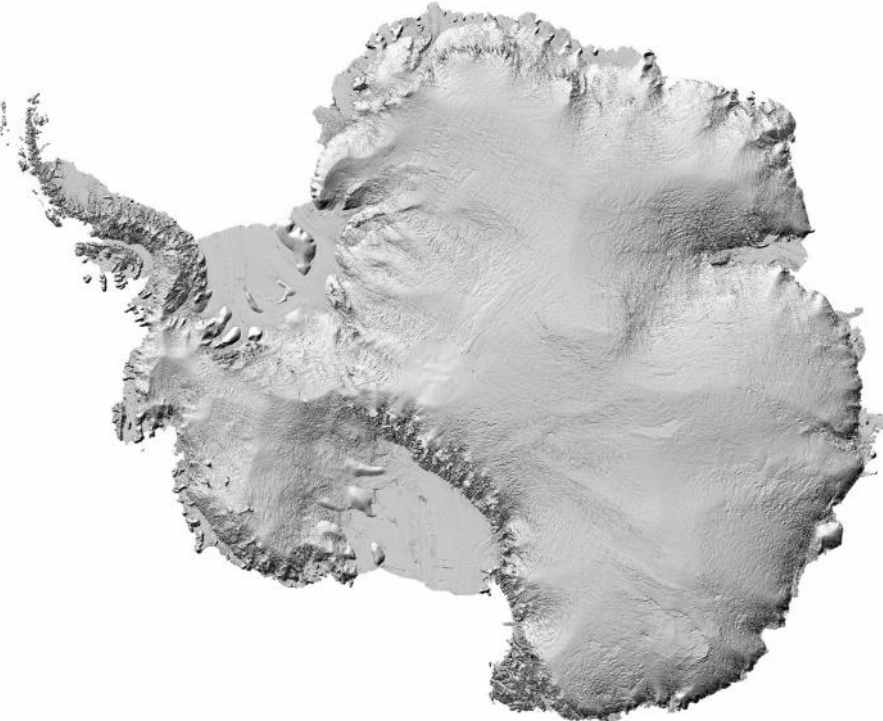
The Reference Elevation Model of Antarctica (REMA) provides the first, high resolution (8-meter) terrain map of nearly the entire continent. Since each REMA grid point has a timestamp, any past or future point observation of elevation provides a measurement of elevation change.

REMA may provide corrections for a wide range of remote sensing processing activities, such as image orthorectification and interferometry, and provide constraints for geodynamic and ice flow modeling, mapping of grounding lines, and surface processes. REMA also provides a powerful new resource for field logistics planning.

**Source**

REMA is constructed from hundreds of thousands of individual stereoscopic Digital Elevation Models (DEM) extracted from pairs of submeter (0.32 to 0.5 m) resolution DigitalGlobe satellite imagery, including data from WorldView-1, WorldView-2, and WorldView-3, and a small number from GeoEye-1, acquired between 2009 and 2017, with most collected in 2015 and 2016, over the austral summer seasons (mostly December to March).

Each individual DEM was vertically registered to satellite altimetry measurements from Cryosat-2 and ICESat, resulting in absolute uncertainties of less than 1 meter over most of its area, and relative uncertainties of decimeters.



# National SDI



DATA TOPICS ▾ IMPACT APPLICATIONS DEVELOPERS CONTACT

## The home of the U.S. Government's open data

Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and [more](#).

GET STARTED  
SEARCH OVER 245,897 DATASETS

bathymetry

### BROWSE TOPICS



Agriculture



Climate



Consumer



Ecosystems



Education



BROWSE TOPICS

GeoPlatform Data.gov Search

Search Data.gov

Enter keywords and press 'Enter'  
Surround phrases with quotations (!)

