Exercise 11: Crimean Ship Paths
# Path Maps

Objectives

1. Learn how to use Tableau map features to analyze track data (e.g., airline flights, shipping tracks, train movements, weather patterns)
2. Learn how to leverage the Page shelf to animate data for presentation

Applying Map Features

1. Open the Tableau starter workbook called **Exercise 11: Crimean Ship Paths Starter** in the Exercise Starter Workbooks folder. In the Data Source tab notice that each row in the dataset represents a ship and its location (latitude and longitude) at a specific time throughout a single day. Create a path map that visualizes each ship's course throughout the day.
2. First, double-click on **Latitude** and **Longitude** in the Measures Pane to generate a map.

Notice that there is a single mark representing the coordinate point at the average latitude and longitude in the dataset. Recall why this is the case. We would like to display a mark, or path, for each ship in the dataset.

Question 1: What is the best way to achieve this? _____

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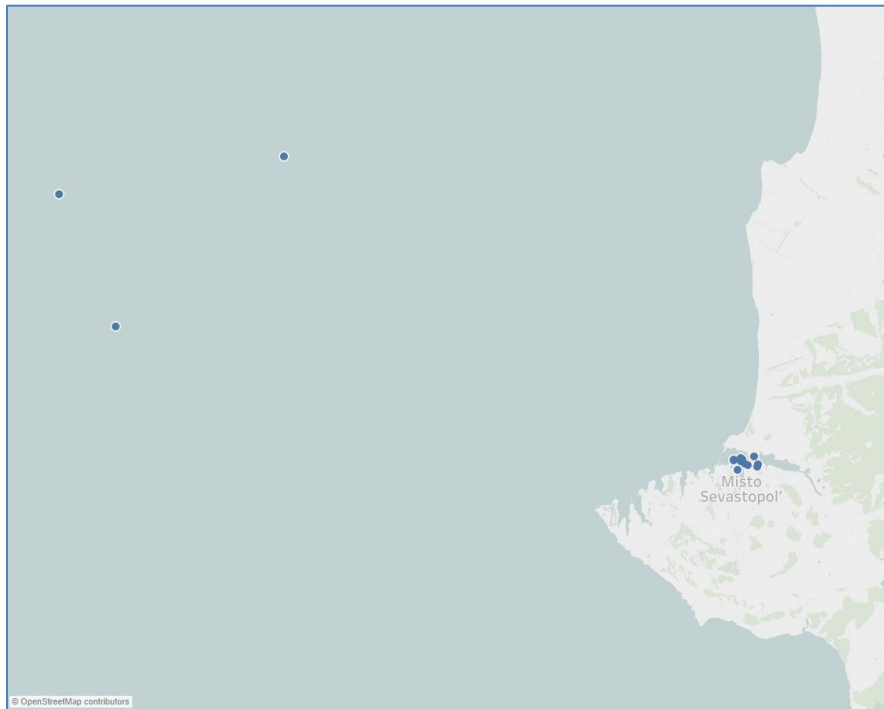
3. With **Mmsi** (or **Ship Name**) on the Detail Shelf, select the three distant points on the left-hand side of the map and select Exclude. This allows you to zoom into and visualize the unique paths of the remaining ships more clearly.
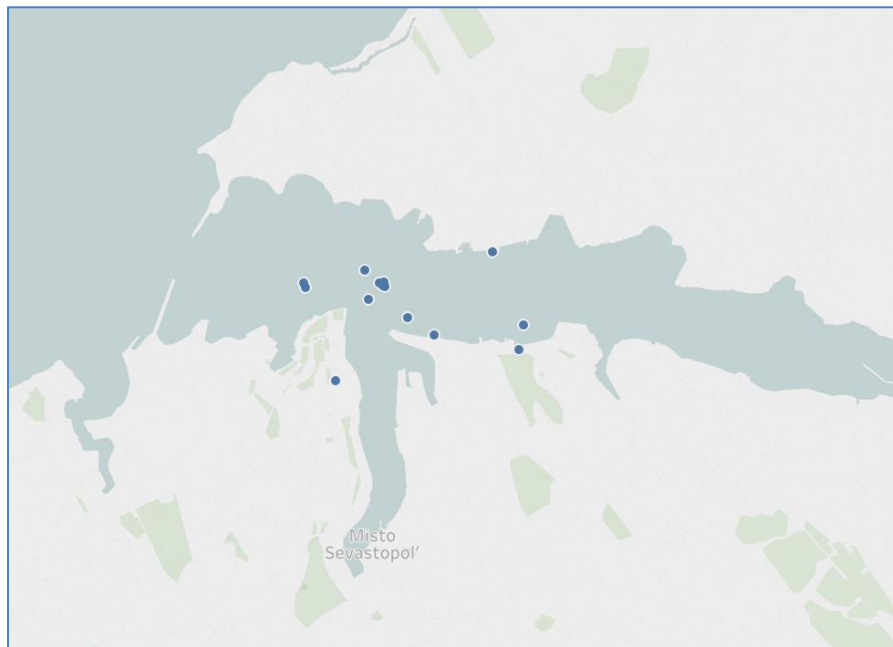

