Oregon Offshore Wind Energy Mapping Tool (OROWindMap)

Introductory Webinar

March 11, 2021

Whitney Hauer, Ph.D. and Frank Pendleton

Bureau of Ocean Energy Management (BOEM) Pacific Regional Office

Andy Lanier

Oregon Department of Land Conservation and Development (DLCD)

Facilitated by Jamie Damon, Kearns & West

For help with technical difficulties, please contact Gillian Garber-Yonts (ggarberyonts@kearnswest.com, (503) 468-7974) for assistance.
Webinar will be recorded.

Agenda

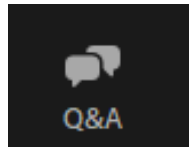
Time	Topic
10:00 am	Welcome and Overview
10:15 am	Overview of Offshore Wind Energy Planning in Oregon
10:25 am	OROWindMap Tool Exploration and Data Catalog
11:00 am	Q&A
11:25 am	Closing Remarks and Next Steps
11:30 am	Adjourn

Webinar Participation Tips

Please join audio by either phone or computer, not both.

Use the Q&A webinar feature to ask substantive questions during the presentation

Questions will be addressed in the Q&A section



During the Q&A section, use "Raise Your Hand" button to get in the queue; if joined by phone, press *9 to raise hand

Facilitator will call on you

Say your name and affiliation before speaking

For Zoom technical issues, email ggarberyonts@kearnswest.com or call (503) 468-7974

Meeting recording, presentation, and meeting summary will be posted at www.boem.gov/OROWindMap-webinar

Overview of Offshore Wind Energy Planning in Oregon

Whitney Hauer, Ph.D, Renewable Energy Specialist
BOEM Pacific Regional Office

Bureau of Ocean Energy Management (BOEM)

Mission: Manage the development of U.S. Outer Continental Shelf (OCS) energy and mineral resources in an environmentally and economically responsible way.

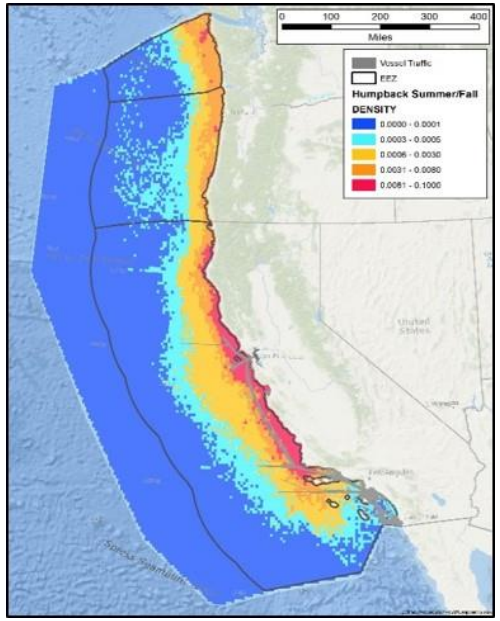
Jurisdiction on the U.S. West Coast

- Federal waters from 3 to 200 nautical miles (i.e., the OCS)
- Excludes National Marine Sanctuaries

OCS Renewable Energy Authorization Process

Multi-year Process

Planning & Analysis

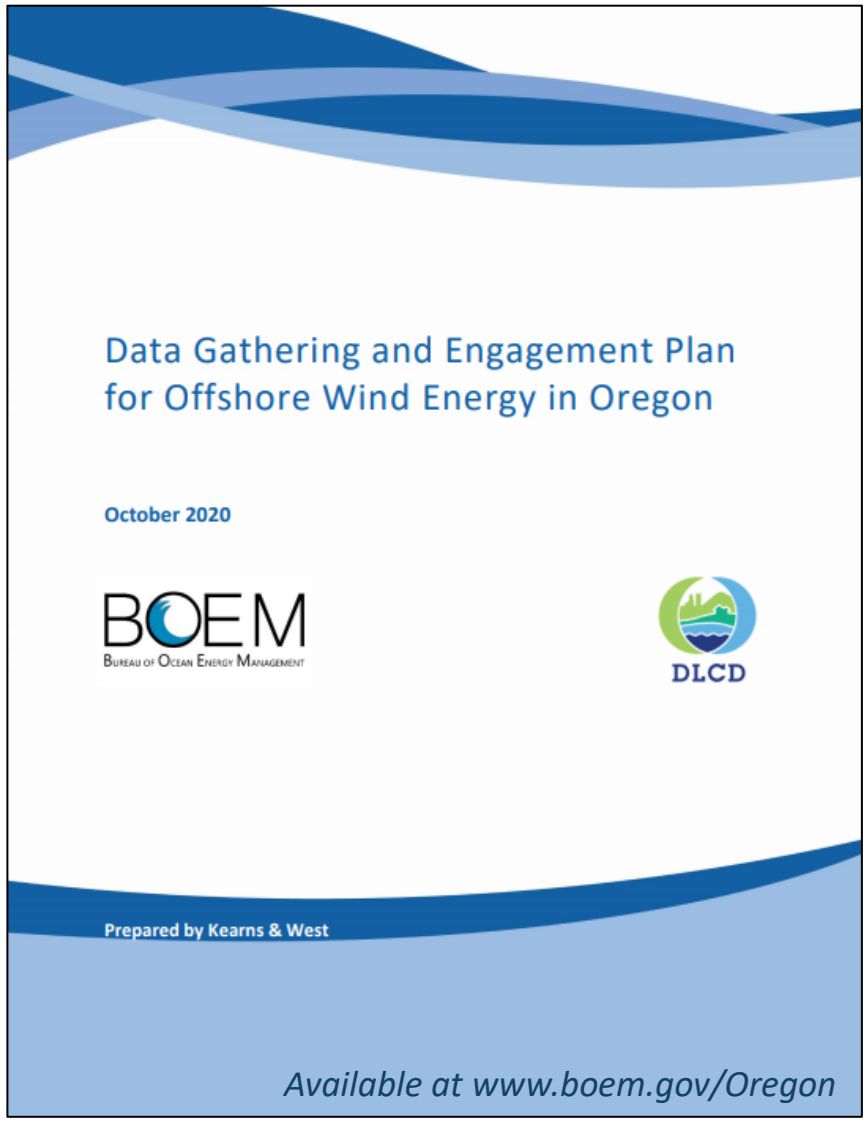


Leasing

Site Assessment

Construction & Operations

BOEM Oregon Intergovernmental Renewable Energy Task Force



Provides coordination with governmental bodies and input into BOEM's renewable energy leasing process

September 2019 meeting: discussed planning approach

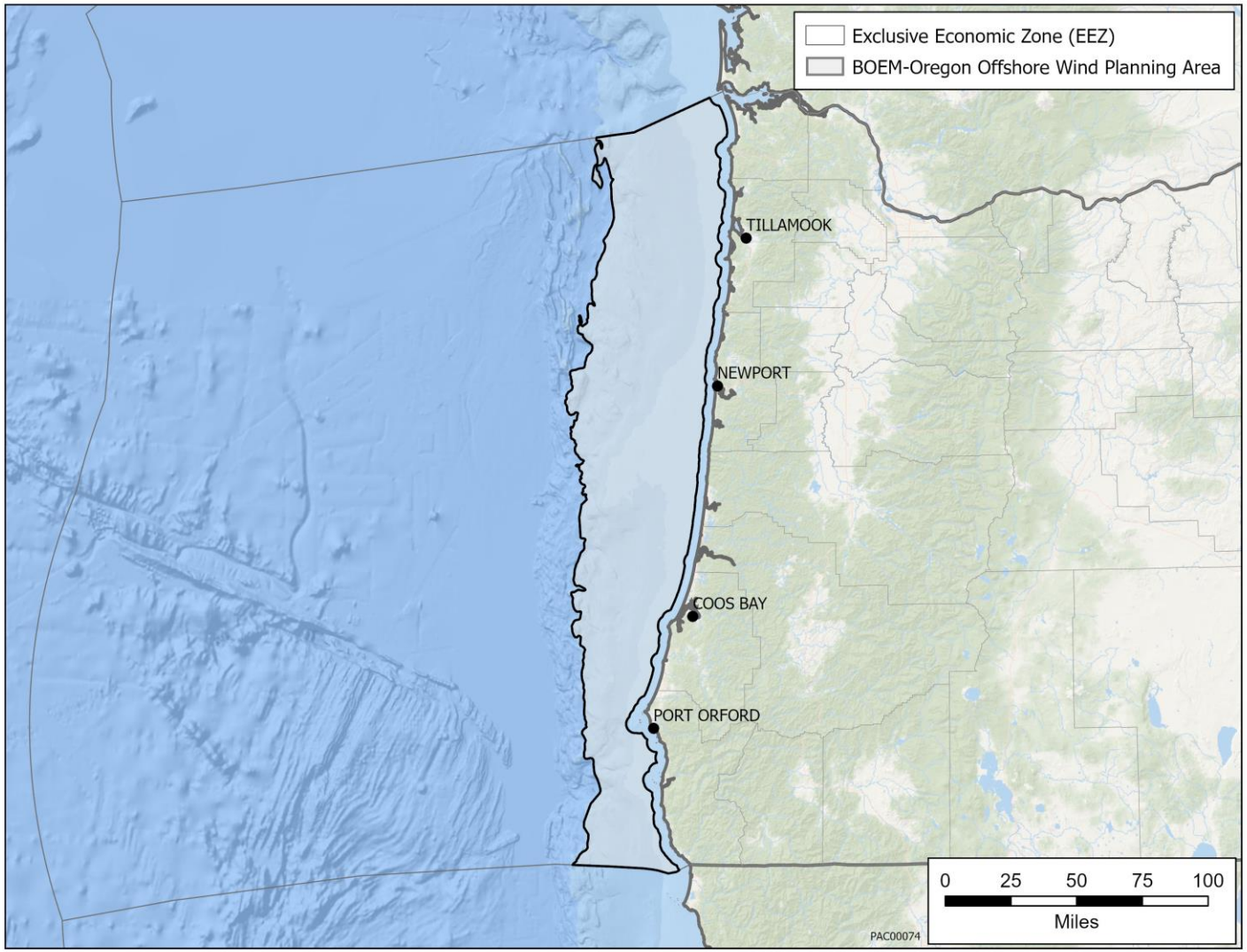
Result: BOEM and DLCD drafted data gathering and engagement plan

June 2020 meeting: discussed draft plan

Result: BOEM and the State of Oregon committed to offshore wind energy planning

October 2020: BOEM and DLCD finalized "Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon"

Oregon Offshore Wind Energy Planning: Data Gathering



Fall 2020 – Fall 2021

Oregon Offshore Wind Mapping Tool (OROWindMap)

Potential Area for Leasing:

- Federal waters offshore Oregon
- Water depths less than 1,300 m (4,625 ft)
- Average wind speed at least 7 m/s (13.6 knots)

Planning Area: State and federal waters, and onshore with pertinent data and information

Datasets 101

Frank Pendleton, GIS Specialist
BOEM Pacific Regional Office

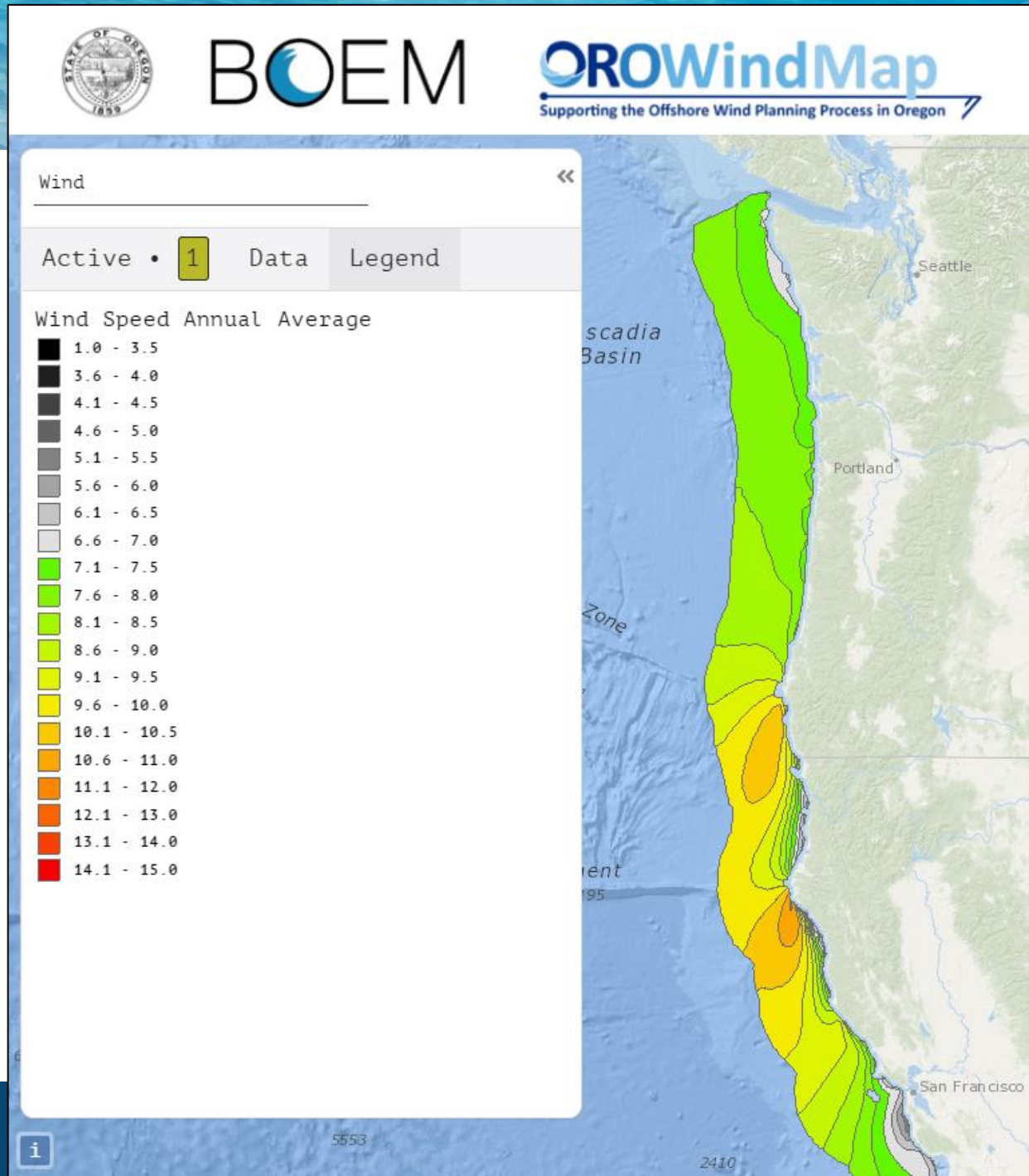
Wind Speed Data

National Renewable Energy Laboratory (NREL)

