

Tutorial: AIS Track Builder

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Overview

The Track Builder converts a collection of point features into a track line. See Figure 1. The input data must include date and time values for each point and an identifier to group points in a line. The start and end of a line can be controlled with one of two parameters: either using a fixed time duration for all lines, or a threshold of maximum distance or time between a pair of points. For users of Automatic Identification System (AIS) data from MarineCadastre.gov, the Track Builder also offers a function to extract Vessel and Voyage attributes from related tables for each line. AIS track lines can be used to generate heat maps of vessel traffic for transportation analysis and coastal and ocean planning.

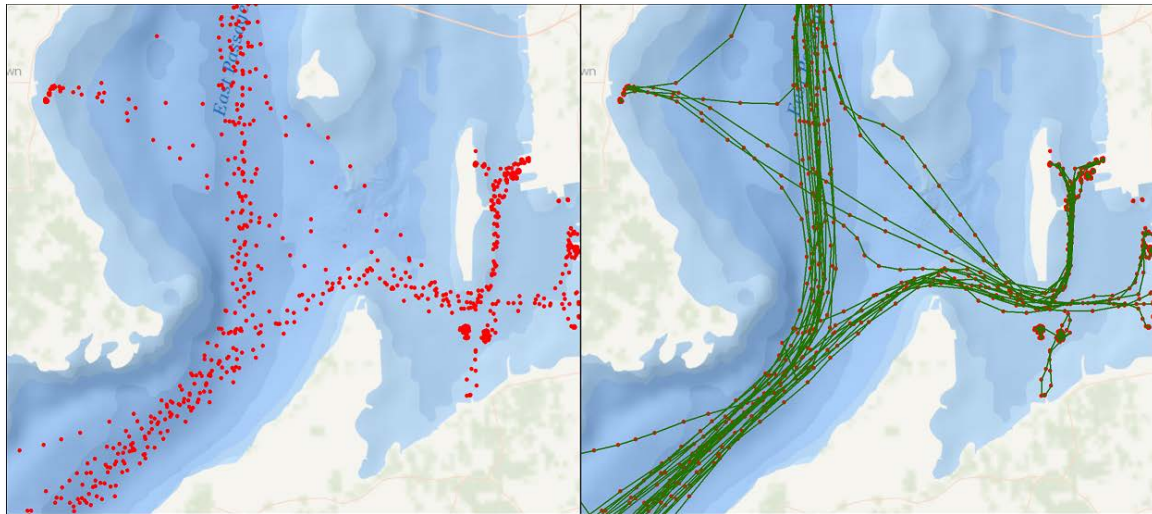


Figure 1: The Track Builder converts a collection of points into track lines.

Technical Specifications

- The Track Builder is an ArcGIS Toolbox ArcPy script designed for ArcGIS Desktop version 10.1.
- It is designed to work with AIS File Geodatabase data available from www.marinecadastre.gov/ais but will also function with other feature classes that contain a DateTime field and unique identifier.

Installation

- Download and unzip the Track Builder file at www.marinecadastre.gov/ais.

Quick Start

In ArcCatalog or ArcMap, browse to the folder where the Track Builder tool was unzipped, expand the Track Builder Tool Box, and double-click the **Track Builder** script tool.

The Track Builder dialog window will open and show six mandatory input fields: 1) Input Points, 2) ID Field, 3) DateTime Field, 4) Output Workspace, 5) Output Name, and 6) Break Track Lines using. See Figure 2. Once the Break Track Line option is selected, additional input parameters will be required to set thresholds. When the input points are from an AIS database, most of the parameters will default to the correct settings automatically.

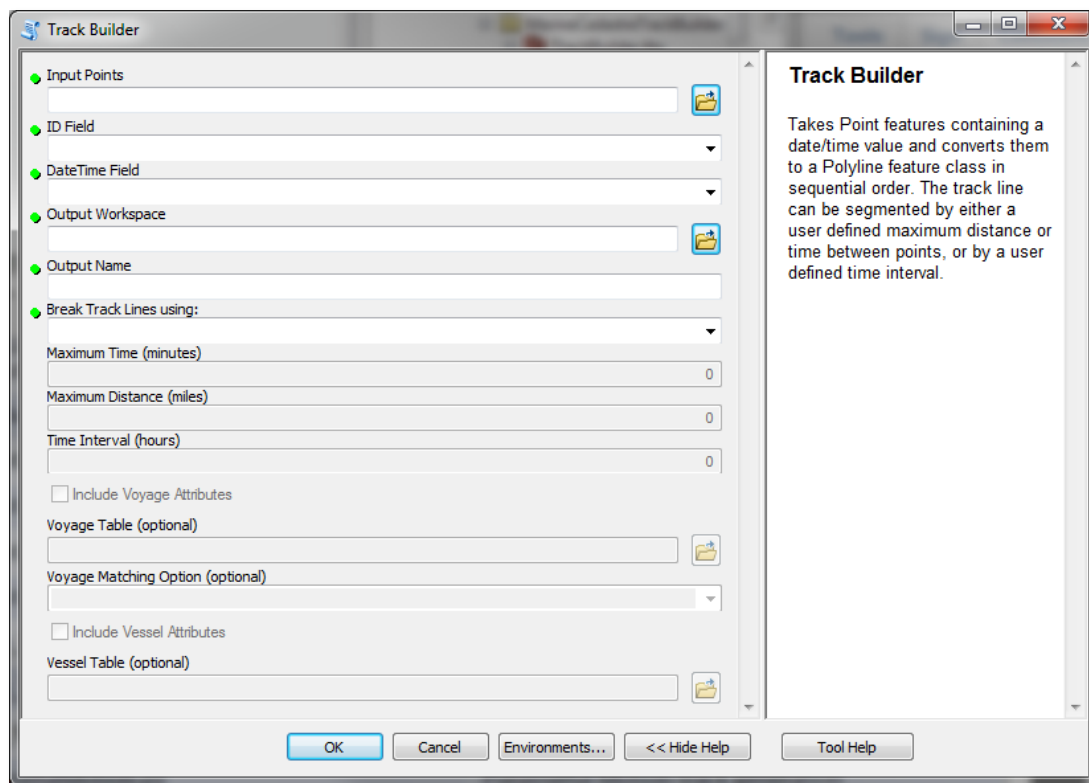


Figure 2: The Track Builder tool interface.

The tool will generate a new Polyline feature class with at least three fields, including ID, TrackStartTime, and TrackEndTime. If the “Include Voyage Attributes” or “Include Vessel Attributes” options are used, the output table will have all the same attributes as the related source tables.

Help

The Help window is on the right side of the tool panel and gives a brief description of the tool and each parameter. If it is not visible, click the Show Help button. For more detailed help, click the Tool Help button.

The option to include Voyage or Vessel attributes can fail in rare cases, resulting in a message about “Assigning the Cargo/Vessel Type coded domain values.” One option is to complete this step manually in ArcCatalog using the Properties > Fields > Field Properties tab. Select VesselType in the domain setting, and select Cargo for the Cargo field. Click OK.

Reference Material

AIS Data Handler Tutorial

www.marinecadastre.gov/AIS/AIS%20Documents/AISDataHandlerTutorial_Jan2013.pdf

2011 AIS Metadata

[www.marinecadastre.gov/AIS/AIS%20Documents/AISDataHandler2011Metadata_01072013%20\(1\).xml](http://www.marinecadastre.gov/AIS/AIS%20Documents/AISDataHandler2011Metadata_01072013%20(1).xml)

AIS Message Format and Content – U.S. Coast Guard Navigation Center

www.navcen.uscg.gov/?pageName=AIMessages