4. To refine the level of detail even further, drag **Timestamp UTC** onto the Detail Shelf. Select the drop-down arrow on the pill and select 'Exact Date' to display a coordinate point for each ship at each recorded time in the dataset.
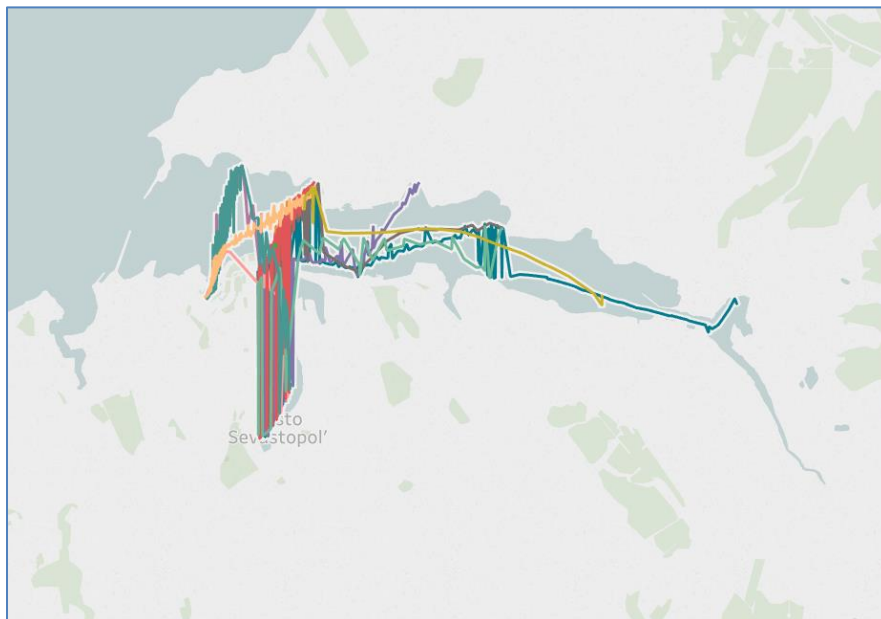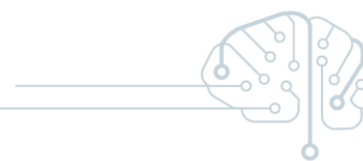
5. Drag **Ship Name** onto the Color shelf to visualize each ship's coordinate point as a unique color. Now we can begin to see the paths of the ships take shape.
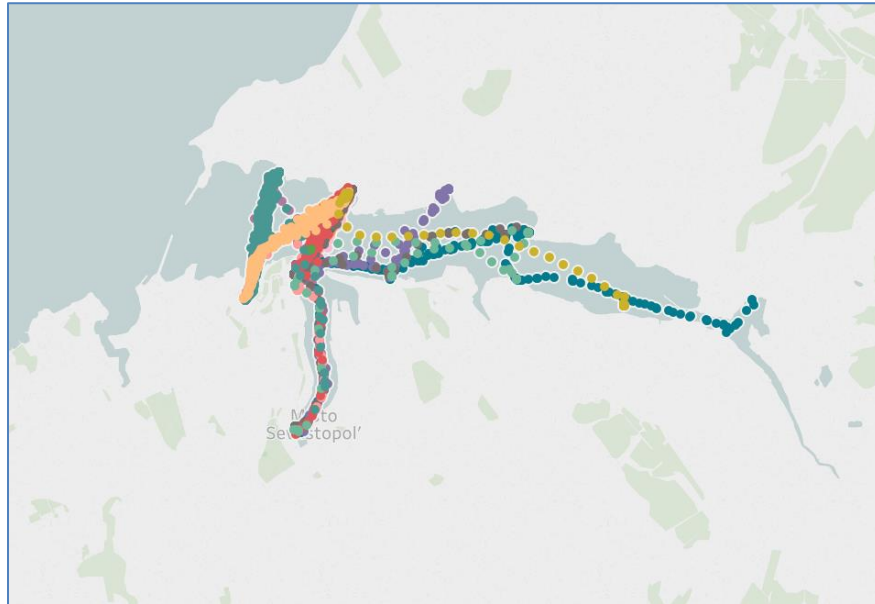
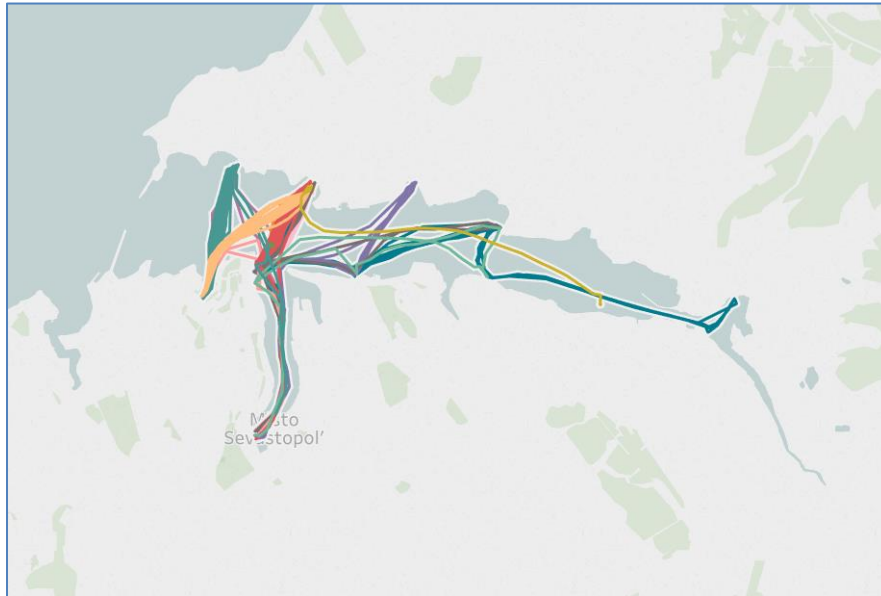6. Change the mark type to **Line** ⁓ to see the data point connections.