Subset of NREL Wind ToolKit

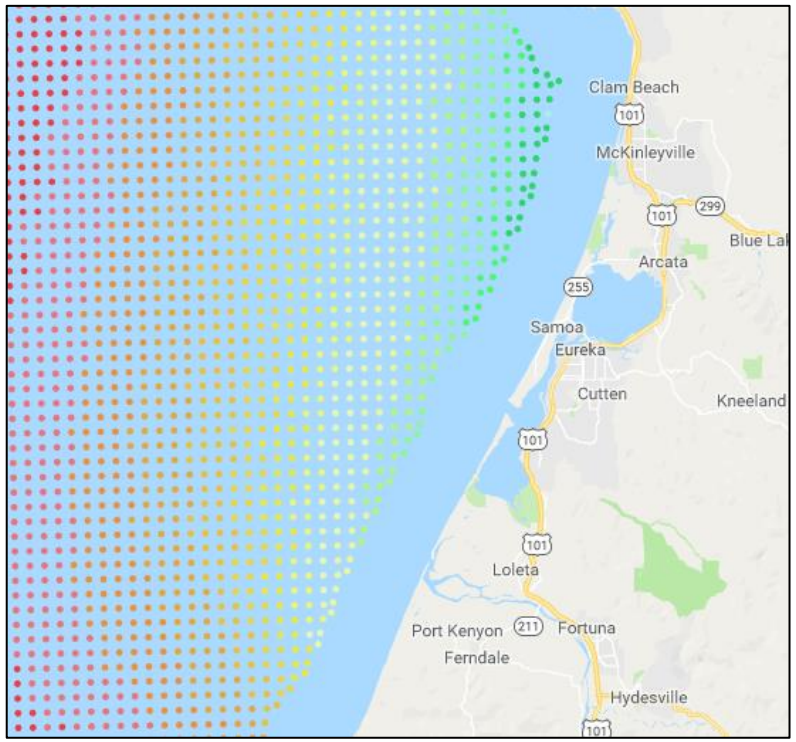
Available at NREL Wind Prospector

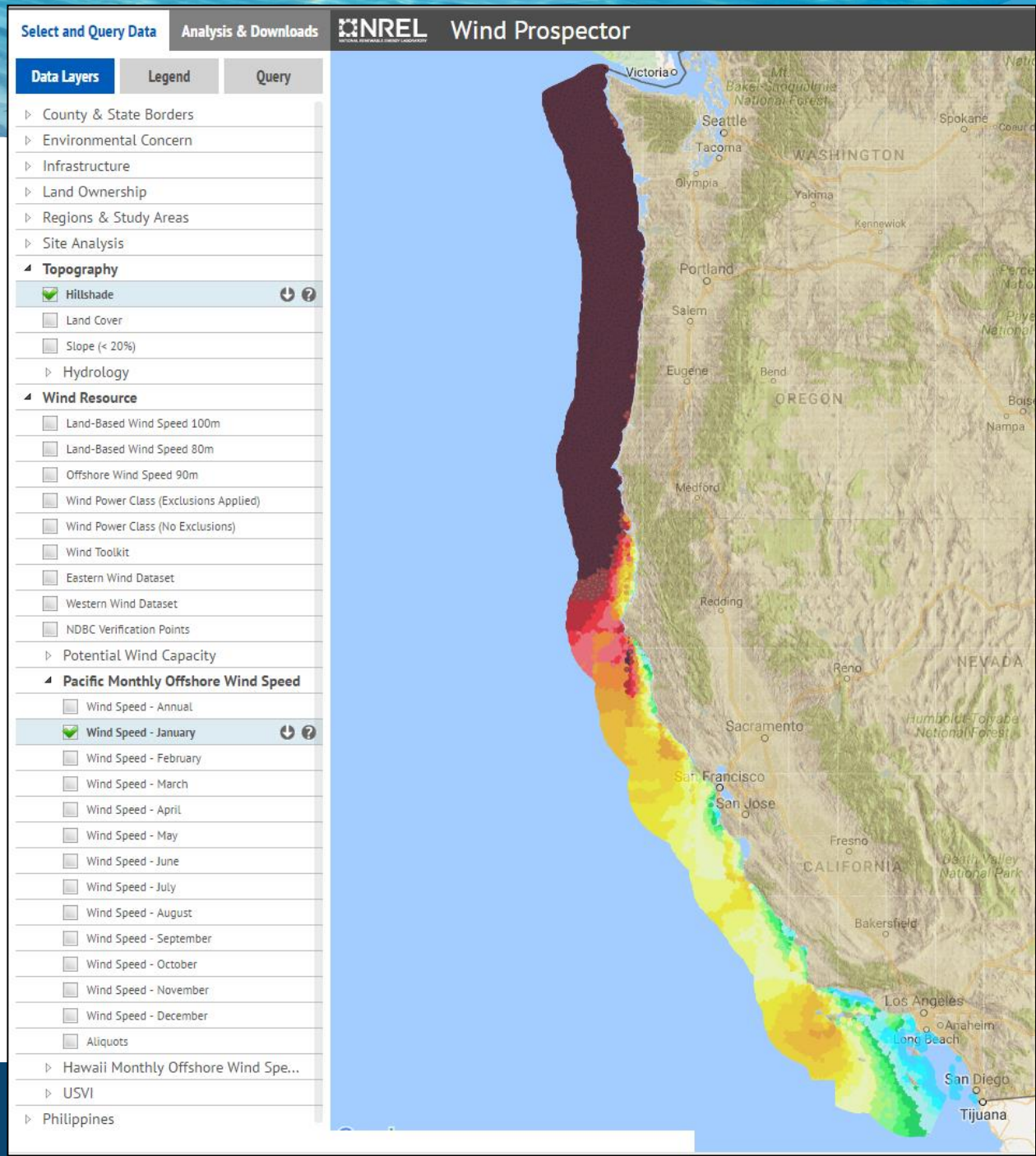
maps.nrel.gov/wind-prospector



Wind Speed Data

NREL Wind Prospector



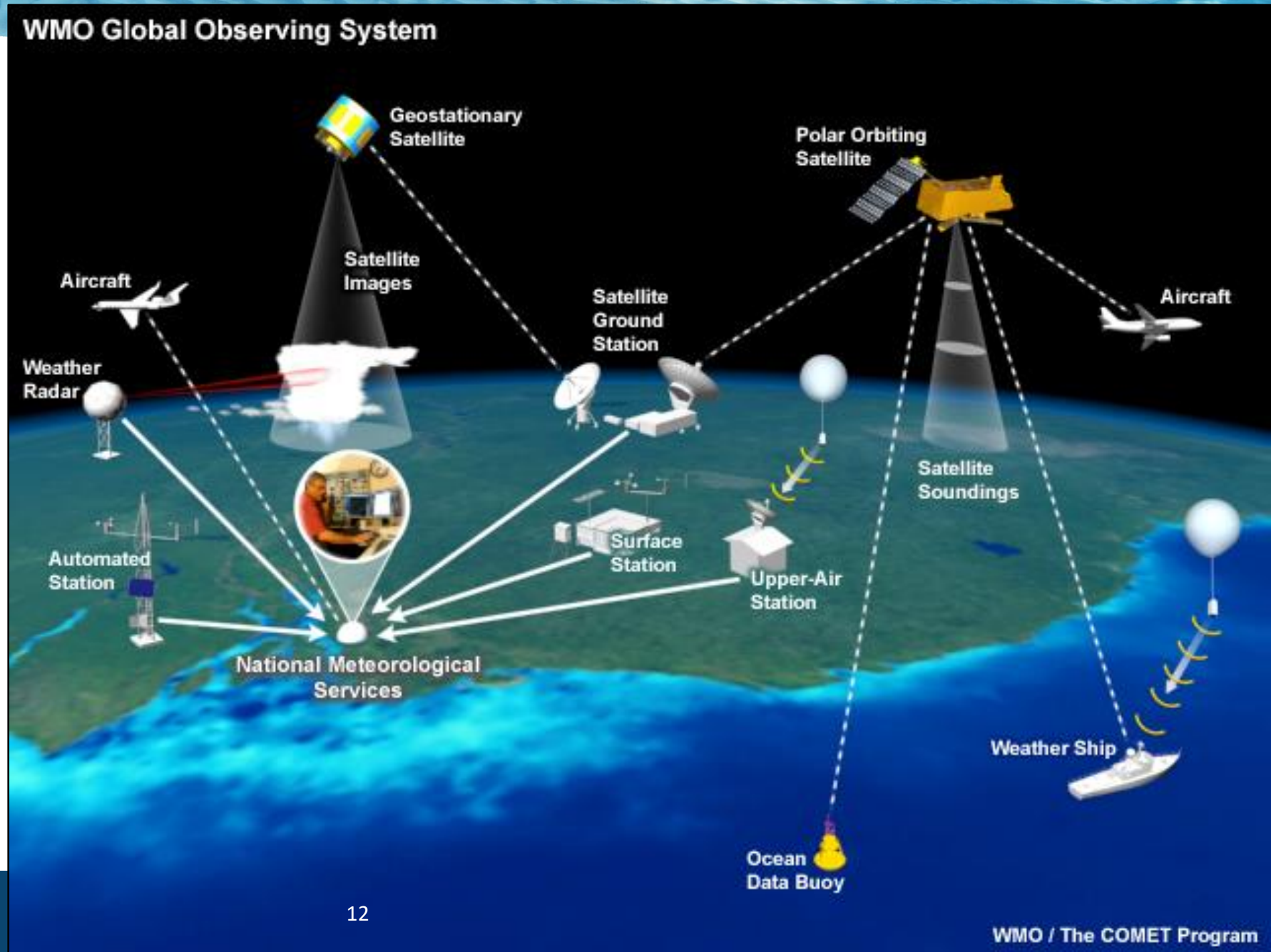


Wind Speed Data

Many Data Sources

Modeled to Provide Consistent Dataset for USA

WIND Toolkit

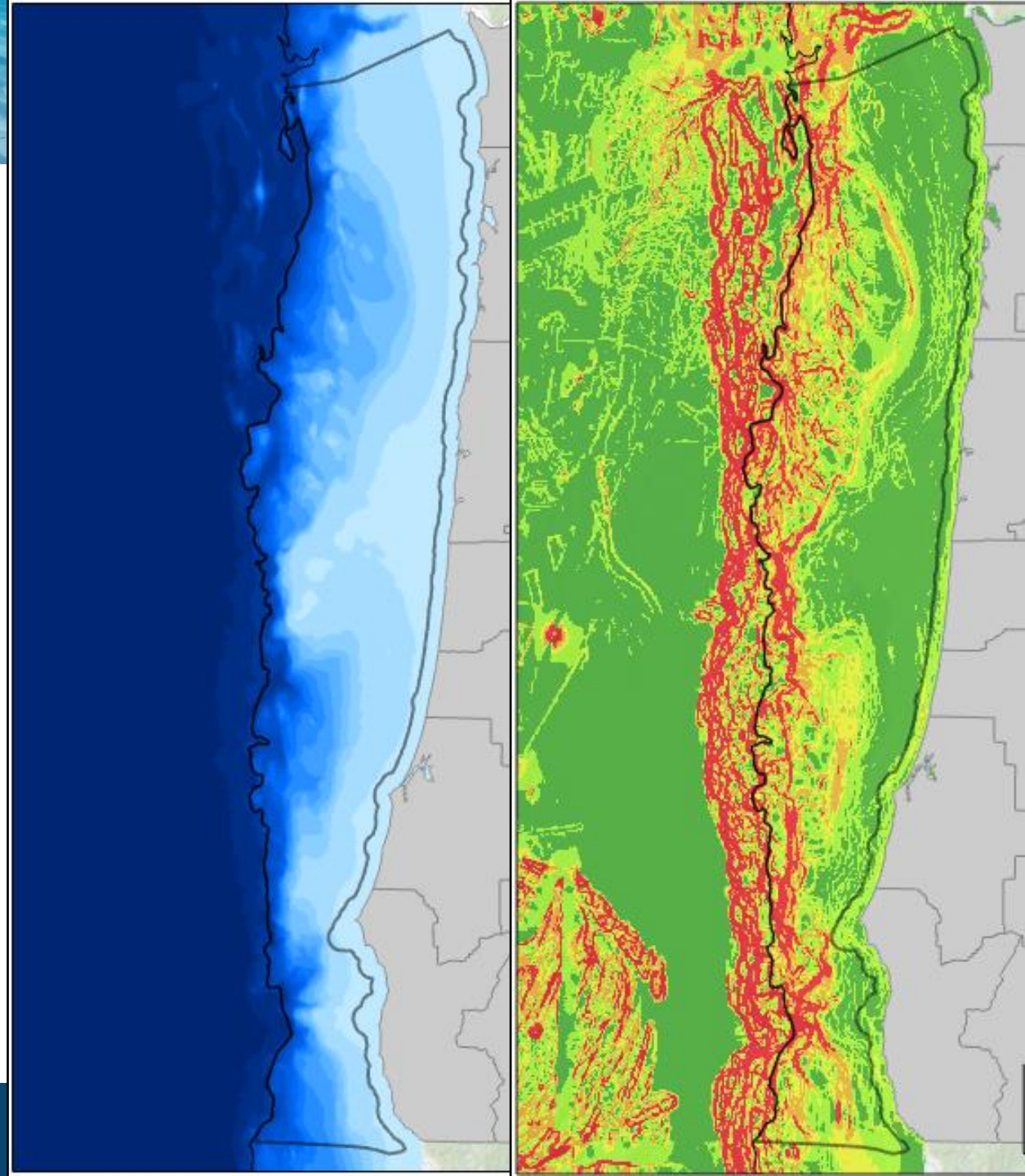


Depth & Slope

Bathymetry Data from NOAA

Slope Derived from Bathymetry

Both Vital to Offshore Wind Energy Planning



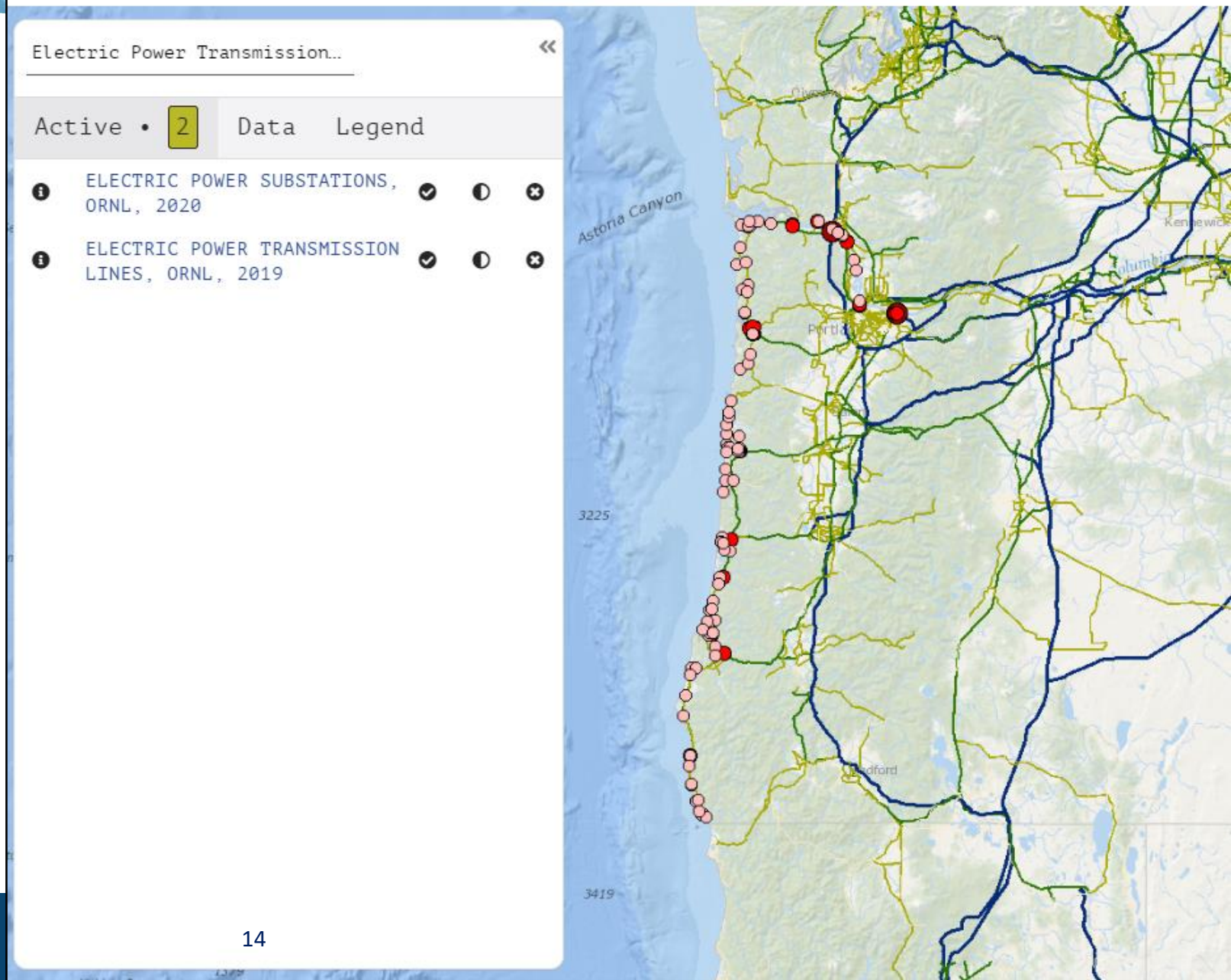
https://maps.ngdc.noaa.gov/viewers/bathymetry/

Grid Connection

Electric Substations and Transmission Lines

Homeland Infrastructure Foundation Level Data (HIFLD)

- Dept of Defense
- Dept of Homeland Security
- National Geospatial Intelligence Agency
- Dept of the Interior

