



Raritan River Real-Time Hydrological Observatory

Rutgers, The State University of New Jersey, New Brunswick, NJ
Advanced Environmental Geomatics

Spring 2017

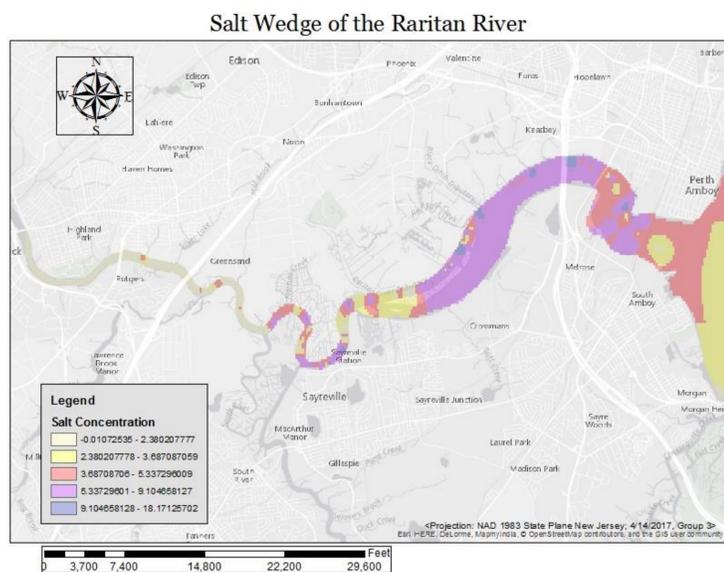
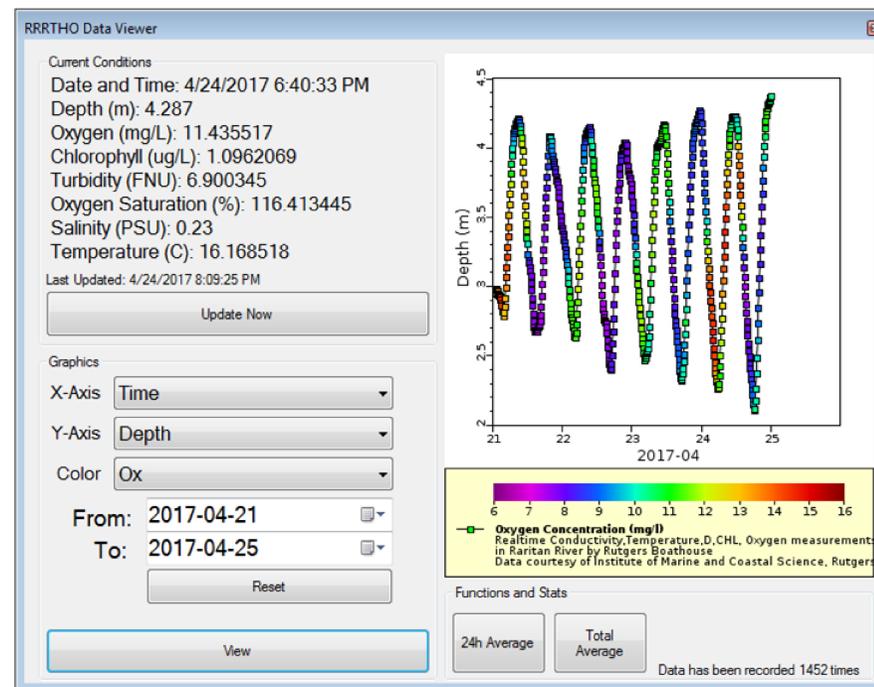
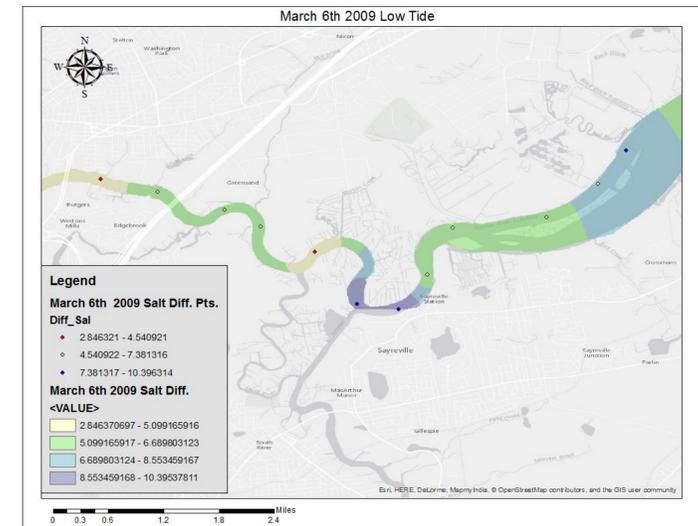
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Introduction

