# Flow Analysis on Pintail Island Using Tracer Studies
## Term Project Update

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**Project:** My project has changed scope since its proposal in order to have a more feasible study. The concentration will be in Wax Lake delta, Louisiana, on Pintail and Mike Island. Tracer study data for Pintail Island were obtained from Matt Hiatt in the form of time series records. I also received sensor coordinates along with injection points. These points will be input into ArcMap along with the time series to get sense of flow conditions on the island. Interpolation methods will be utilized to understand spatial distribution. The findings of this study will be used to make predictions of injection points for a tracer analysis that will be done on Mike Island.

## Update:

- An image basemap has been input into ArcMap showing Wax Lake delta.
- The sensor locations and injection points for the 3 tracer studies have been added to the map. These are shown in figures 1 and 2.



Figure 1: Orientation for Tracer Study 1



Figure 2: Orientation for Tracer Study 2 and 3

- The time series data have only recently been acquired and are currently being processed to be loaded onto the map.
- The time stamps are being analyzed in order to choose appropriate time steps since the data is now at 30 second intervals.
- A table will be created for all sensors with matching time stamps for ease of input into GIS.

## Future Work:

- The time series table need to be added to the map then joined to the sensor table to give each time a spatial reference.

- Interpolation methods such as the spline method still have to be done to find the spatial distribution of the time series.
- A python program may be needed of some sort to do this since there is a lot of data.
- I hope to use a time slider to create a video that visualizes the study.

**Prediction for Mike Island**

- Once the flow from each experiment is mapped, emergent patterns will be assessed using GIS in order to help make predictions for Mike Island.
- Estimates will be made based on island size for sensor placement and tracer injection sites for a tracer study on Mike Island.
- Since the injection volume of each test is also known, there should be enough information to make valid predictions about Mike Island.
- Figure 3 shows Wax Lake delta, with Pintail and Mike Island labeled to get an idea of the spatial differences between them
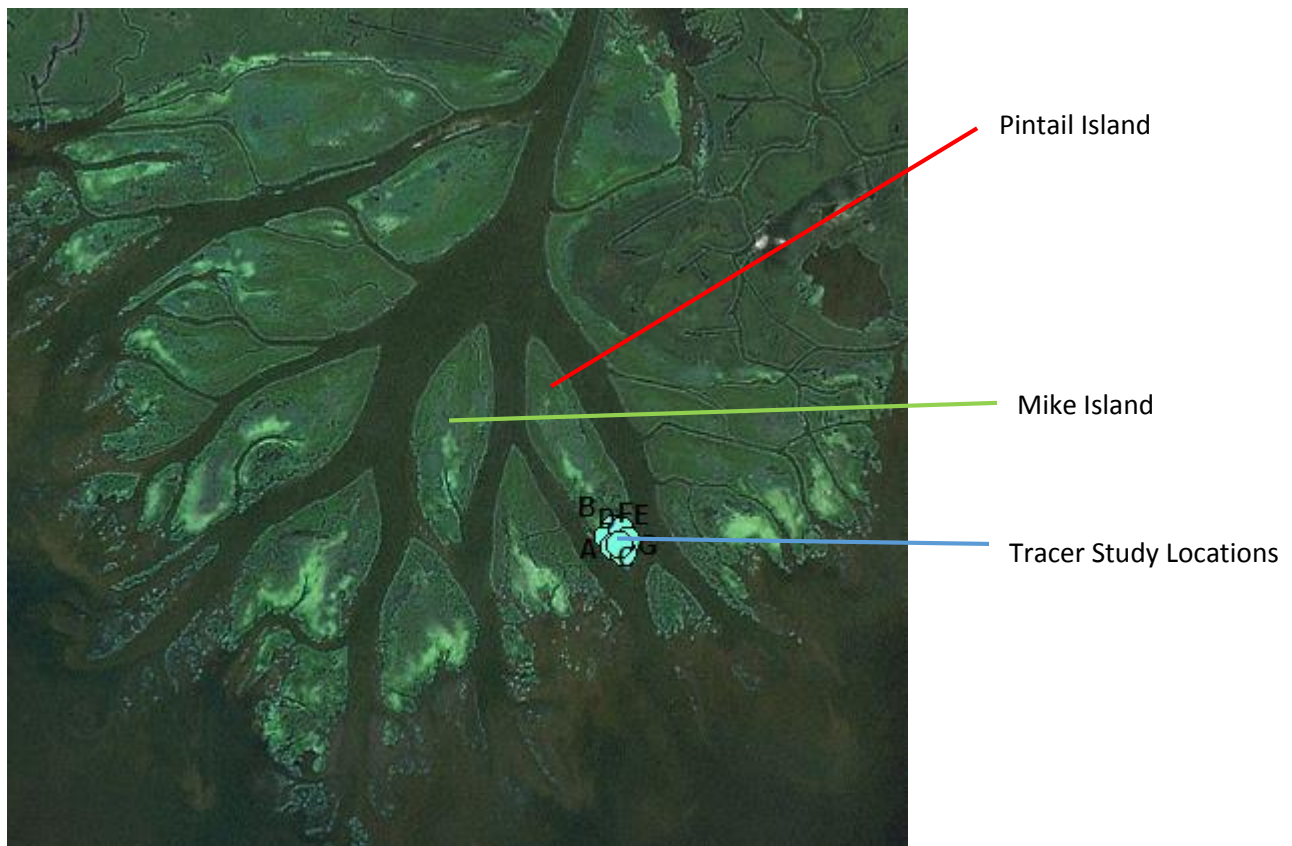


Figure 3: Wax Lake Delta highlighting Pintail, Mike, and the tracer studies.