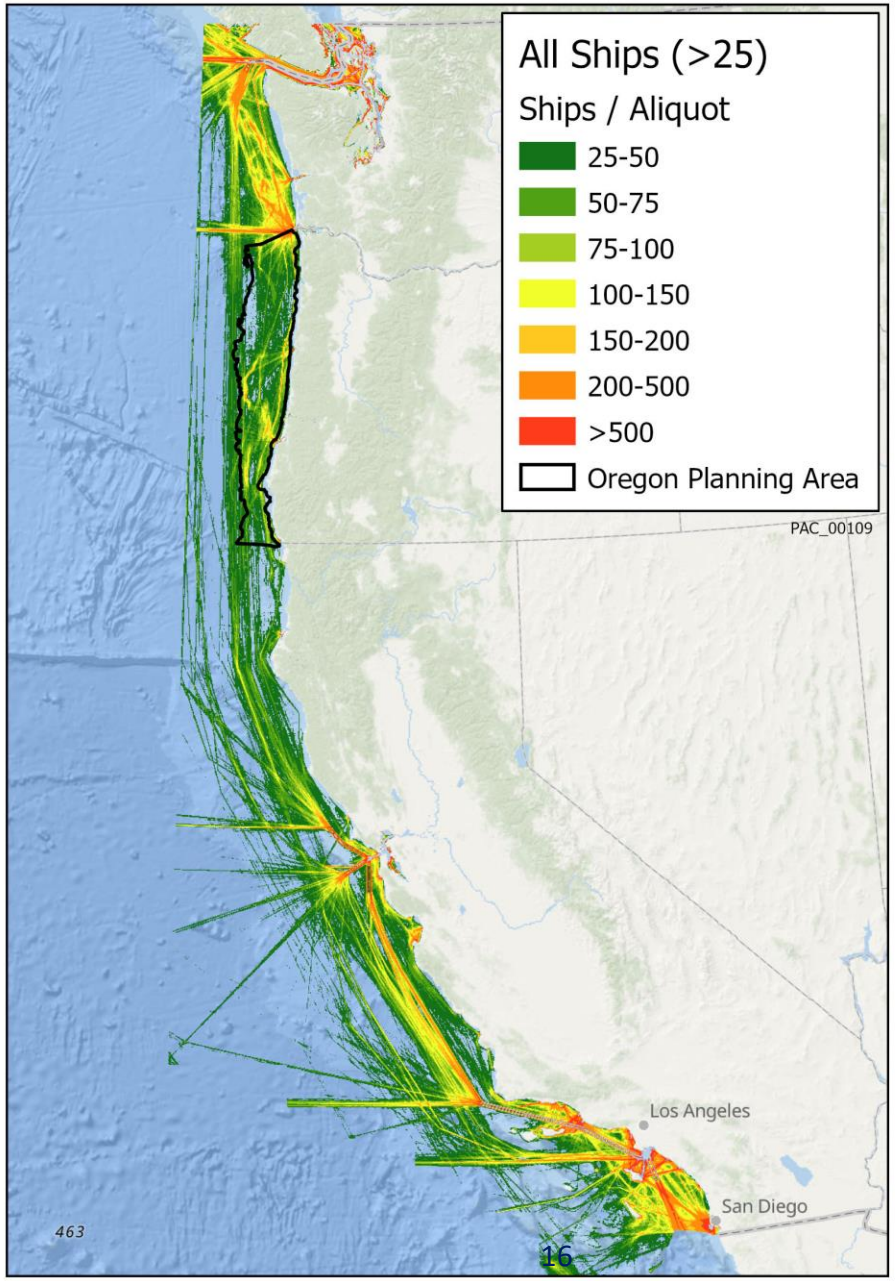


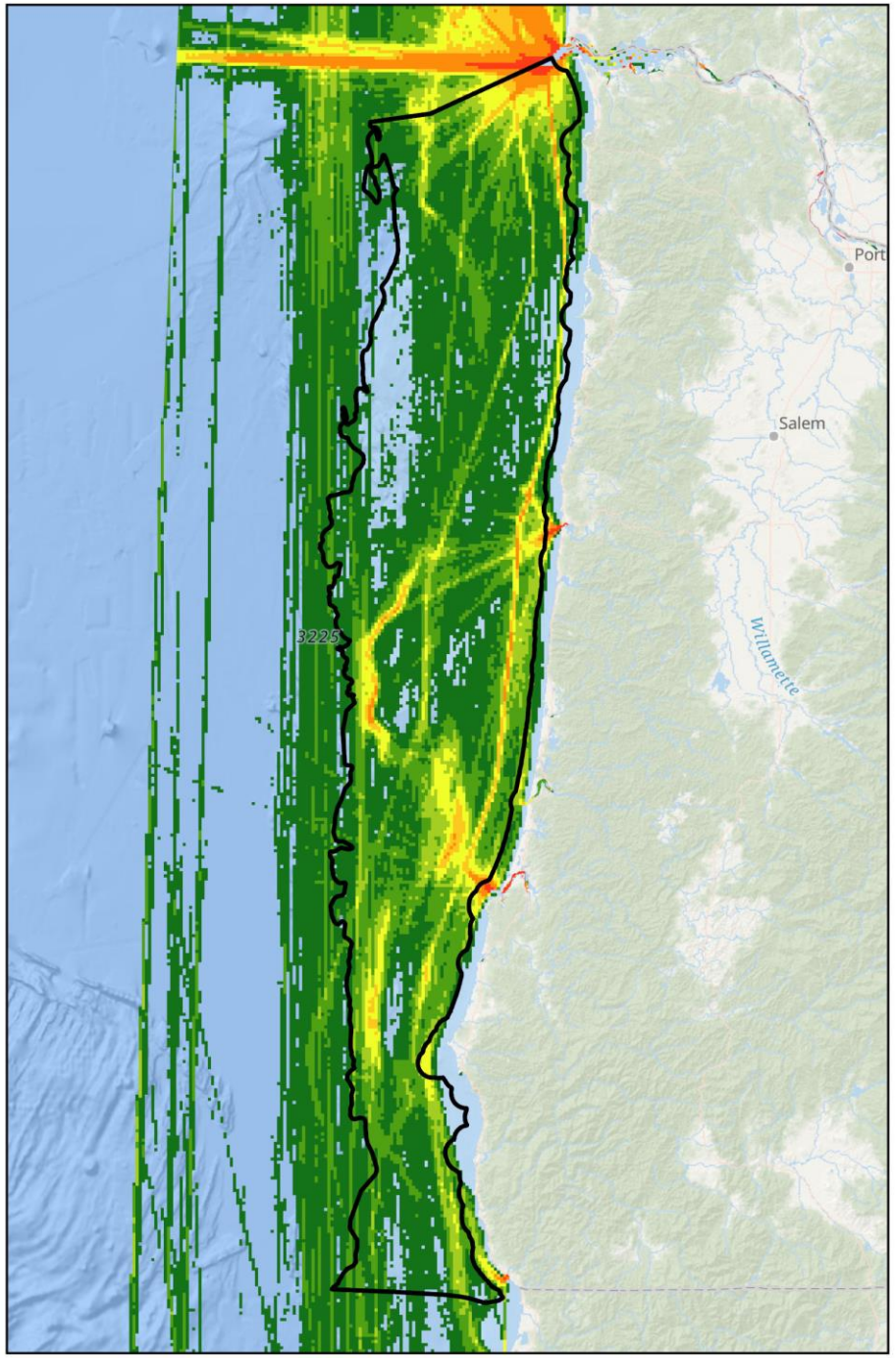
Vessel Traffic: Satellite Tracking

	Automatic Identification System (AIS)	Vessel Monitoring System (VMS)
Purpose	Collision avoidance	Fisheries management
Source	U.S. Coast Guard	National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement
Required Vessels	> 300 gross tonnage (~ 65 feet)	Federally managed fishery
Years	2009-2020 (2017 shown)	2010-2018
Confidential?	N/A. Data available at https://marinecadastre.gov/ais/	Non-disclosure Agreement At least 3 vessels in any block
Analysis: Speeds	All speeds	Fishing speed only (< 5 knots)