A large population of New Jersey lives near and interacts with the Raritan River in one way or another. Data collection is important in understanding the state of the river. Once data is collected it must be organized and presented in a way that the public and academics can interpret and use. One of the challenges is presenting the data in a way that is easily accessible and understandable to the public. Our project addresses this problem and includes the steps we took to help deploy a water quality monitoring station on the Raritan and share it in the most effective way. We also provide a budget for the gaging station implemented in the Raritan and looked at cheaper alternatives for future gaging stations.

Methods

One of our classes was spent on the R/V Rutgers boat using a water quality meter, model YSI ProDSS to measure conductivity, temperature, dissolved oxygen, and pH. A CTD Sea-Bird was also used to measure the same attributes, as well as turbidity and chlorophyll a. On a separate date, data was collected from a REMUS that includes depth, conductivity, temperature, and salinity. We worked with Eli Hunter from the Department of Marine and Coastal Sciences to assist in implementing a water quality monitoring station near the Rutgers boathouse on the Raritan. To do this we helped install a CTD ADCP device that was mounted in a mooring frame. This records depth, oxygen, chlorophyll, turbidity, oxygen saturation, salinity, and temperature every ten minutes and uploads to an RRRTHO Data Viewer every hour. We also gathered historical data of the Raritan from ERDDAP as well as NJHDG, AMNET, and FIBI data.



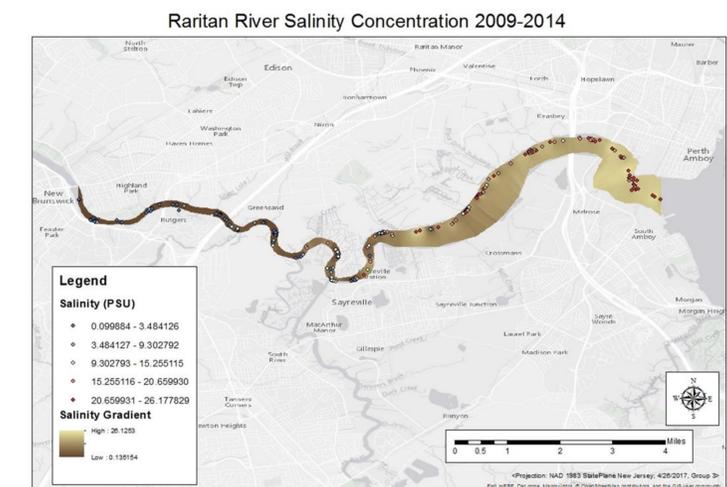
Results

Salt wedge and tidal maps were created to demonstrate the functionality of the compiled datasets which can be used to compare with current data or to see patterns along the Raritan.

- Location of the salt wedge by comparing difference of salinity levels from the surface to the bottom of the water (above figure, lower right figure)
- Used lunar data to compare salinity levels at low and high tides (top right figure)
- Depth, pH, DO, temperature and salinity from ProDSS collected during boat trip to compare to historical data derived from ERDDAP
- Budget for future gaging stations (middle right figure)
- Continuous oxygen, chlorophyll, salinity, depth, and temperature monitoring of the Raritan River recorded on RRRTHO Data Viewer from CTS ADCP device (middle figure)

Discussion

The water quality gaging station was installed near the Rutgers Boathouse along the Raritan River. The data collected is continuous and updates hourly on the RRRTHO Data Viewer that we created. Data can be customized and compared between the different quality attributes on the Data Viewer. This makes it easier for anyone to access the data and look for patterns and the health of the River at any given time. Additionally, the various historical data compiled and collected on ArcGIS Online and can be readily used by students and researchers that may need the information. There were many trials and tribulations when it came to data collection. Problems ranged from human error to technical difficulties and timing delays. Even when presented with these issues, we were able to find alternatives or work around them. Overall, our project is a success because of the ongoing data collection. We hope that this provides a stepping stone to future expansions of the RRRTHO by providing historical and current data, as well as projecting costs for placing additional gaging stations along the Raritan River.



Acknowledgements: Professor Richard Lathrop, Eli Hunter, Chip Haldeman, Joshua Daw