

Tug and Tow Monthly Vessel Transit Counts from - 2021 AIS  
Northeast and Mid-Atlantic United States

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Prepared for:  
Northeast Regional Ocean Council (NROC)  
Northeast Ocean Data  
[www.northeastoceandata.org](http://www.northeastoceandata.org)

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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. Vessel records are reported as a series of points during transit or dwell-times when within range of a receiving station. This dataset represents a subset of AIS records for tug and tow vessels. Individual vessel positions have been processed into tracks and then summarized at a 100 x 100 meter (10,000 m<sup>2</sup>) cell resolution to characterize intensity of use for each month. These monthly transit Count grids were 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

- Atlantic vessel tracks 2021, Marine Cadastre, 2022
- 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: 16699, 17808

Number of Bands: 1  
Cell Size: 100 meters  
Source Type: generic  
Pixel Type: floating point  
Pixel Depth: 32 Bit

Dataset Name: TugTowVesselTransitCounts2021\_<month>

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: -8794269.7374 to -7124369.7374, 3895278.3932 to 5676078.3932

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, North Carolina, Pennsylvania, Rhode Island, Rhode Island Sound, United States, Virginia

Recommended Cartographic Properties:

(Using ArcGIS ArcMap nomenclature)

Classification, 8 classes, color mode: HSV

1 – 2:	blue	(222-91-48)
2 – 5:	blue-green	(187-82-63)
5 – 10:	green	(126-97-83)
10 – 15:	light green	(89-100-93)
15 – 20:	yellow	(60-100-100)
20 – 50:	orange	(40-100-100)
50 – 100:	orange-red	(20-100-100)
> 100:	red	(0-100-90)

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

## 6. DATA PROCESSING

Processing environment: ArcGIS Pro 2.1.3, Windows Server 2012 R2, Intel Xeon CPU

Process Steps	
1	CLIP 2021 Atlantic vessel tracklines from the Marine Cadastre Project to the extent of the Northeast and Mid-Atlantic U.S.
2	SELECT to extract trackline features where the VesselGroup field value is equal to 'TugTow'
3	SELECT BY ATTRIBUTE to create trackline feature layers for each month using TrackStartTime and TrackEndTime
4	Run the Marine Cadastre track Counter Tool with a 100 x 100 m cell size
5	Create Raster Catalog and load the monthly vessel transit count grids
6	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 U.S. Coast Guard Nationwide Automatic Identification System records from 2021. Source data were created using the Marine Cadastre Track Builder Tool with filter settings of 30 minutes and 1 mile. The gridded raster identifies vessel transit counts 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:** 2021

**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.