AIS

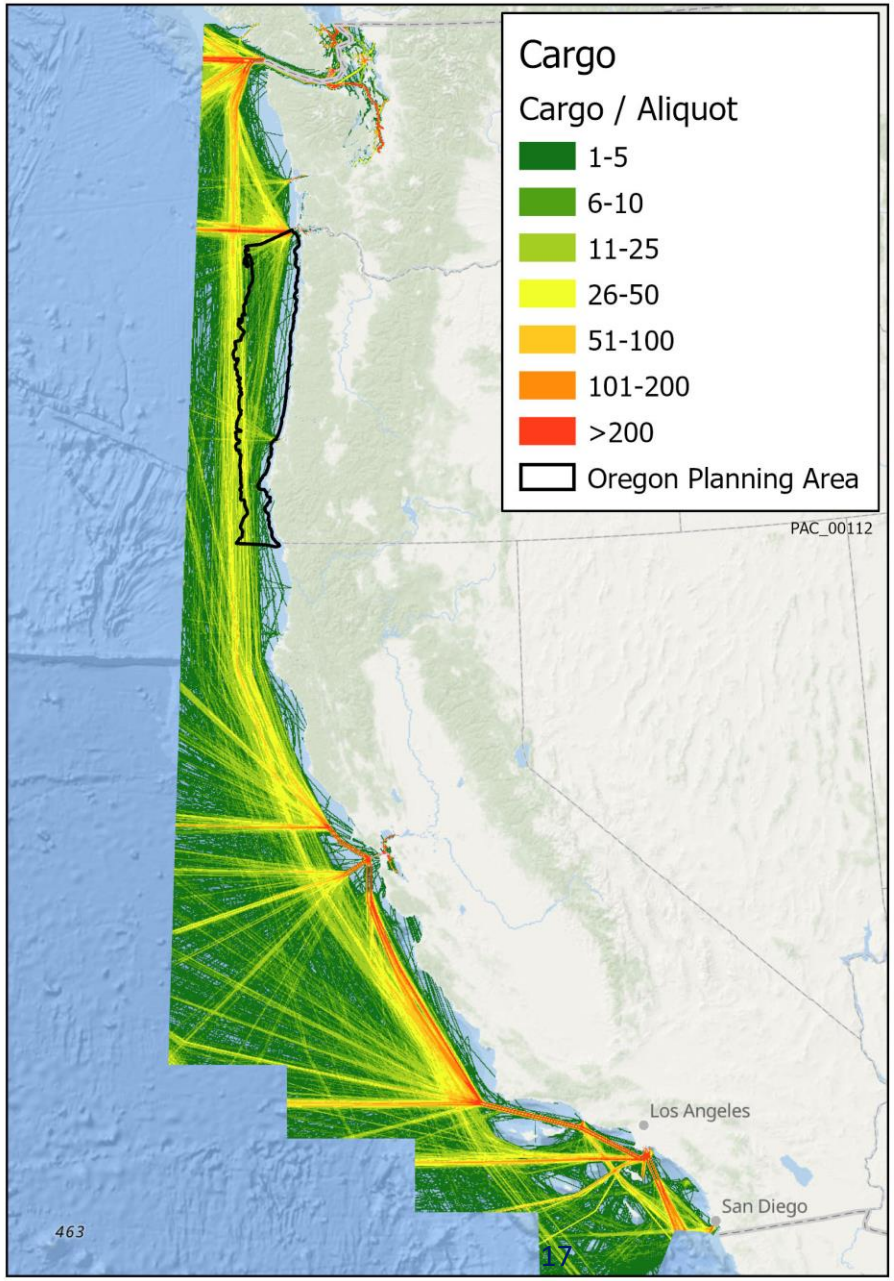
2017 AIS Vessel Traffic
All Ships

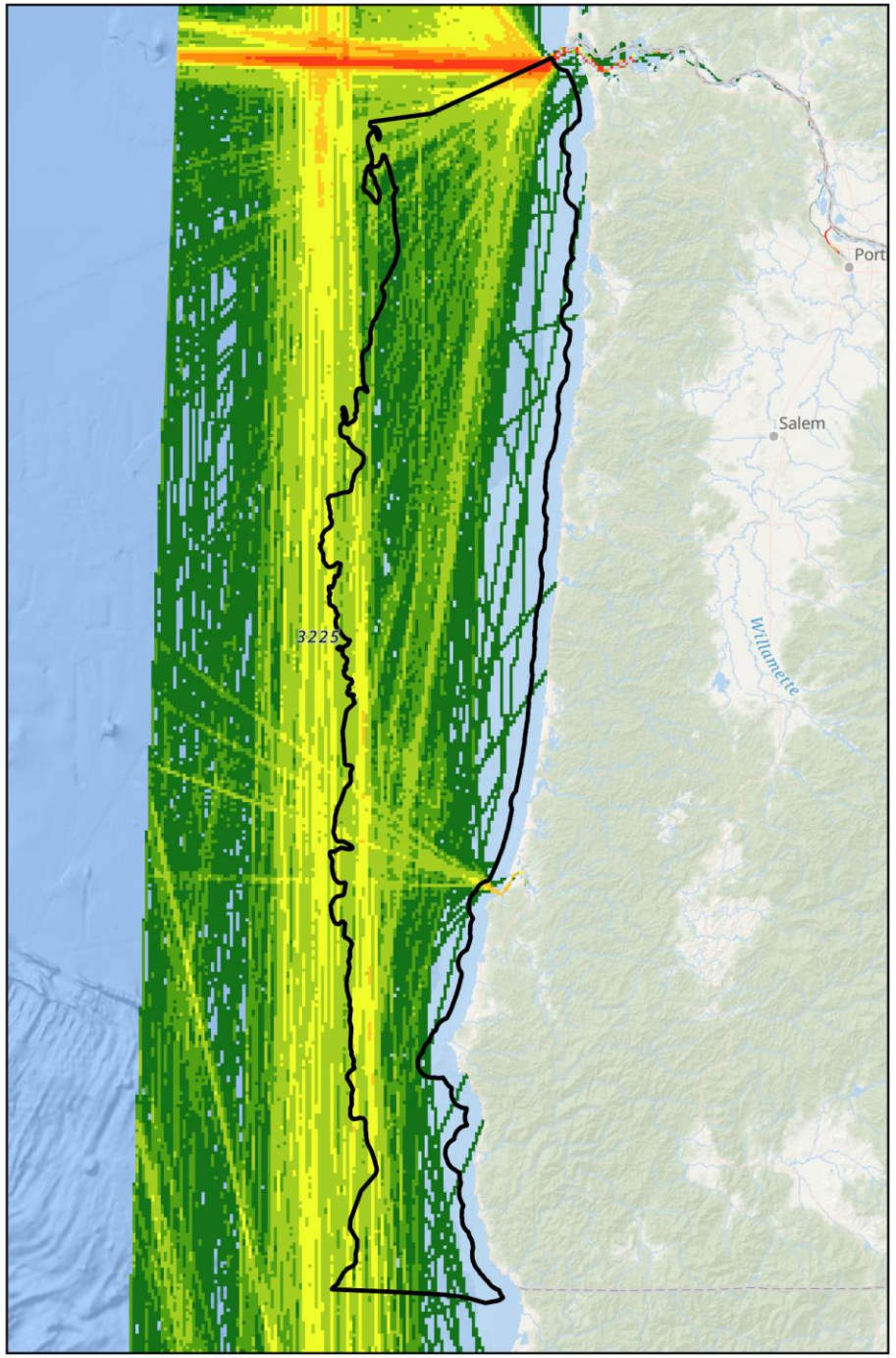




AIS

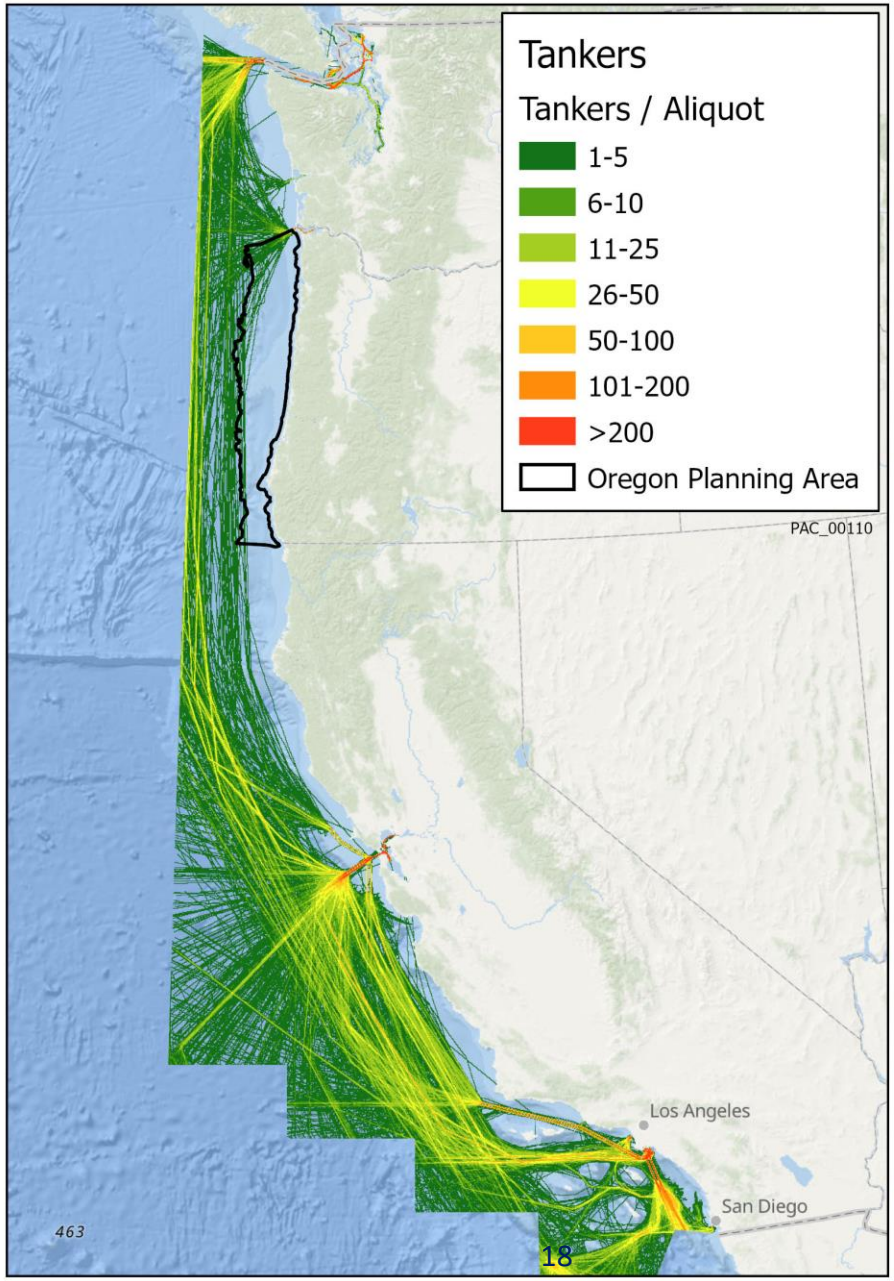
2017 AIS Vessel Traffic
Cargo Ships

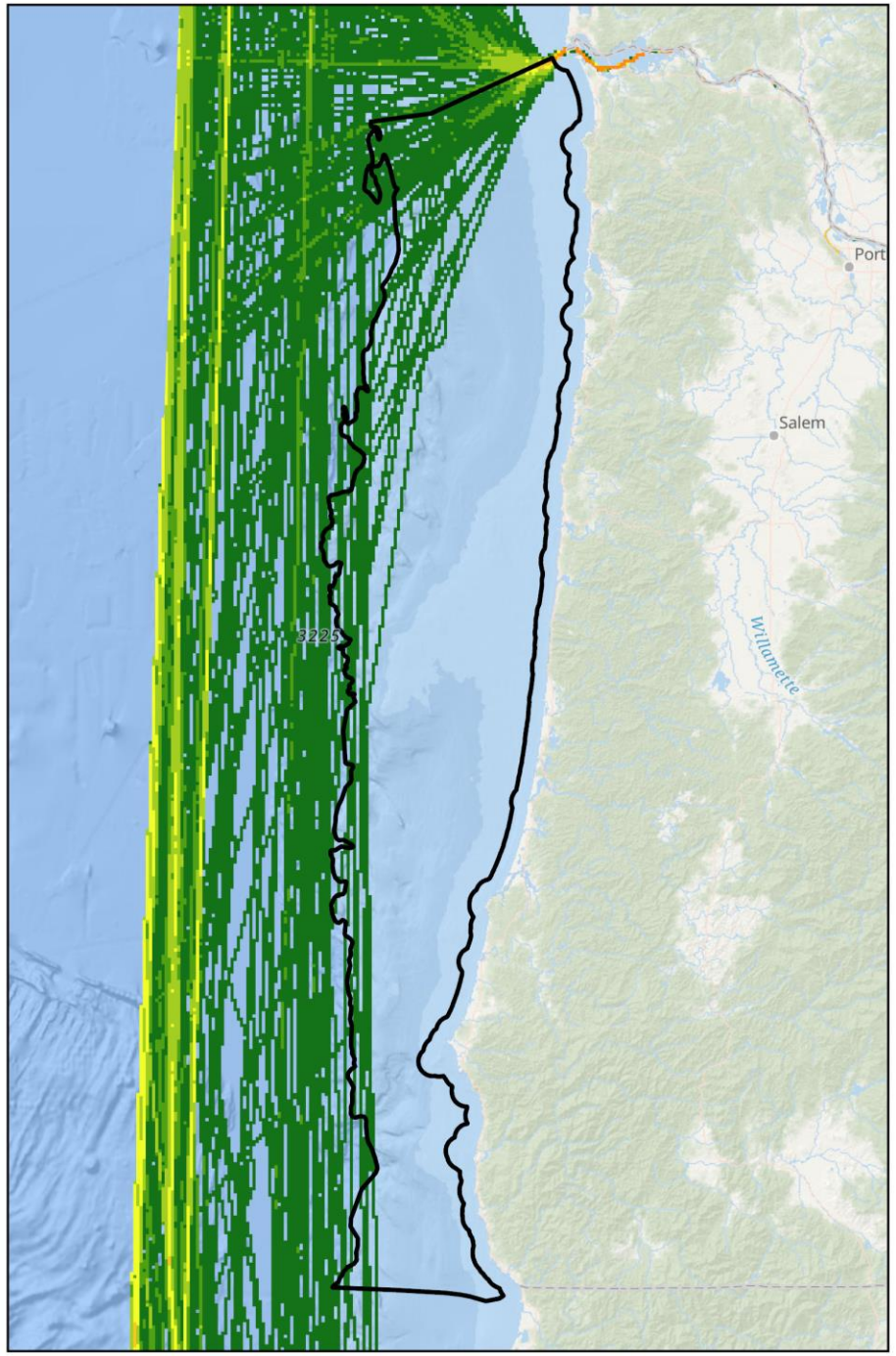




AIS

2017 AIS Vessel Traffic
Tankers

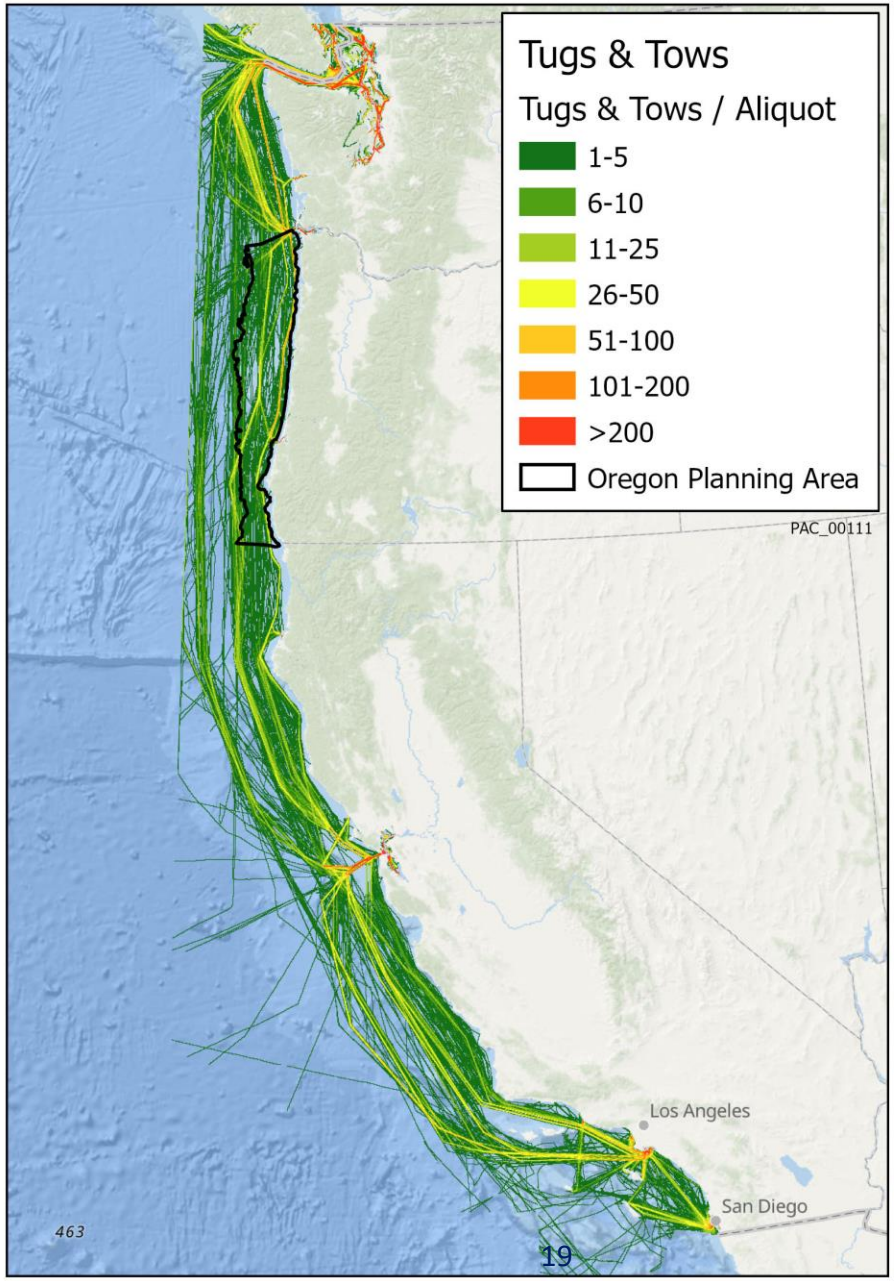




BOEM Bureau of Ocean Energy Management

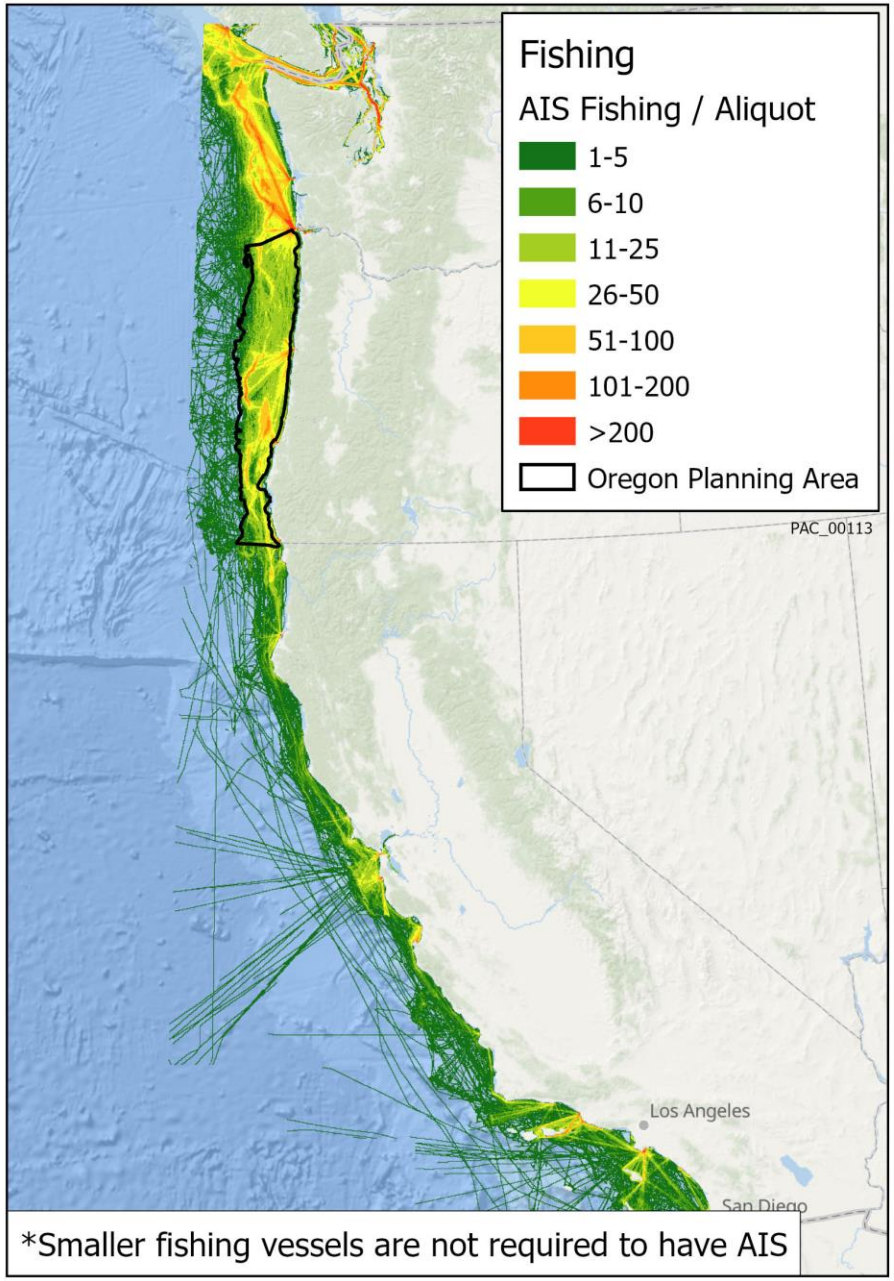
AIS

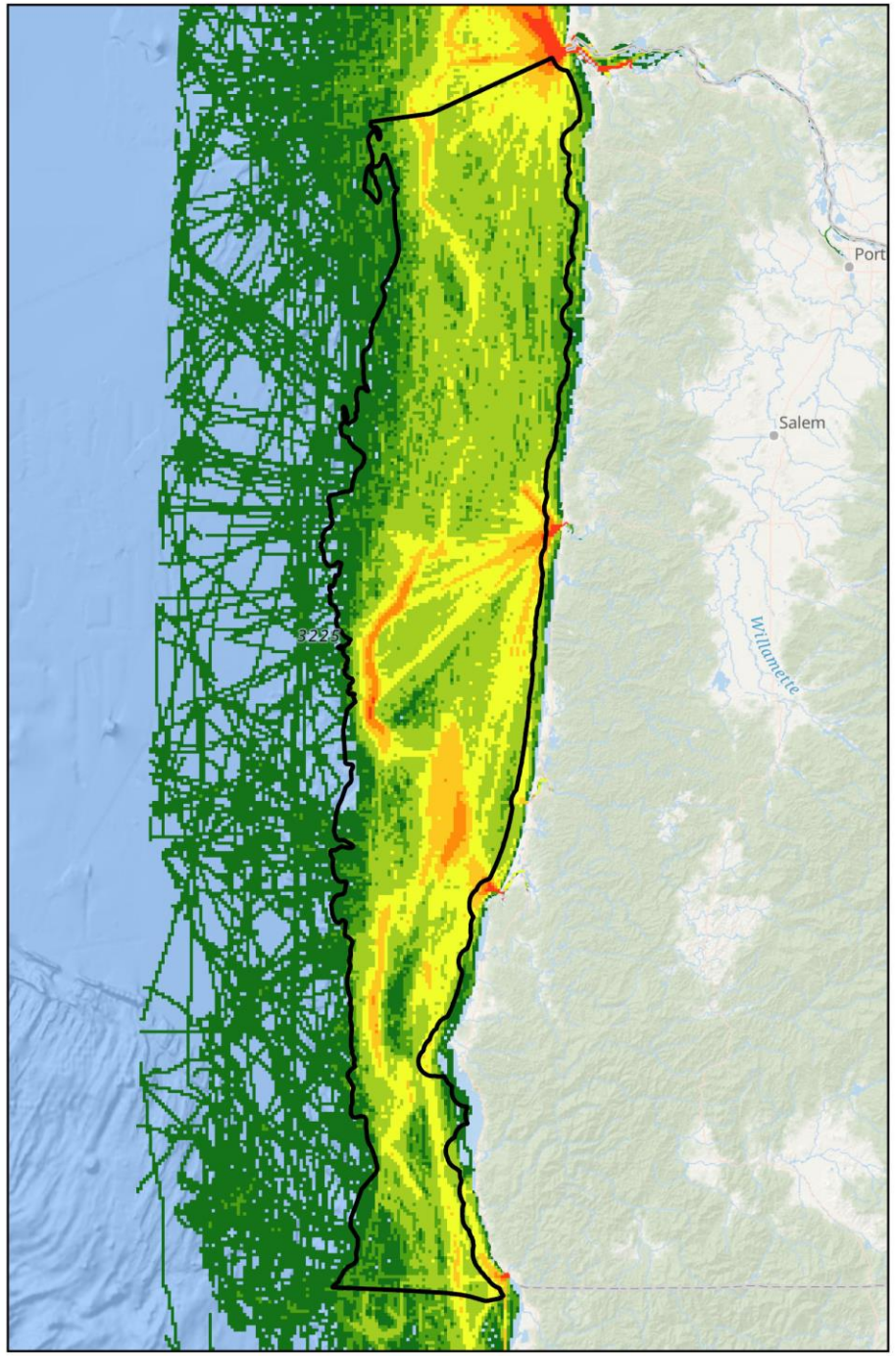