Search by geography

SELECTED FACETS CLEAR ALL

Dataset Type "geospatial" x

ORGANIZATIONS show all ^

National Oceanic and Atmospheric Administration, 75140  
Department of Commerce

155884 results 25 per page

Search Results

Popular

Pittsburgh Wards Map

County Allegheny County / City of Pittsburgh / Western PA Regional Data Center

Allows users to look up City of Pittsburgh Wards

USGS 1 meter Digital Elevation Models (DEMs) - USGS National Map 3DEP Downloadable Data Collection

Federal U.S. Geological Survey, Department of the Interior

This is a tiled collection of the 3D Elevation Program (3DEP) and is one meter resolution. The 3DEP data holdings serve as the elevation layer of The National Map, and provide foundational elevation information

WAP INCI Edit REST WMS HTML + 1 more

NOAA U.S. Hourly Precipitation Data

Federal National Oceanic and Atmospheric Administration, Department of Commerce

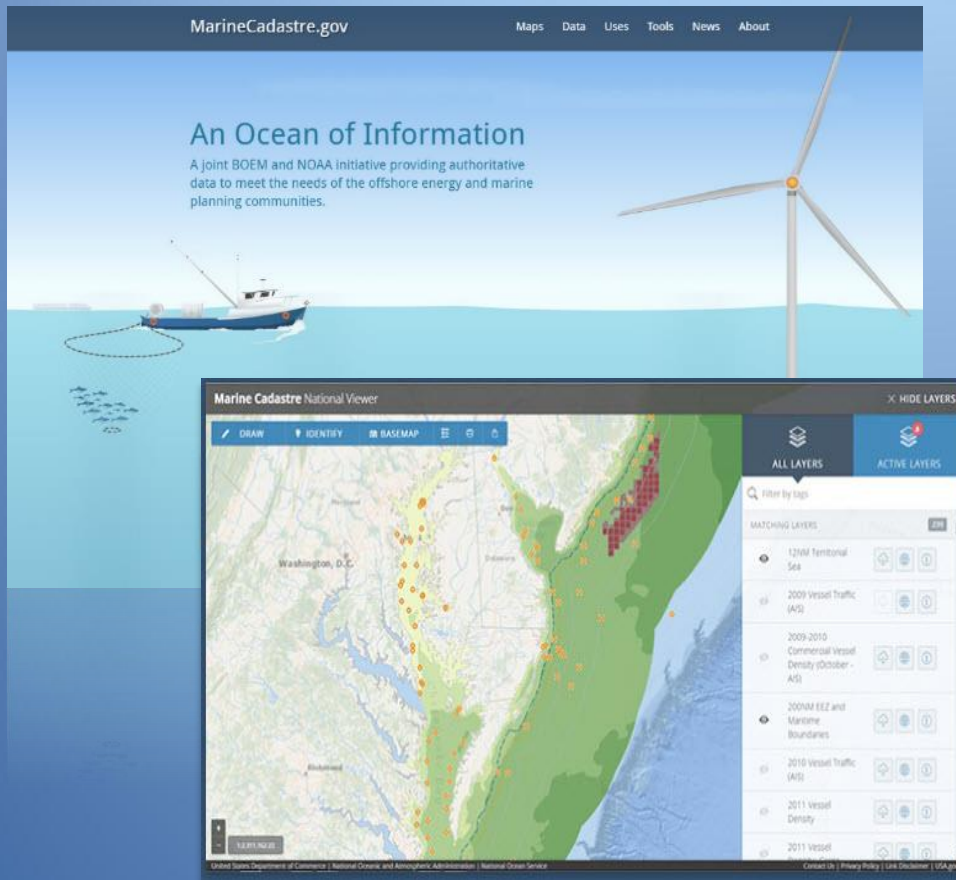
Hourly Precipitation Data (HPD) is digital data set DSI-3240, archived at the National Climatic Data Center (NCDC). The primary source of data for this file is approximately 5,500 US National Weather

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# Marine Cadastre



- MarineCadastre.gov provides direct access to authoritative and trusted datasets.
  - Provides data , tools, and technical support for US Ocean Planning
  - 27+ data providers contributing over 280 data layers
  - Downloadable and Service Enabled
  - National Data Viewer



# US Regional Ocean Data Catalogs/Portals

<http://www.northeastoceandata.org/>

<http://portal.midatlanticocean.org>

<http://portal.westcoastoceans.org/>



# US - International MSDI Participation

- IHO MSDIWG
- IHO Arctic Regional Hydrographic Commission (ARHC)
  - Arctic Regional MSDIWG (ARMSDIWG)
- IHO Meso American & Caribbean Sea Hydrographic Commission (MACHC)
  - MACHC/MSDIWG
- UN-GGIM Working Group on Marine Geospatial Information (WG-MGI)
- OGC Marine Domain Working Group (Marine DWG)
- Marine Spatial Data Infrastructure Concept Development Study (MSDI-CDS)