Notice that Tableau randomly generates a path between points without regard to order.

Question 2: What should be used as the Path Order field?

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7. Order the data points in your view by **Timestamp UTC** using the 'Exact Date'. Drag **Timestamp UTC** from the Dimensions Pane to the Path shelf.
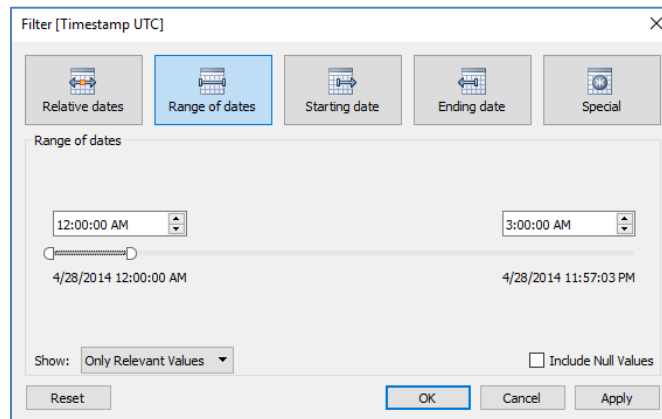

Question 3: How many marks are in your map?

Question 4: Do you notice that your view is slower than before? If so, why do you think that is? _____

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8. Filter the view so that it only includes paths for ships between 12:00:00 AM to 3:00:00 AM. Drag the dimension **Timestamp UTC** to the Filters shelf. Select **Range of dates**. Enter 12:00:00 AM as the start date and 3:00:00 AM as the end date.

9. Select the carrot on the **Timestamp UTC** pill and select 'Show Filter'. Now you have an interactive slider on the right side of the map to filter the view by a specific range of times.
10. Drag measure **Speed (knots)** to the Size shelf. Now the thickness of the line represents the speed of the ship at that point. Edit the size and opacity of the paths. Practice filtering the data with the **Timestamp UTC** slider.
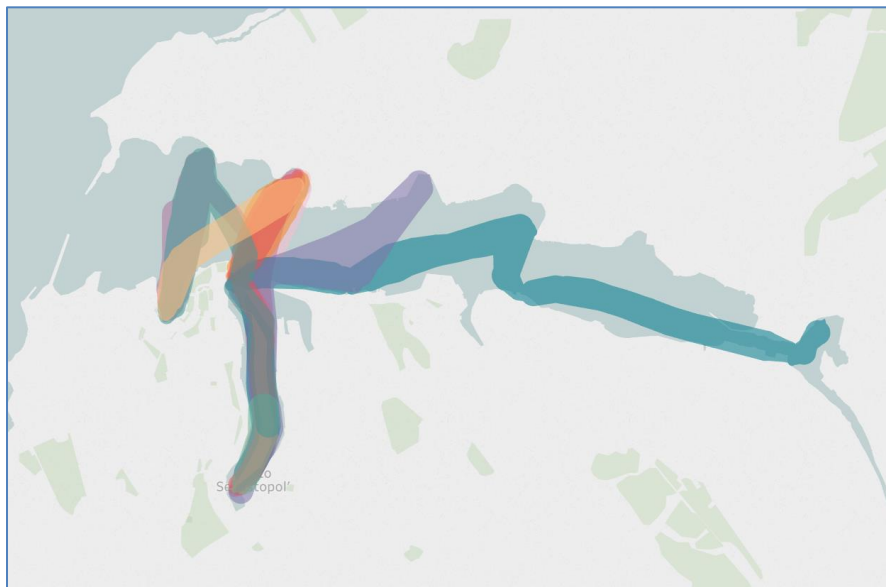