2017 AIS Vessel Traffic
Tugs and Tows



AIS

2017 AIS Vessel Traffic
AIS Fishing Vessels*

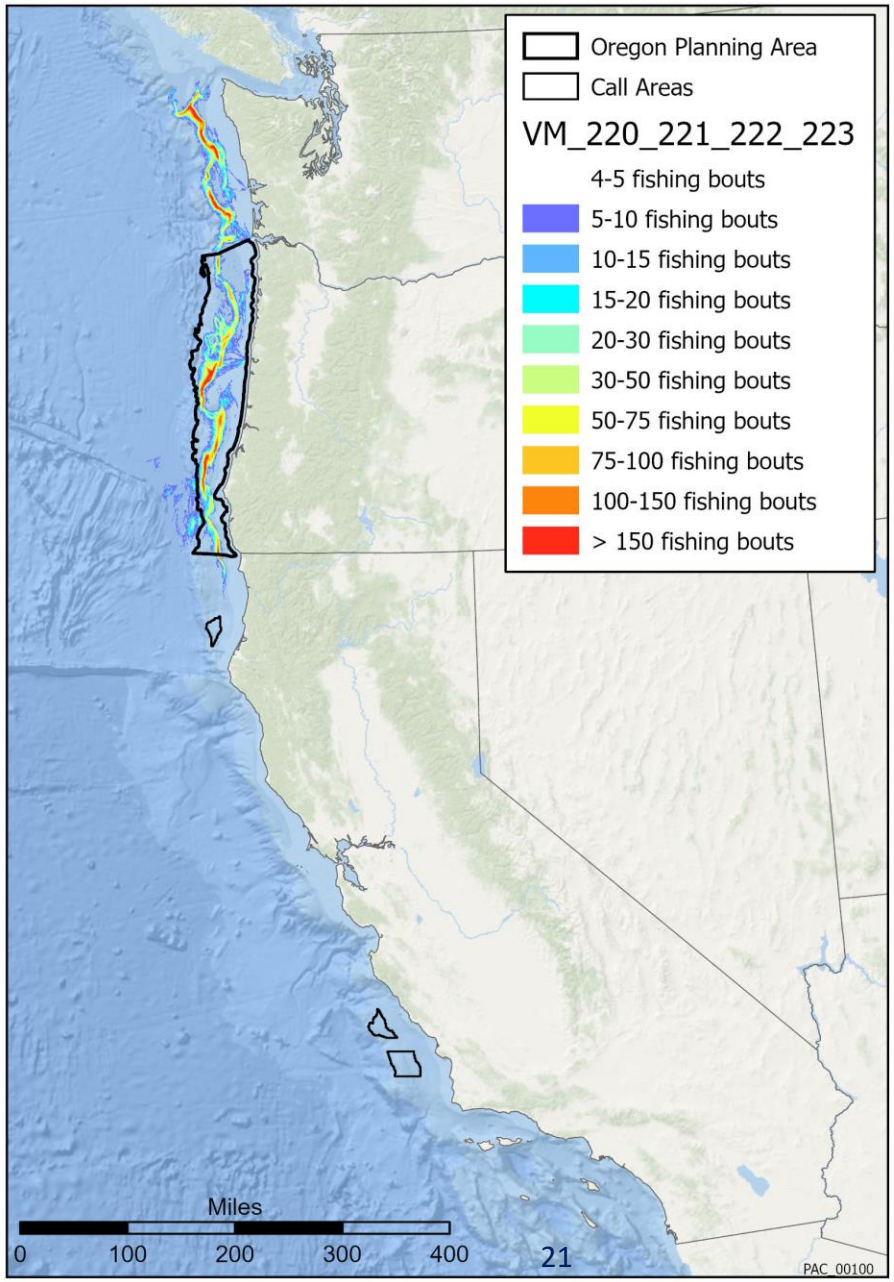


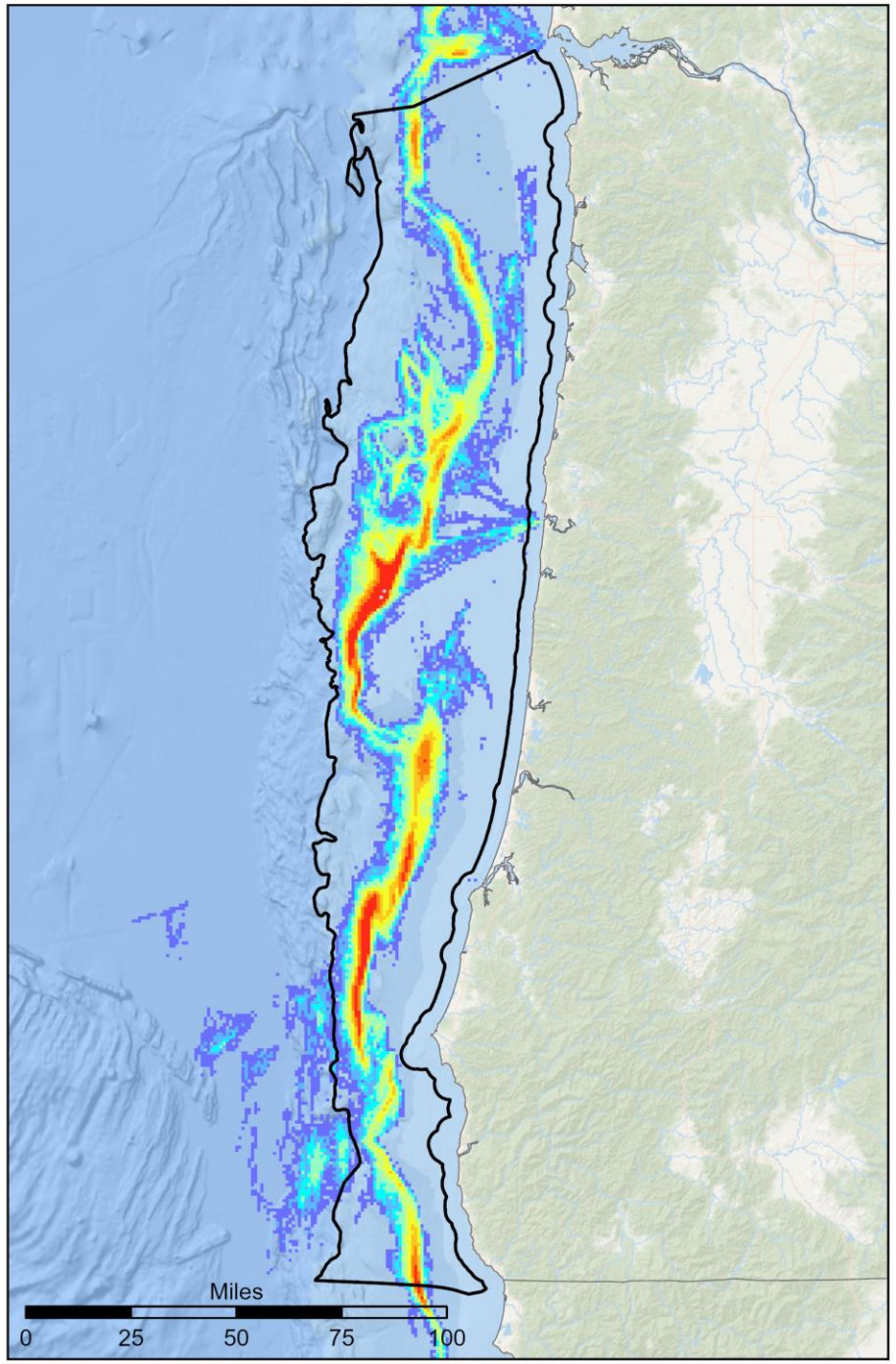


*Smaller fishing vessels are not required to have AIS

VMS

Midwater Trawl 220-223
2010-2018



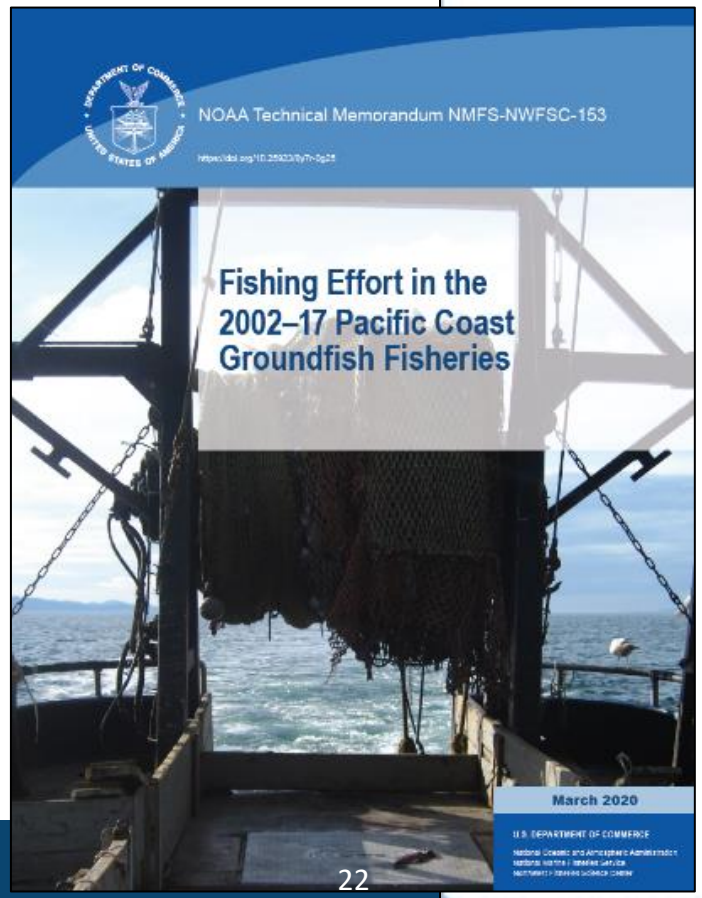


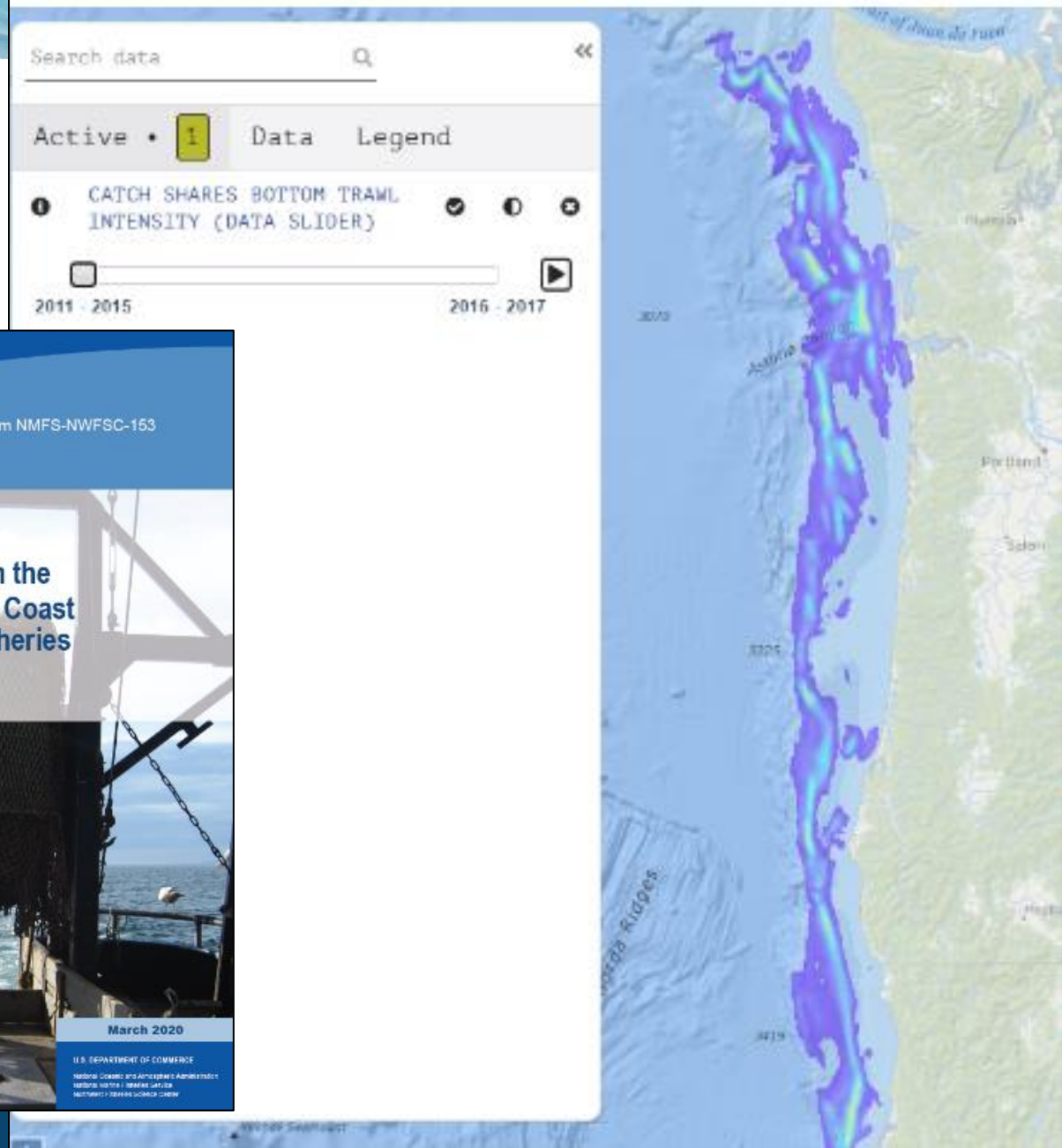
Fishing Effort in the 2002–17 Pacific Coast Groundfish Fisheries

