

Tug and Tow Monthly Vessel Density from - 2013 AIS
Northeast and Mid-Atlantic United States

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1. INTRODUCTION

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. This dataset represents the density of tug and towing vessel traffic in 2013 by month from vessels with AIS transponders in 100 meter grid cells. The dataset is best interpreted using a high to low density scale and does not represent actual vessel counts.

This dataset was created using vessel trackline data produced by the National Oceanographic and Atmospheric Administration (NOAA) Office for Coastal Management (OCM). AIS trackline data for 2013 were processed by month into density grids and organized into a raster catalog to use time enabled capabilities.

2. PURPOSE

To support coastal and ocean planning by the Northeast Regional Ocean Council (NROC).

3. SOURCES

- North Atlantic Vessel Tracks 2013, NOAA OCM
- MarineCadastre.gov, <http://marinecadastre.gov/ais/>
- Nationwide Automatic Identification System, United States Coast Guard
- Northeast Regional Ocean Planning White Paper Update: Overview of the Maritime Commerce Sector in the Northeastern United States – Appendix A, [neoceanplanning.org http://neoceanplanning.org/wp-content/uploads/2015/07/Maritime-Commerce-Overview-July-2015.pdf](http://neoceanplanning.org/wp-content/uploads/2015/07/Maritime-Commerce-Overview-July-2015.pdf)

4. DATABASE DESIGN AND CONTENT

Native storage format: ArcGIS File Geodatabase Raster

Columns and Rows: 13312, 13260

Number of Bands: 1

Cell Size: 100 meters

Source Type: generic

Pixel Type: floating point

Pixel Depth: 32 Bit

Dataset Status: Complete

5. SPATIAL REPRESENTATION

Reference System: WGS 1984 Web Mercator Auxiliary Sphere

Horizontal Datum: WGS 1984

Linear Unit: Meter (1.0)

Angular Unit: Degree (0.0174532925199433)

False Easting: 0.0

False Northing: 0.0

Central Meridian: 0.0

Geographic extent: -7318886.8927 to -8650086.8927, 4360927.7857 to 5686927.7857

ISO 19115 Topic Category: environment, oceans, transportation

Place Names:

Atlantic Ocean, Cape Cod Bay, Cape May, Chesapeake Bay, Connecticut, Delaware, Delaware Bay, Georges Bank, Gulf of Maine, Hudson River, Long Island Sound, Maine, Maryland, Massachusetts, Massachusetts Bay, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Rhode Island Sound, United States, Virginia

Recommended Cartographic Properties:

(Using ArcGIS ArcMap nomenclature)

Classification, 8 classes, color mode: HSV

< 0.01:	blue
0.01 – 0.05:	green
0.05 – 0.1:	yellow
0.1 – 0.5:	orange
> 0.5	red

Scale range: Optimal at 1:2,000,000 to 1:500,000

6. DATA PROCESSING

Processing environment: ArcGIS 10.3, Windows 7 Professional, Intel Core i5 CPU

Process Steps	
1	SELECT to extract trackline features where vesselGroup is equal to 'tugTow'
2	SELECT BY ATTRIBUTE to create trackline feature layers for each month using TrackStartTime and TrackEndTime
2	Perform KERNEL DENSITY using Spatial Analyst on NOAA CSC 2011 AIS trackline dataset. Search Radius = 100; Resolution = 100, Units = SQUARE_METERS
3	SET NULL to change all zero values to NoData
4	Create Raster Catalog and load the monthly density grids
5	ADD FIELD and assign date information to Raster Catalog to use time slider capability

7. QUALITY PROCESS

Logical Consistency: No testing was performed on the source trackline data. Data were visually inspected to confirm that the results of the density analysis were reasonable.

Completeness: Data are complete based on all known Nationwide Automatic Identification System records from 2013. Source data were created using the NOAA Trackline Builder tool which created separate trackline features using filter settings for 30 minutes and 1 nautical mile. The gridded raster identifies density based on the results of that analysis.

Positional Accuracy: Horizontal accuracy is dependent on the location of the transmitted AIS locations from GPS and includes errors associated with this technology.

Timeliness: 2013

Use restrictions: NOT FOR NAVIGATION.

Distribution Liability: Data are provided as is. NROC and RPS Group Inc. are not liable for any interpretations, assumptions, or conclusions based on these data.