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 passenger vessels. Individual vessel positions have been processed into tracks and then summarized at a 100 x 100 meter ($10,000 \text{ m}^2$) 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
- Nationwide Automatic Identification System, United States Coast Guard

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: PassengerVesselTransitCounts2021_<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)
6. DATA PROCESSING

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

<table>
<thead>
<tr>
<th>Process Steps</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1  CLIP 2021 Atlantic vessel tracklines from the Marine Cadastre Project to</td>
<td>1  CLIP 2021 Atlantic vessel tracklines from the Marine Cadastre Project to the extent of the Northeast and Mid-Atlantic U.S.</td>
</tr>
<tr>
<td>the extent of the Northeast and Mid-Atlantic U.S.</td>
<td></td>
</tr>
<tr>
<td>2  SELECT to extract trackline features where the VesselGroup field value is</td>
<td>2  SELECT to extract trackline features where the VesselGroup field value is equal to ‘Passenger’</td>
</tr>
<tr>
<td>equal to ‘Passenger’</td>
<td></td>
</tr>
<tr>
<td>3  SELECT BY ATTRIBUTE to create trackline feature layers for each month</td>
<td>3  SELECT BY ATTRIBUTE to create trackline feature layers for each month using TrackStartTime and TrackEndTime</td>
</tr>
<tr>
<td>using TrackStartTime and TrackEndTime</td>
<td></td>
</tr>
<tr>
<td>4  Run the Marine Cadastre track Counter Tool with a 100 x 100 m cell size</td>
<td>4  Run the Marine Cadastre track Counter Tool with a 100 x 100 m cell size</td>
</tr>
<tr>
<td>5  Create Raster Catalog and load the monthly vessel transit count grids</td>
<td>5  Create Raster Catalog and load the monthly vessel transit count grids</td>
</tr>
<tr>
<td>6  ADD FIELD and assign date information to Raster Catalog to use time slider</td>
<td>6  ADD FIELD and assign date information to Raster Catalog to use time slider capability</td>
</tr>
<tr>
<td>capability</td>
<td></td>
</tr>
</tbody>
</table>

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.