National Marine Fisheries Service
Northwest Fisheries Science Center
March 2020

Input Data

- Observers
  - WCGOP
  - A-SHOP
- State Logbooks
- Fish Tickets





https://repository.library.noaa.gov/view/noaa/23712

Community Mapping

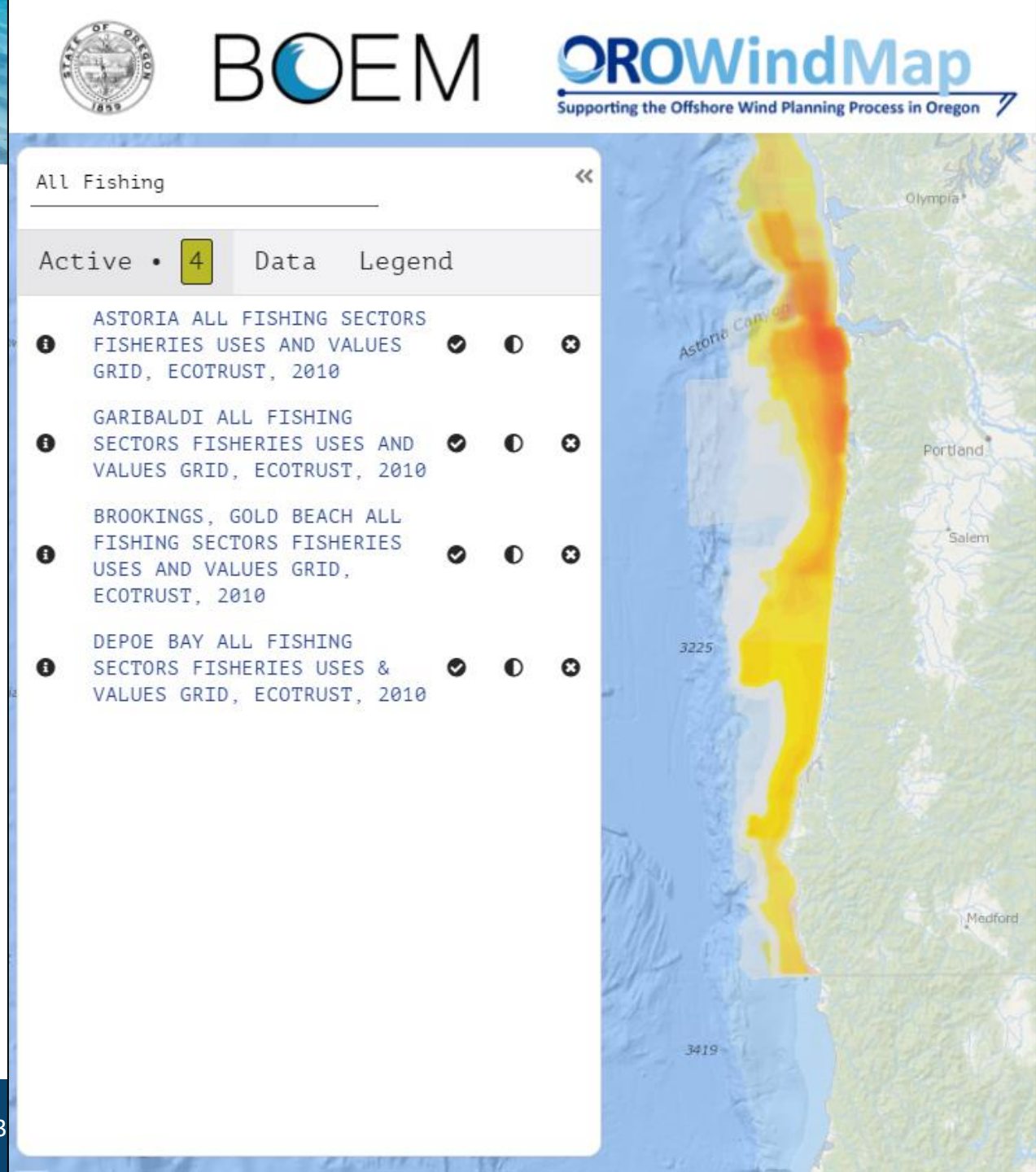
Territorial Sea Plan

Participatory mapping

Areas ranked by fishers

Data owned by fishers

By port



Bird Data

Survey Type

- Observers (Ships)
- Observers (Aerial)
- Aerial Photos

Models

- Habitat Maps

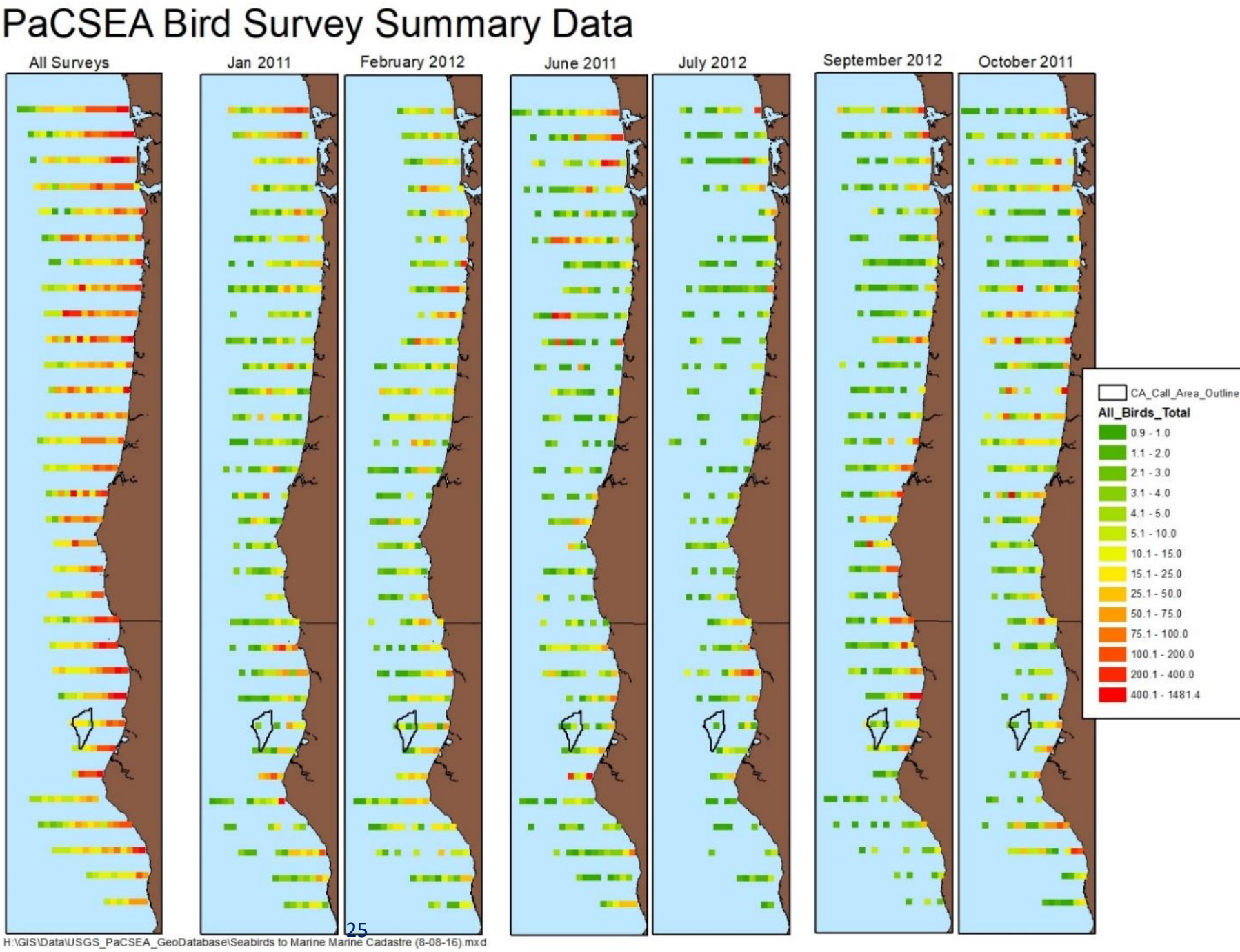
Bird Data

Aerial Surveys

USGS, BOEM

2011 and 2012

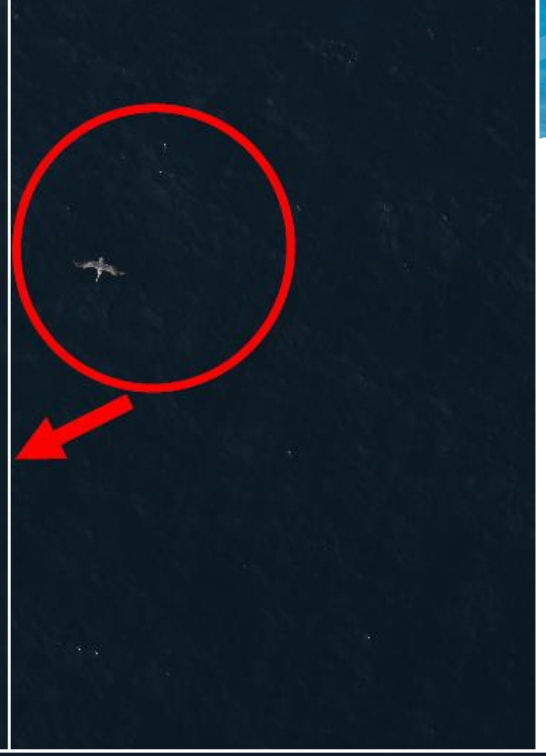
6 Surveys

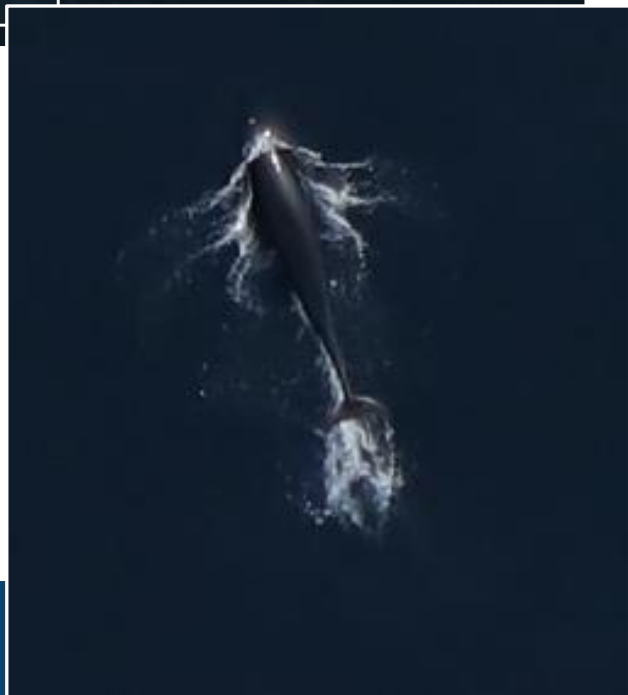


Bird Data

Aerial Photos

- Fly High = Cover More Area
- Permanent Record
- Artificial Intelligence

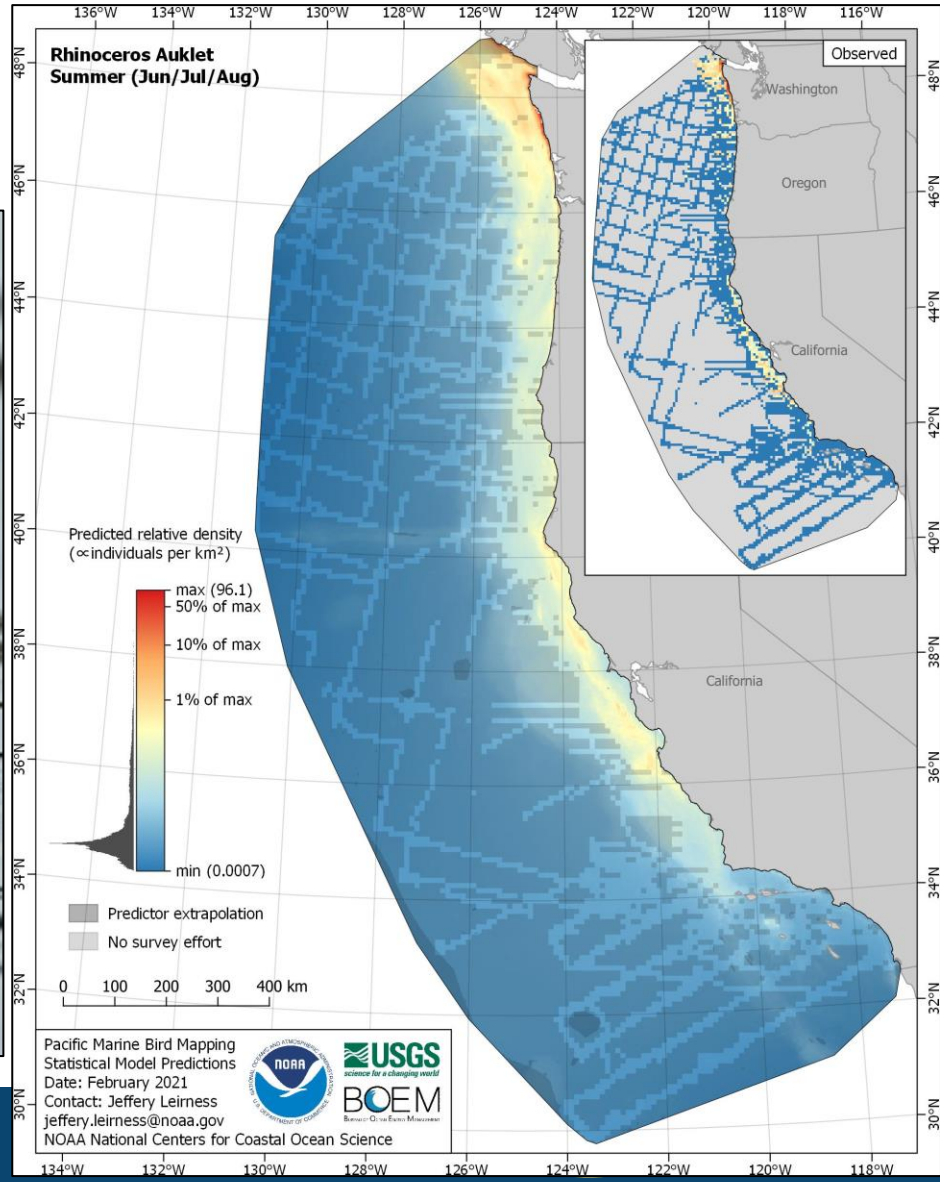




Data Synthesis and Predictive Modeling – Products

Variables for Predictive Models

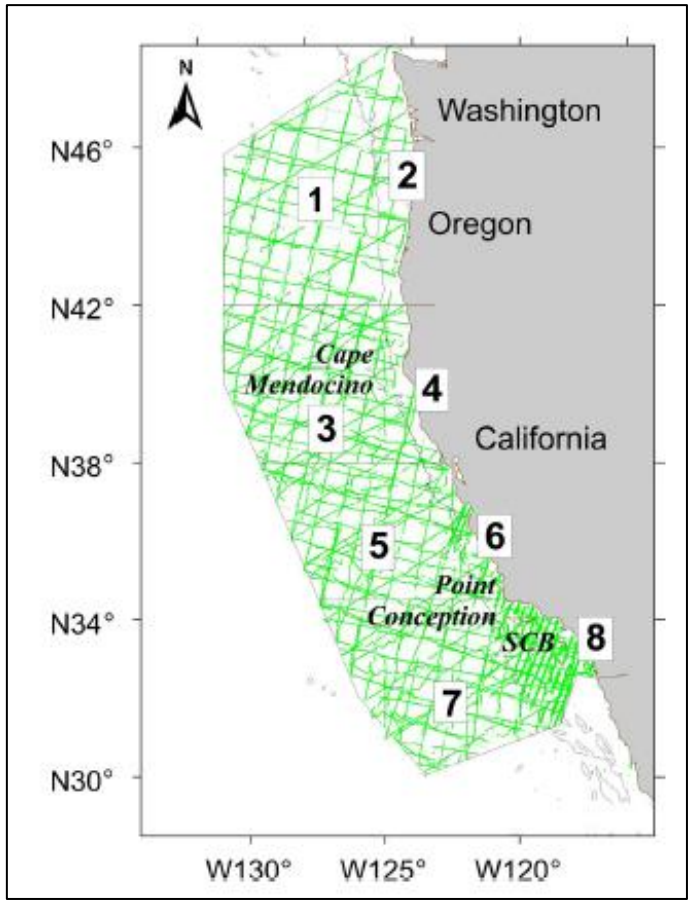
- Time of year
- Latitude
- Depth / Slope / Dist to Shore
- Currents
- Temperature / Salinity
- Chlorophyll
- Etc, etc, etc

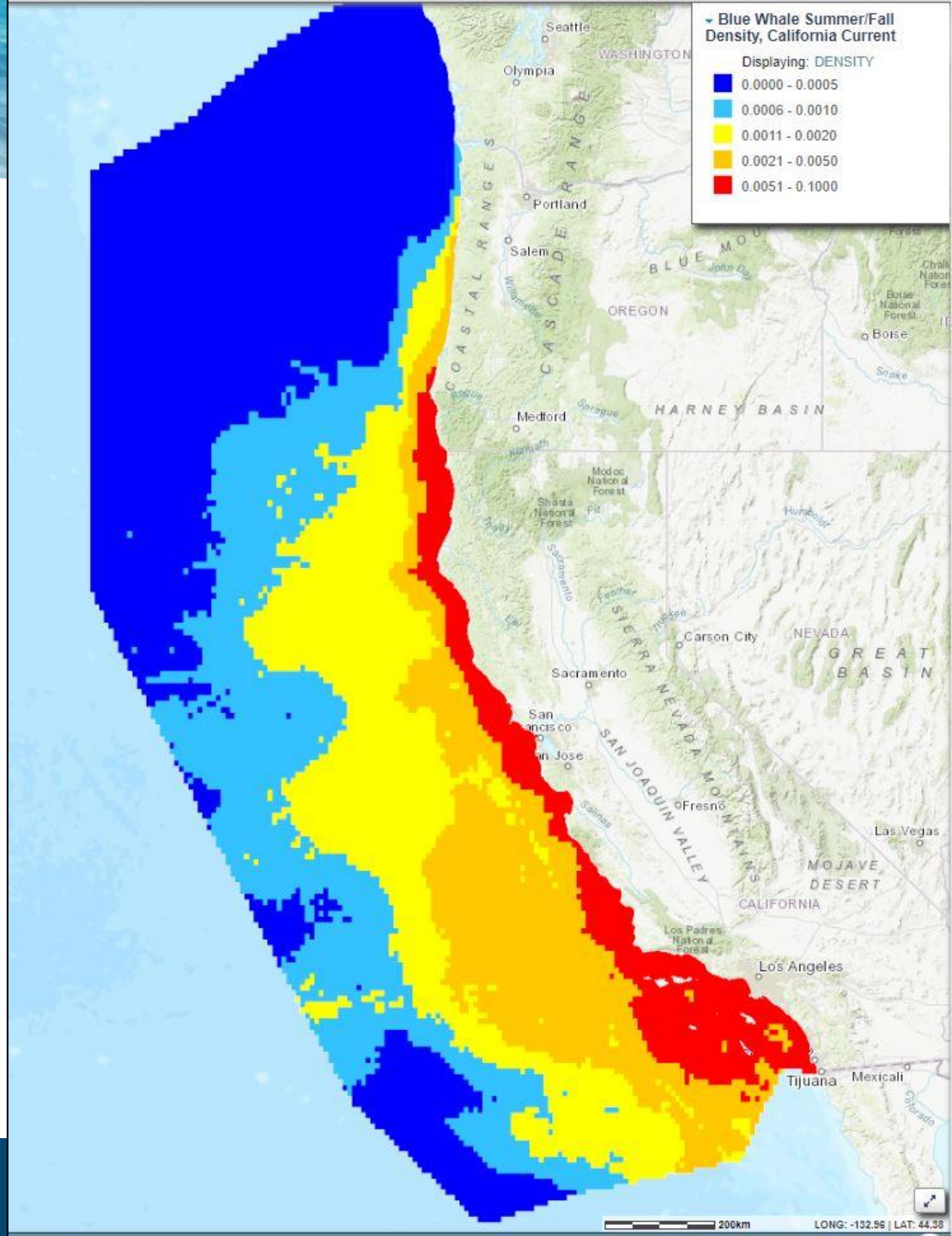


Marine Mammals

Whales and Dolphins

NOAA NMFS
Jul – Dec
1991-2014
(8 Surveys)