Limiting your view to specific points in time may help you more easily identify patterns since you're decreasing the density of your data. It may also improve Tableau performance.

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Custom Shapes

1. Instead of a line, let's change the mark type to a custom boat shape. First, make sure the **Boat.png** file in the exercise folder is saved to **Documents\My Tableau Repository\Shapes\Custom** on your computer.
2. Back in your Tableau workbook, duplicate the sheet you just created. Remove **Speed (knots)** from the Marks Card and change the Mark type to Shape in the drop-down box.
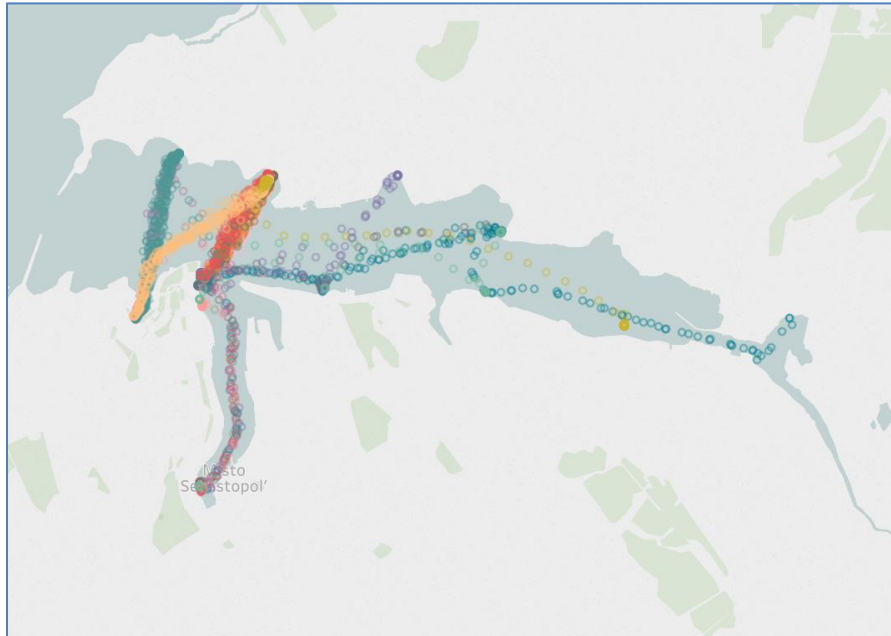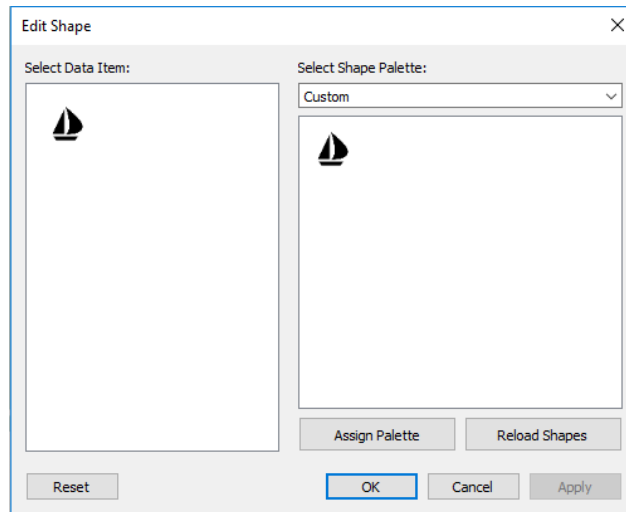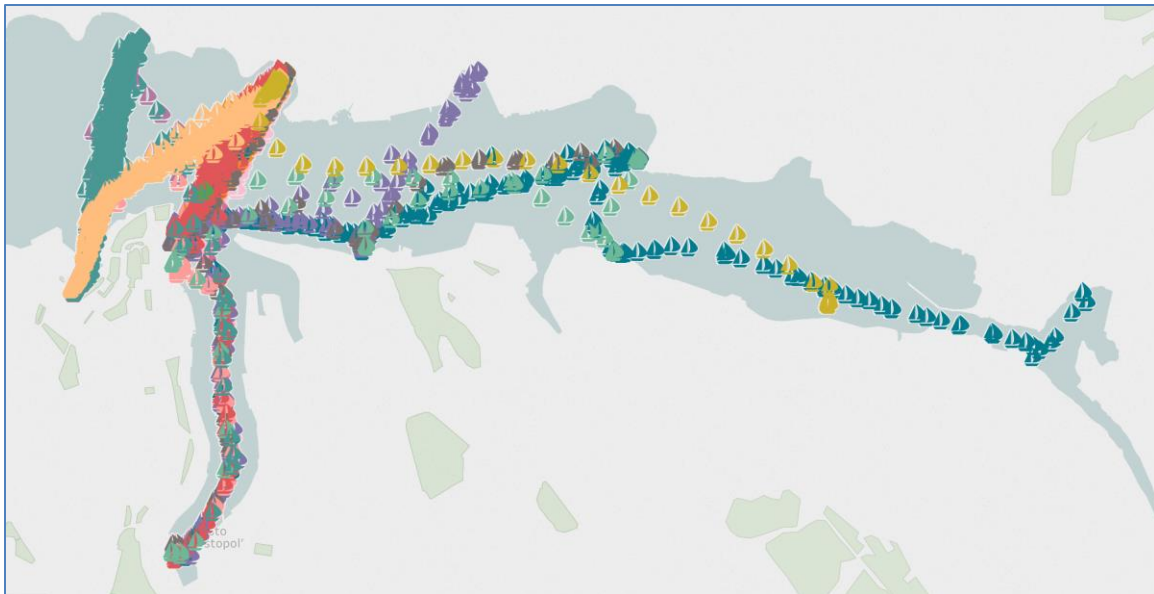

