Summary of MARCO Data Layers

ADMINISTRATIVE DATA

OCS Administrative Boundary — These boundaries provide a basis for more accurate delineation of OCS planning areas; assist in determining affected state status under the Coastal Zone Management Act and OCS Lands Act; and assist in the section 18 comparative analysis to determine an equitable sharing of developmental benefits and environmental risks among regions. Source: BOEMRE

MMS Protraction Diagram — Official Protraction Diagrams are used for determining Requests for Information, Federal Notice of Sales, bidding on potential lease areas, and final sale documentation. Source: BOEMRE

OCS Block — Gridded area bound by the Submerged Lands Act and Exclusive Economic Zone. Lease block cells are used for fixed area leasing to companies for rights to mineral excavation. Source: BOEMRE

Marine Jurisdiction

- State Seaward Boundary
- Revenue Sharing Boundary
- Territorial Sea
- Contiguous Zone
- Exclusive Economic Zone

Marine jurisdictions encompass the collection of U.S. marine boundaries and limits used to delimit the extent of the nation's sovereignty, exclusive rights, jurisdiction, and control over the maritime areas off its coast. Includes Submerged Lands Act, Limit of the '8(g) Zone', Territorial Sea, Contiguous Zone, and the Exclusive Economic Zone. Source: BOEMRE

Wind Energy Areas — Secretary Salazar announced the Department of the Interior's "Smart from the Start" initiative on November 23, 2010. A critical element of this initiative is the identification of Wind Energy Areas (WEA) on the Outer Continental Shelf (OCS) off the Atlantic coast. WEAs are offshore locations that appear most suitable for wind energy development. Secretary Salazar identified the WEAs on February 7, 2011 in a joint announcement with Secretary Chu of the U.S. Department of Energy as part of the National Strategic Work Plan for Offshore Wind. Source BOEMRE

Regional Ocean Councils

South Atlantic, Mid-Atlantic, Northeast — These are unofficial boundaries of the three regional ocean councils on the U.S. East Coast. Source: NOAA

BIOLOGICAL DATA

Artificial Reefs — These are polygon locations of Mid-Atlantic artificial reefs. They were compiled from various sources, primarily lat/long coordinates of reef corners found on public web sites. Source: Compiled by The Nature Conservancy from each state

2001-2003 Waterbird Survey

Bird Density per sq. km
- 0.0 - 2.0
- 2.1 - 10.0
- 10.1 - 25.0
- 25.1 - 100.0
- 100.1 - 2395.8

This layer contains waterbird density blocks that are based on a U.S. Fish & Wildlife Service aerial survey conducted between December, 2001 and March, 2003. Densities were calculated for the sum of all species observed on specific transects. Source: USFWS

EFH Overlay

Number of Overlapping EFH
- 1 - 2
- 3 - 4
- 5 - 6
- 6 - 9
- 10 - 16

This particular layer represents an overlay of EFH polygons for numerous species. The Nature Conservancy obtained individual EFH layers from NOAA. The layers presented here do not represent EFH for individual species but rather the number of overlapping EFH in any given location. Sources: The Nature Conservancy, NOAA

Benthic Habitats

Click here for detailed legend

Benthic habitats are based on Ecological Marine Units (EMUs), which represent the three-way combination of depth, sediment grain size and seabed forms based on the ecological thresholds revealed by the organism relationships. Benthic habitats are combinations of EMUs considered with their species assemblages. The signature of a benthic habitat type may be a combination of multiple EMUs. Thresholds were created by classifying grab samples into organism groups based on similarities in the composition and abundance of the benthic species using hierarchical cluster analysis. Source: The Nature Conservancy

Endangered Whales

Sightings per unit Effort
- 0
- < 10
- 10 - 100
- > 100

Geospatial data obtained from the United States Navy included point shapefiles of valid sightings for numerous marine mammal and turtle species and pre-calculated effort grids for each season. Sightings data were taken from NMFS-NEFSC Aerial Surveys, NMFS-NEFSC Shipboard Surveys, and the North Atlantic Right Whale Consortium database. The validity of sightings was carefully screened and verified by United States Navy contractors before inclusion in the model. Invalid records were not included in the analysis. Sightings for each ten minute square were divided by the effort for each ten minute square to calculate Sightings Per Unit Effort (SPUE). SPUE was calculated for each species, for each season, and for each ten minute square. Source: The Nature Conservancy and U.S. Navy