Becker EA, Carretta JV, Forney KA, et al. Performance evaluation of cetacean species distribution models developed using generalized additive models and boosted regression trees. *Ecol Evol*. 2020;00:1–28. https://doi.org/10.1002/ece3.6316

Oregon Ocean Data Catalog and Oregon Offshore Wind Mapping Tool (OROWindMap)

Andy Lanier, Marine Affairs Coordinator
Oregon Department of Land Conservation and Development

Offshore Wind Data Catalog Organizational Plan

Oregon Data Catalogs +

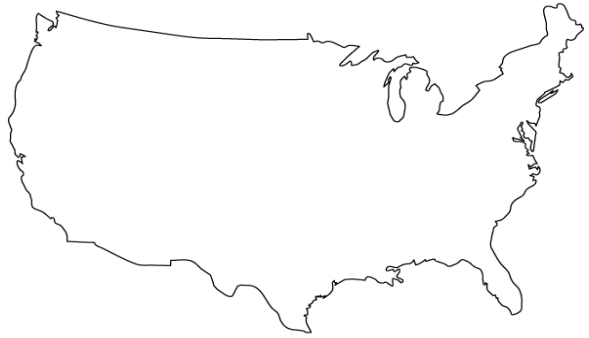
Coastal and Marine Data

- Oregon Coastal Atlas
- Oregon Ocean Information

Oregon Statewide GIS Data Catalog

- Oregon Spatial Data Library
- Oregon Explorer (ORESA Project)

Federal Data Catalogs



- **Marine Cadastre**
- **Ocean Reporting Tool**
- **Digital Coast**
- **NOAA Fisheries (FRAM)**
- **NREL Data Catalog**
- **Ocean Observing Initiative**
- **USGS**
- **…and many more**

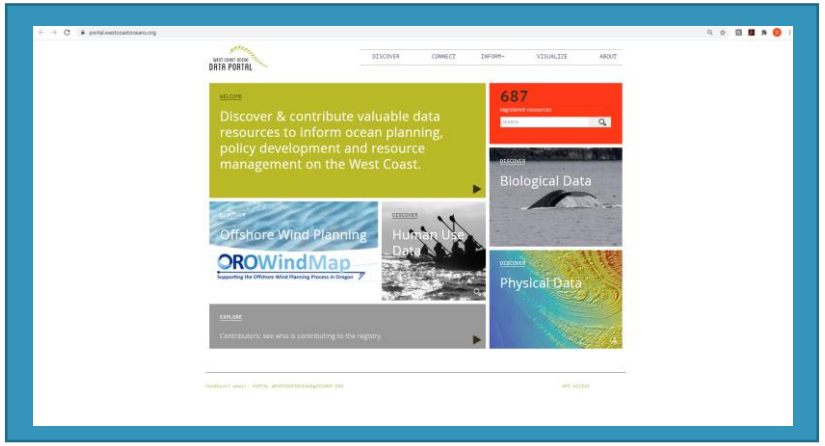
Curated Offshore Wind Catalog

WEST COAST OCEAN DATA PORTAL

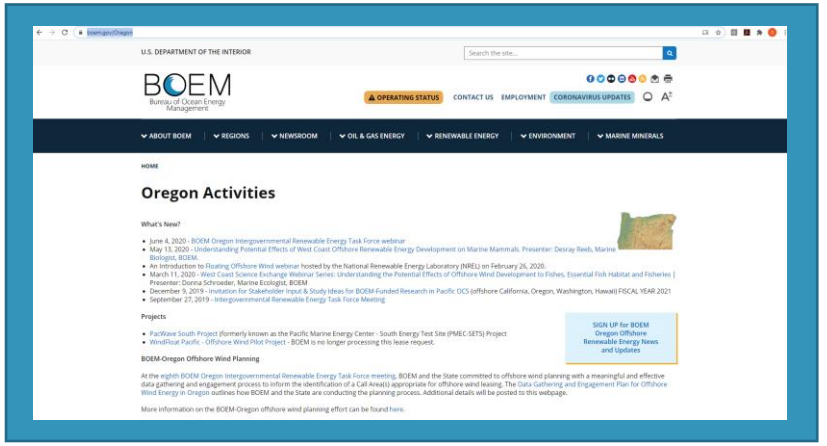
Offshore Wind Catalog (Combination of Records from Oregon and Federal Data Catalogs)

Discover the OROWindMap Tool

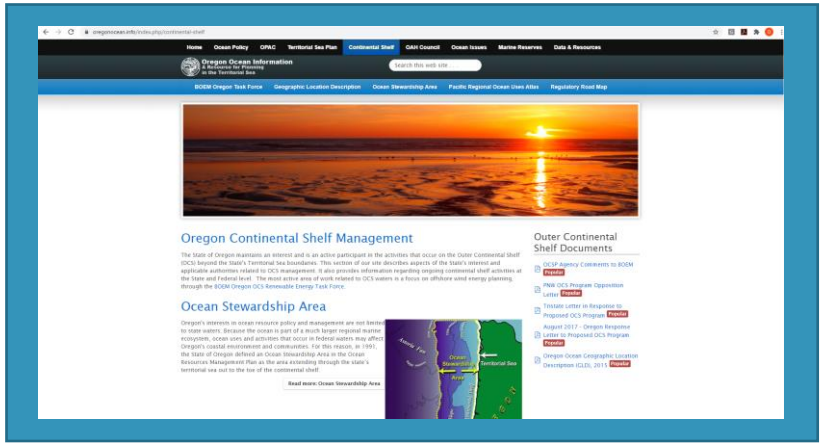
Regional Ocean Data Portal Website



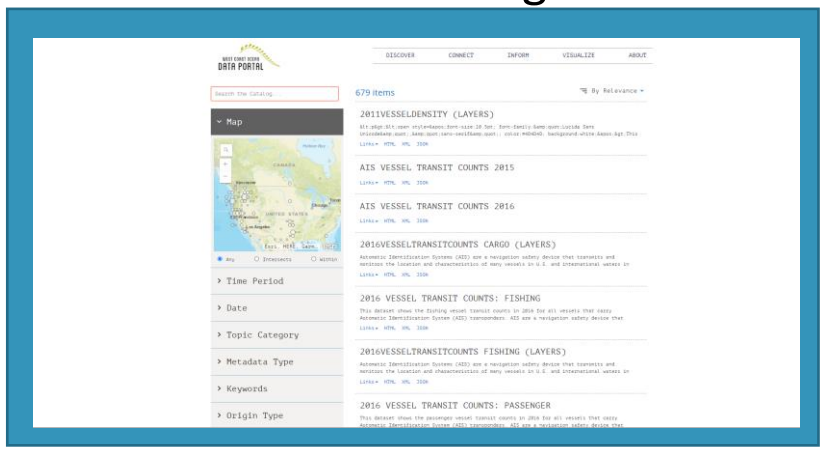
BOEM Website



Oregon Ocean Planning Website

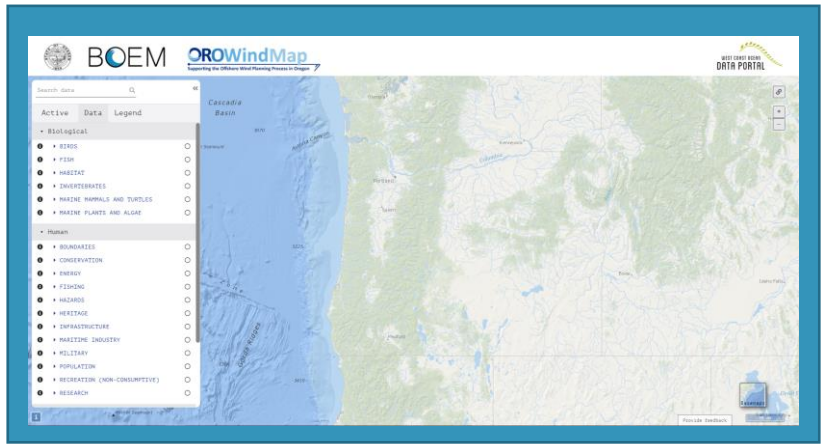


Data Catalog



https://portal.westcoastoceans.org/catalog/

Mapping Tool



https://offshorewind.westcoastoceans.org/

Offshore Wind Planning Data Catalog (In Progress)

WEST COAST OCEAN DATA PORTAL

DISCOVER INFORM VISUALIZE ABOUT

Any Intersects Within

› Time Period

› Date

⌄ Hierarchical Category

- Biological (285)
- Human (458)
  - Economy (186)
    - Fishing (141)
    - Maritime Industry (36)
    - Energy (7)
    - Recreation \(Non\-Consum
  - Boundaries (101)
  - Management (119)

<p><span style='font-size:10.5pt; font-family:"Lucida Sans Unicode","sans-serif"; color:#4D4D4D; background:white;'>This

Links HTML XML JSON

AIS VESSEL TRANSIT COUNTS 2015

Links HTML XML JSON

AIS VESSEL TRANSIT COUNTS 2016

Links HTML XML JSON

2016VESSELTRANSITCOUNTS CARGO (LAYERS)

Automatic Identification Systems (AIS) are a navigation safety device that transmits and monitors the location and characteristics of many vessels in U.S. and international waters in real-time.

Links HTML XML JSON

2016 VESSEL TRANSIT COUNTS: FISHING

This dataset shows the fishing vessel transit counts in 2016 for all vessels that carry Automatic Identification System (AIS) transponders. AIS are a navigation safety device that transmits and

Links HTML XML JSON

2016VESSELTRANSITCOUNTS FISHING (LAYERS)

Automatic Identification Systems (AIS) are a navigation safety device that transmits and monitors the location and characteristics of many vessels in U.S. and international waters in real-time.

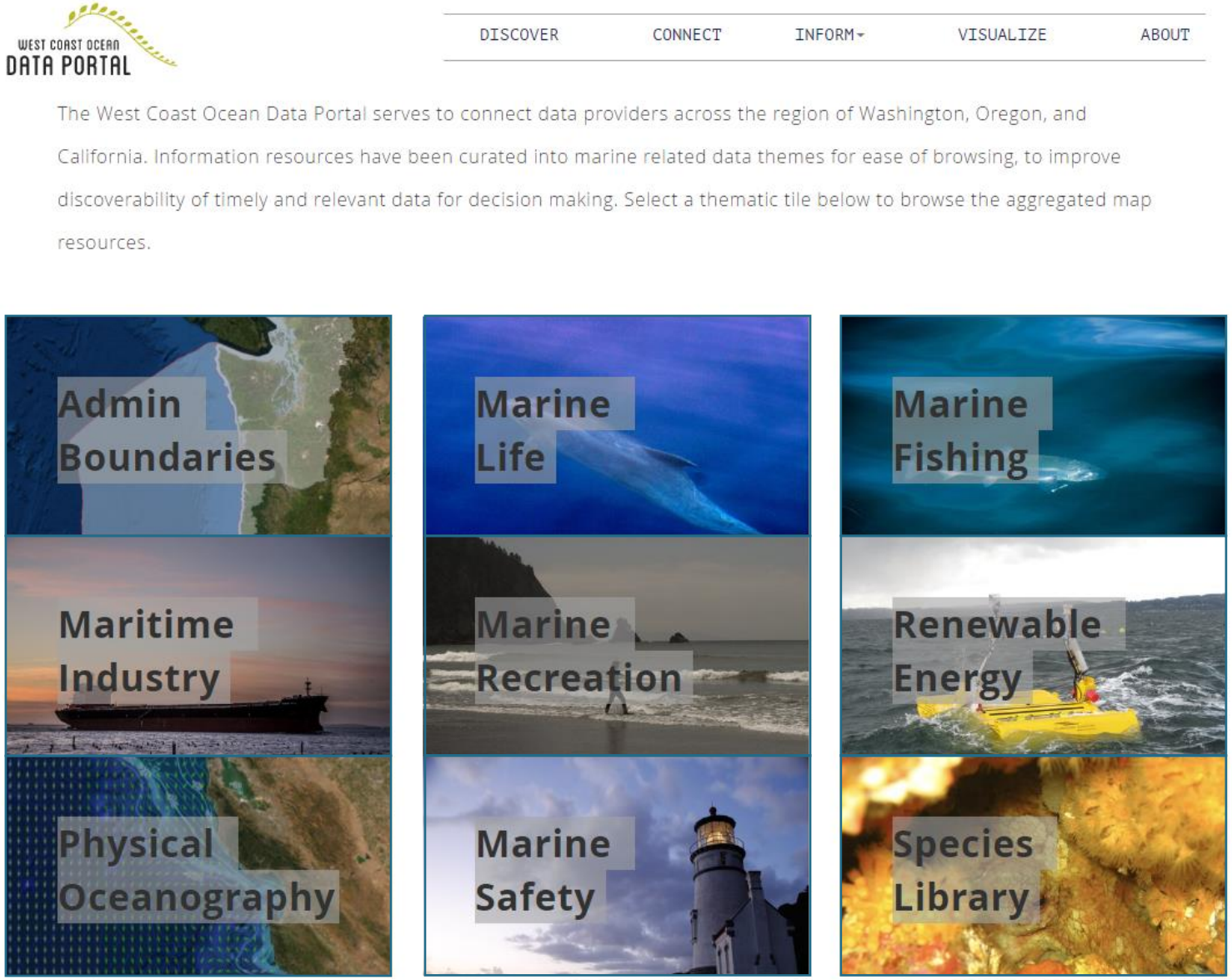
Links HTML XML JSON

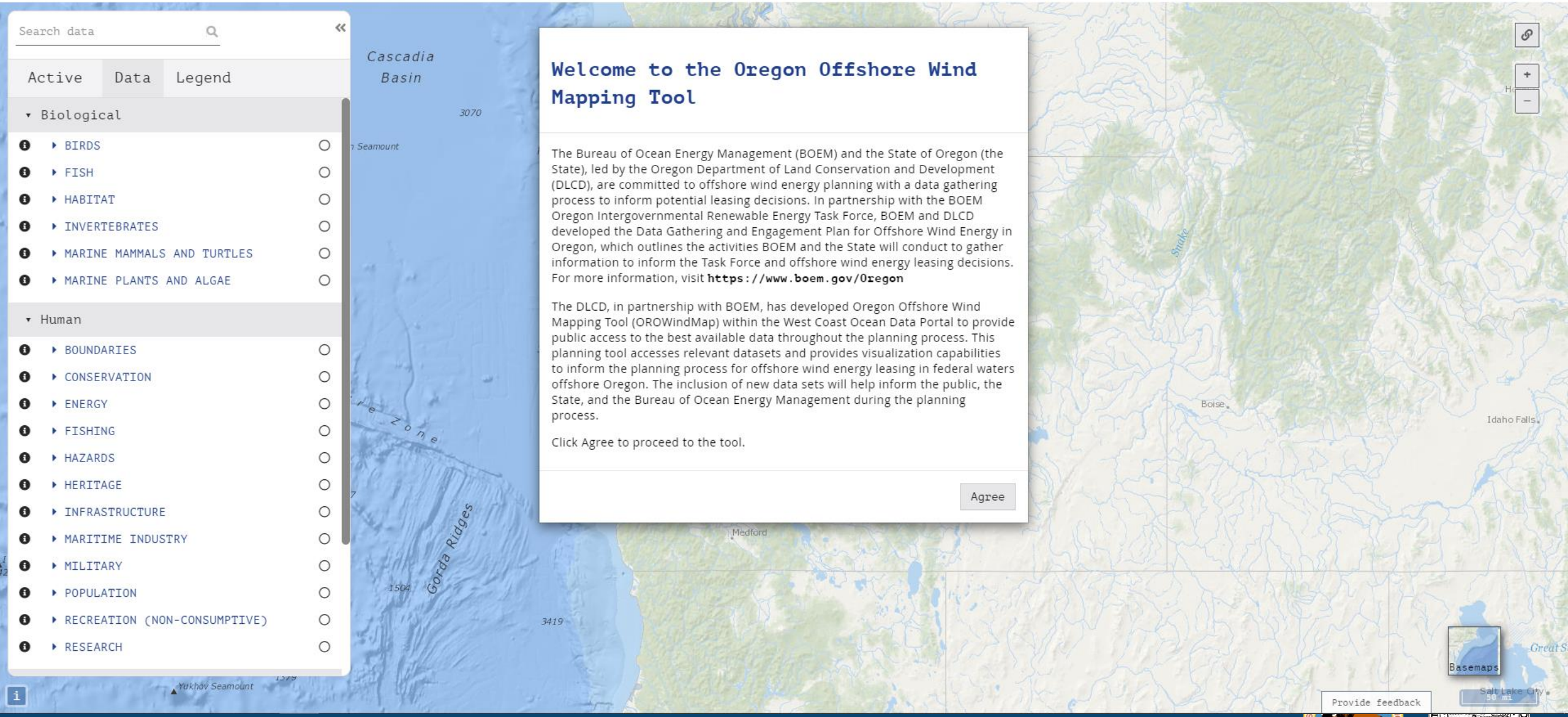
2016 VESSEL TRANSIT COUNTS: PASSENGER

This dataset shows the passenger vessel transit counts in 2016 for all vessels that carry Automatic Identification System (AIS) transponders. AIS are a navigation safety device that