3. On the Marks card, click on 'Shape'. In the drop-down box select 'More Shapes...'. Click on 'Reload Shapes.' In the dialogue box choose 'Custom' under 'Select Shape Palette:' and select the boat shape.

4. Click OK. Increase the Size and Opacity of the boats using the Color and Size cards.

Due to the density of the points in this map, it may be helpful to filter the data based on certain characteristics (time, ship name, speed, etc.). Or we can animate the ships, which you will learn about in the next section.

Animating your Map View

1. Duplicate the sheet you just created.
2. Before animating your view, filter the view by **Ship Name** so that you can select the ships that you want to animate. Reducing the number of ships (marks) in the view will not only clarify the visualization but will improve Tableau's performance. Let's select the 'Nord' and 'Orion'.
3. Drag **Timestamp UTC** onto the Pages shelf and click on the carrot on the pill to select 'Exact Date' in the drop-down box. Notice that the Pages card appears to the right of the visualization. This is where you can play and pause the animation. Additionally, you can adjust the speed of the animation.
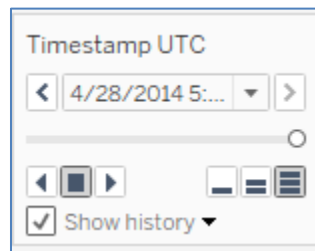
4. Check the 'Show History' box and then select the 'Show History' carrot. Select 'All' under 'Marks to show history for', set the Length equal to 'Last 15', select 'Both' under 'Show' and check 'Fade' under 'Marks'. Use this dialogue box to play around with various display styles for the animation.
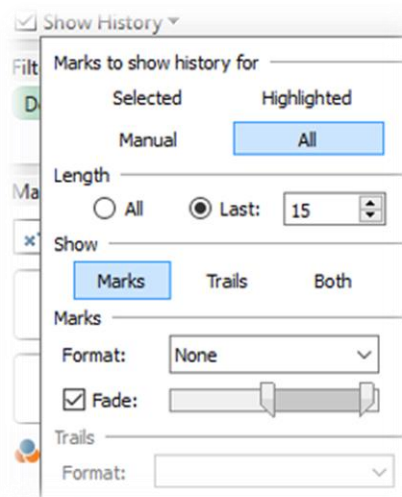
5. To rewind, stop, and play your animation, use the following page controls

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Rewind Stop Play

6. To change the speed of your animation, use the following page controls

Slowest Faster Fastest