HUMAN USE DATA

Fishing Effort (All Gear Types)
- 0 - 50 days/year
- 50.1 - 100 days/year
- 100.1 - 250 days/year
- 250.1 - 500 days/year
- 500.1 - 1345 days/year

Fishing Effort (Bottom Contacting Mobile Gear)
- 0 - 50 days/year
- 50.1 - 100 days/year
- 100.1 - 200 days/year
- 200.1 - 300 days/year
- 300.1 - 733 days/year

Fishing Effort (Pelagic Gear)
- 0 - 10 days/year
- 10.1 - 25 days/year
- 25.1 - 50 days/year
- 50.1 - 75 days/year
- 75.1 - 141 days/year

Summer Flounder Landings
- 0
- 0.1 - 5,000 pounds/year
- 5,000.1 - 25,000 pounds/year
- 25,000.1 - 50,000 pounds/year
- 50,000.1 - 142,117 pounds/year

This is an extract of Fishing Vessel Trip Report (FVTR) data that The Nature Conservancy compiled from raw data received from the National Marine Fisheries Service (NMFS). The owner/operator of a vessel issued a federal fishery permit with FVTR requirements is required to submit FVTRs for each trip taken. The National Marine Fisheries Service requires this information for the conservation and management of marine fishery resources in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. The data reported are used to develop, implement, and monitor fishery management strategies and for a variety of other uses.

Reported information includes fishing effort, location and gear type for each trip, among other information. This particular data set represents fishing effort (days fished) and landings for one species (summer flounder) compiled by ten-minute square (areas that are 10 minutes of longitude by 10 minutes of latitude) for a 10-year period (2000-2009). The fishing effort data are broken down by various gear types. In the MARCO portal the data are displayed for a sum of all gear types, for a sum of all bottom contacting mobile gear (mostly dredges and bottom trawls) and for a sum of pelagic gear types.

Source: National Marine Fisheries Service

Estimated Commercial Shipping Density

Higher

Lower

This is an extract of a global data set on commercial ship traffic. Ships from many countries voluntarily participate in collecting meteorological data globally, and therefore also report the location of the ship. This location data was compiled to a 1 km resolution raster to give an estimate of the commercial shipping footprint in the world's oceans.
Source: National Center for Ecological Analysis and Synthesis

Submarine Cables

This shows cables that have been laid underwater or buried beneath the seabed.
Source: NOAA ENC Direct to GIS web portal

Ship Traffic Separation Zones

A traffic separation zone is a zone separating the lanes in which ships are proceeding in opposite or nearly opposite directions; or separating traffic lanes designated for particular classes of ships proceeding in the same direction.
Source: NOAA ENC Direct to GIS web portal

GEOPHYSICAL DATA

Major Canyons

This data layer represents major canyons of the Mid-Atlantic Coast. Canyon names come from NOAA charts and other various sources. These boundaries were created primarily for cartographic purposes and do not represent ecological boundaries.
Source: The Nature Conservancy

Vulnerability to Sea Level Rise

Low
High
Moderate
Very High

The goal of this data layer is to provide a preliminary overview, at a National scale, of the relative susceptibility of the Nation's coast to sea-level rise through the use of a coastal vulnerability index (CVI). This initial classification is based upon the variables geomorphology, regional coastal slope, tide range, wave height, relative sea-level rise and shoreline erosion and accretion rates. The combination of these variables and the association of these variables to each other furnish a broad overview of regions where physical changes are likely to occur due to sea-level rise. Source: USGS

20, 50 & 100 Fathom Depth Lines

These are included for general reference and are derived from the bathymetry data described below.
Source: The Nature Conservancy and NOAA

Estimated Mean Annual Wind Speed

Speed at 90m (m/s)

< 7.0
7.0 - 7.5
7.5 - 8.0
8.0 - 8.5
8.5 - 9.0
9.0 - 9.5
9.5 - 10.0

Annual average wind speeds are closely related to the available energy at a particular location and are categorized in these data by their value at a height of 90 meters above the surface. The data were created by the National Renewable Energy Laboratory (NREL) and AWS Truepower. Wind speed data for all of the MARCO states was created as part of onshore wind mapping projects. Speed data was extrapolated to 50 nautical miles offshore by NREL. The 90 m wind speed was calculated by a linear interpolation between 70 m and 100 m wind speeds. Source: National Renewable Energy Laboratory