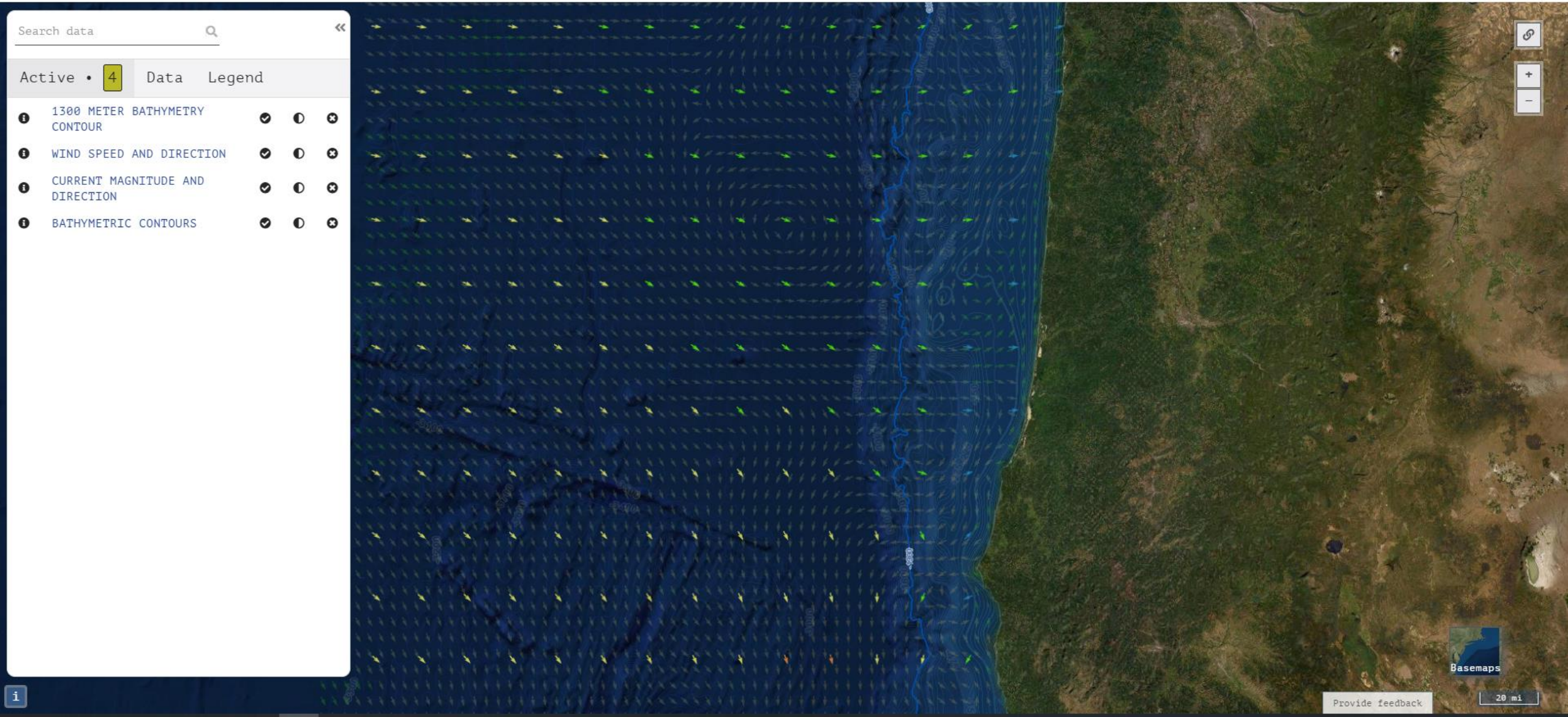
Links HTML XML JSON

2016VESSELTRANSITCOUNTS PASSENGER (LAYERS)


WEST COAST OCEAN
DATA PORTAL
DISCOVER
CONNECT
INFORM
VISUALIZE
ABOUT
The West Coast Ocean Data Portal serves to connect data providers across the region of Washington, Oregon, and California. Information resources have been curated into marine related data themes for ease of browsing, to improve discoverability of timely and relevant data for decision making. Select a thematic tile below to browse the aggregated map resources.
Admin Boundaries
Marine Life
Marine Fishing
Maritime Industry
Marine Recreation
Renewable Energy
Physical Oceanography
Marine Safety
Species Library
Feedback? email: PORTAL.WESTCOASTOCEANS@SCCWRP.ORG
API ACCESS

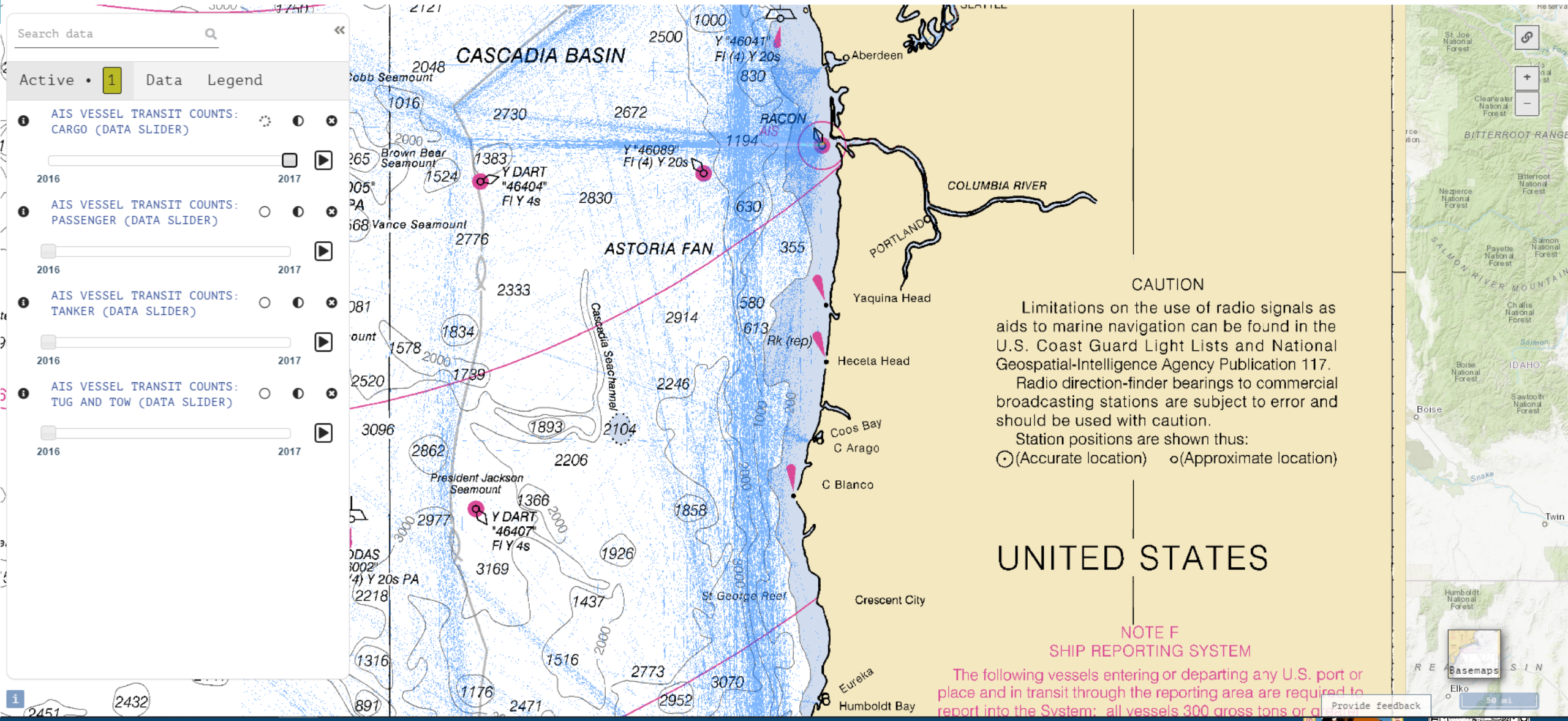

Search data
Active
Data
Legend
Biological
BIRDS
FISH
HABITAT
INVERTEBRATES
MARINE MAMMALS AND TURTLES
MARINE PLANTS AND ALGAE
Human
BOUNDARIES
CONSERVATION
ENERGY
FISHING
HAZARDS
HERITAGE
INFRASTRUCTURE
MARITIME INDUSTRY
MILITARY
POPULATION
RECREATION (NON-CONSUMPTIVE)
RESEARCH
Cascadia Basin
3070
Gorda Ridges
1504
3419
Yukhov Seamount
Welcome to the Oregon Offshore Wind Mapping Tool
The Bureau of Ocean Energy Management (BOEM) and the State of Oregon (the State), led by the Oregon Department of Land Conservation and Development (DLCD), are committed to offshore wind energy planning with a data gathering process to inform potential leasing decisions. In partnership with the BOEM Oregon Intergovernmental Renewable Energy Task Force, BOEM and DLCD developed the Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon, which outlines the activities BOEM and the State will conduct to gather information to inform the Task Force and offshore wind energy leasing decisions. For more information, visit https://www.boem.gov/Oregon
The DLCD, in partnership with BOEM, has developed Oregon Offshore Wind Mapping Tool (OROWindMap) within the West Coast Ocean Data Portal to provide public access to the best available data throughout the planning process. This planning tool accesses relevant datasets and provides visualization capabilities to inform the planning process for offshore wind energy leasing in federal waters offshore Oregon. The inclusion of new data sets will help inform the public, the State, and the Bureau of Ocean Energy Management during the planning process.
Click Agree to proceed to the tool.
Agree
Boise
Idaho Falls
Medford
Salt Lake City
Basemaps
Provide feedback

Bathymetry, Winds, & Currents



Marine Mammals: Cetaceans & Pinnipeds

Maritime Industry & Nautical Chart Basemaps



Visual Resource Management

Portal Development Next Steps

Data Catalog

- Data Library Pages (for browsing the catalog)
- Data Updates for:
  - Marine Birds Predictive Models (NOAA, USGS, BOEM)
  - Marine Mammals Predictive Models (NOAA)
  - West Coast Fisheries Closures (CSUN)
  - Planning Analysis layer (CSUN)

Software Upgrades

- Area Calculation Tool
- Individual Logins
- User Groups

Got Data?

What?

Ocean Characteristics

Biological, Physical, Human Use

Where?

Oregon, West Coast

Geospatial

Ideal, but not required

Geospatial Service

Metadata

How was it made?

Where does it live?

www.boem.gov/OROWindMapInfo

BOEM Bureau of Ocean Energy Management

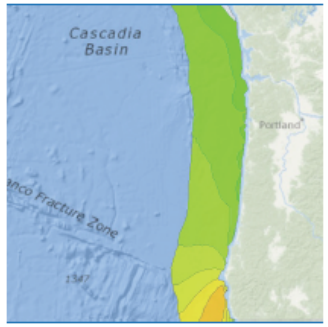
BOEM Bureau of Ocean Energy Management | West Coast Ocean Data Portal

Data Sharing for Oregon Offshore Wind Planning

The Bureau of Ocean Energy Management (BOEM) and the State of Oregon (the State), led by the Oregon Department of Land Conservation and Development (DLCD), are committed to offshore wind energy planning with a data gathering process to inform potential leasing decisions. In partnership with the BOEM Oregon Intergovernmental Renewable Energy Task Force (Task Force), BOEM and DLCD developed the *Data Gathering and Engagement Plan for Offshore Wind Energy in Oregon*, which outlines the activities BOEM and the State will conduct to gather information to inform the Task Force and offshore wind energy leasing decisions. The plan can be found at: www.boem.gov/Oregon.

The DLCD, in partnership with BOEM, is developing a data catalog and map viewer within the West Coast Ocean Data Portal to provide public access to the best available data throughout the planning process. The Oregon Offshore Wind Mapping Tool (OROWindMap), which can be found at https://offshorewind.westcoastoceans.org, has been developed to compile the collected data and information. This powerful planning tool accesses relevant datasets and provides visualization capabilities to inform the planning process for offshore wind energy leasing in federal waters offshore Oregon. The inclusion of new data sets will help inform the public, the State, and the Bureau of Ocean Energy Management during the planning process. Below are the criteria for inclusion of new data sets in OROWindMap.

- Data sets depict coastal and ocean characteristics (e.g., biological, physical) or human uses that are relevant to planning for offshore wind energy development in federal waters offshore Oregon.
- Data sets include the State (and its Territorial Sea) or federal waters offshore Oregon; however, data that encompasses the entire West Coast are ideal.
- Data sets are geospatial, ideally in a GIS format, but may be in a tabular format with coordinates.
- Data sets include standards-compliant metadata. The basic information required for metadata is outlined below, and more information can be found at http://wcodp.readthedocs.io/.



If there is an information product that is relevant to this process but is not geospatial or tabular, please contact the West Coast Ocean Data Portal (WCODP) Administrator at portal.westcoastoceans@sccwrp.org.

Metadata help document the details of data sets, including who created it, when it was created, and why it was created. All data in OROWindMap have, at a minimum, the following metadata associated with them:

- Title
- Abstract / Description
- Use Limitations / Constraints
- Bounding Box Coordinates in Latitude/Longitude (decimal degrees)
- Keywords
- Date Published
- Contacts
  - Originator
  - Publisher
  - Distributor
- URLs for data download, web services, kml, web application, documentation

If the metadata meet the requirements of the Federal Geographic Data Committee (FGDC) endorsed standards (https://www.fgdc.gov/metadata/geospatial-metadata-standards), then it will meet the WCODP requirements.

Data Catalog Review Effort

The State and BOEM are seeking:

Available data and information from research organizations, governmental bodies, environmental groups, OSW industry, and interested and affected parties.

A Data Review Working Group will be convened to gather and review data that identifies existing environmental information and uses to inform OSW planning in Oregon.

Existing archives of data from TSP amendments and other ocean planning related processes will form the foundation of information to build on.

The purpose will be to identify new records for inclusion in the Data Catalog and Data Visualization Tool, and gaps to prioritize for future information gathering.

Virtual meetings likely

Contact Andy Lanier or Frank Pendleton to participate

Meeting Participation Ground Rules

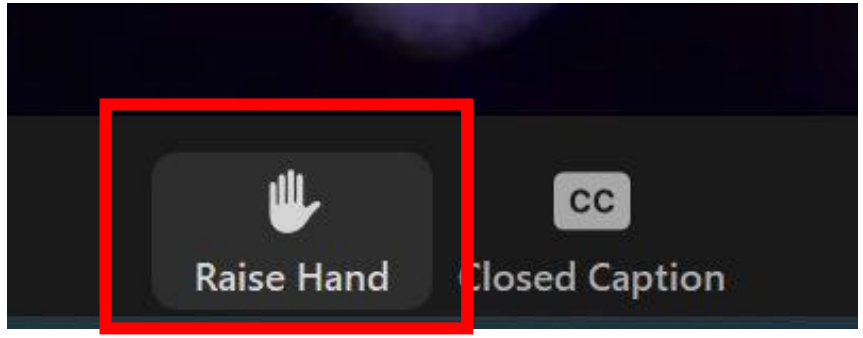
Bring concerns and comments up for discussion during the Q&A

Provide a balance of speaking time during Q&A

Listen and speak with respect

Use "Raise Your Hand" button to get in the queue; if joined by phone, press *9 to raise hand

- When it is your turn to speak, the facilitator will call on you
- Say your name and affiliation before speaking



Discussion and Next Steps

Explore OROWindMap at offshorewind.westcoastoceans.org

Share relevant data (see www.boem.gov/OROWindMapInfo)

Stay informed and connected about Oregon offshore wind activities and any scheduled Task Force meetings

- Visit the BOEM Oregon webpage at www.boem.gov/Oregon
  - Publicly available standing meetings
  - Save the date: BOEM Oregon Public Meetings, May 12 & 13, 2021
- Sign up for announcements at www.boem.gov/OregonUpdates

Let Whitney Hauer (whitney.hauer@boem.gov) and Andy Lanier (andy.lanier@state.or.us) know if there are other organizations, groups, or members of the public that BOEM and DLCD should engage with for offshore wind energy planning

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