Estimated sediment grain size (mm)

0 - 0.03
0.03 - 0.17
0.17 - 0.35
0.35 - 0.36
0.36 - 0.48
> 0.48

This layer was created from interpolation of usSEABED point data. usSEABED's averaged grain-size for each sample produced a robust interpretation of sediment texture, showing local variation as well as large-scale patterns. The point samples were interpolated using the Kriging interpolation method in ArcGIS to create surfaces representing the area between sample points at a cell size of 500 meters. Source: The Nature Conservancy and USGS

Seabed form

Depression
High Flat
High Slope
Low Slope
Mid Flat
Side Slope
Steep

Seabed forms classify seafloor topography into discrete units. Derived from The Nature Conservancy's derived digital bathymetry, seabed forms can be described by a combination of just two variables: seabed position and slope. Seabed position (also referred to as topographic position or slope position) describes the topography of the area surrounding a particular cell. The seabed position calculations are based on Fels and Zobel's (1995) method, which evaluates the elevation differences between the model cell and the surrounding cells within a specified distance. Source: The Nature Conservancy

Depth (meters)

0 - 10
10 - 20
20 - 50
50 - 100
100 - 200
200 - 500
500 - 1,000
1,000 - 2,000
> 2,000

Bathymetry data is primarily from the National Geographic Data Center's Coastal Relief Model (CRM). It was augmented with data from the NOS Bathymetric & Fishing Maps (BFM).
Source: The Nature Conservancy and NOAA

DECISION SUPPORT DATA (under development)

50 Mile Shoreline Buffer

This is a line representing a 50 mile buffer from the Mid-Atlantic shoreline. It was created because of policy implications that could keep potential oil and gas drilling more than 50 miles offshore in the Mid-Atlantic. Currently Virginia has a 50 mile buffer requirement for oil and gas as its official policy. Source: The Nature Conservancy

OCS Blocks / Artificial Reefs Intersection

This represents OCS blocks that intersect artificial reefs in the Mid-Atlantic. Any full OCS block that touches an artificial reef boundary is included. Source: The Nature Conservancy

STATE DATA

Maryland Shoals

These are shoal boundaries off the coast of Maryland created by the Maryland Geological Survey (MGS). An attribute detailing their potential for sand mining is also included. Source: Maryland Geological Survey

Sand Mining Conclusion

- Recommended Borrow Source
- Excluded or Rejected
- Not Studied

New Jersey Ocean/Wind Power Ecological Baseline Study data Source: New Jersey Department of Environmental Protection

Marine Mammal & Turtle Sightings

- Fin Whale
- Humpback Whale
- North Atlantic Right Whale
- Other Marine Mammal
- Turtle

This layer includes marine mammal and sea turtle sightings in the New Jersey study area. These observations were recorded from offshore ship surveys and aerial surveys during January 2008 through December 2009.

Density Distribution for Total Birds

#/km^2, All Behavior, Overall

- 80-100%
- 60-79%
- 40-59%
- 20-39%
- < 20%

Areas of high-avian density were identified based on a ranking procedure, in which the individual grid boxes with non-zero densities (i.e., those grid boxes with at least one bird sighting) were ranked in the order of highest to lowest total density, and those grid boxes that rank in the top 20 percent of all non-zero-density grid boxes were designated as high-density grid boxes (i.e., regions of high avian density).

Environmental Sensitivity
(For All Marine Mammals and Threatened & Endangered Marine Mammals)

- 1 (Lower)
- 2 (Medium)
- 3 (Higher)

The sensitivity index was developed from data collected during field studies, through review of published literature, and from resource agencies such as NJDEP, NOAA, NMFS, and MMS. The resources considered for the index include: artificial reefs, marine protected areas (MPAs), shoals, habitat areas of particular concern (HAPCs), EFH, known obstructions, known shipwrecks, unexploded ordnance (UXO), shipping lanes, utility cables, commercial fishing grounds, recreational fishing grounds, modeled avian and marine mammal density data, and sea turtle sightings per unit effort data.

Overall Environmental Sensitivity

- Higher
- Lower