

# Visualizing National Water Quality Data

The Water Quality Portal (WQP) is a large national dataset of water quality measurements aggregated by the USGS and EPA.

The WQP offers a central source for a large number of water quality measurements. However, there lacks a way to quickly explore when and where measurements exist and what that data looks like.

**pondr** is a comprehensive tool for investigating data coverage, values, and trends from the Water Quality Portal.

Pondr's interactive functionalities are built with RShiny, a powerful web framework for presenting R-based data analyses.

Yoav Kargon  
Tommy Lin

| yoav.kargon@duke.edu  
| kailai.lin@duke.edu

Nicholas Bruns  
John Gardner

| Project Managers

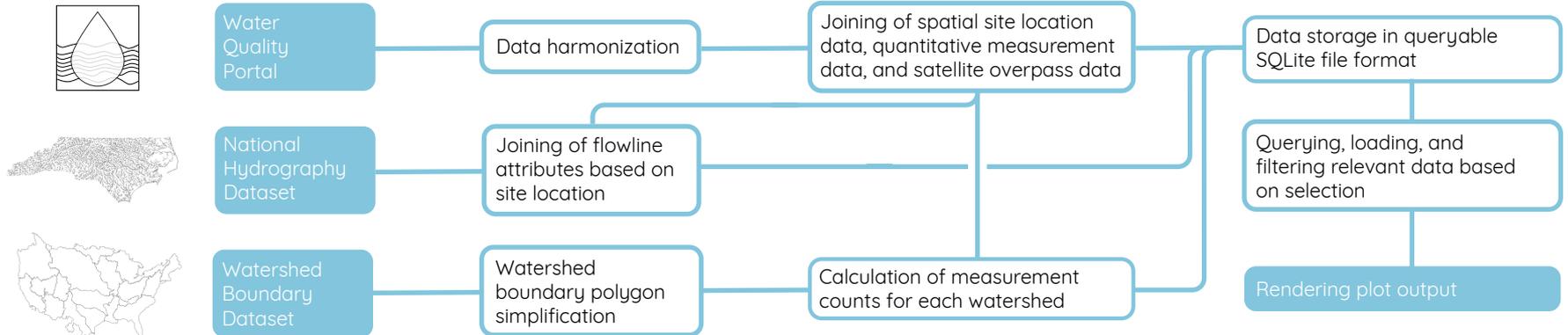
Dr. Jim Heffernan | Faculty Lead



NICHOLAS SCHOOL OF THE  
ENVIRONMENT



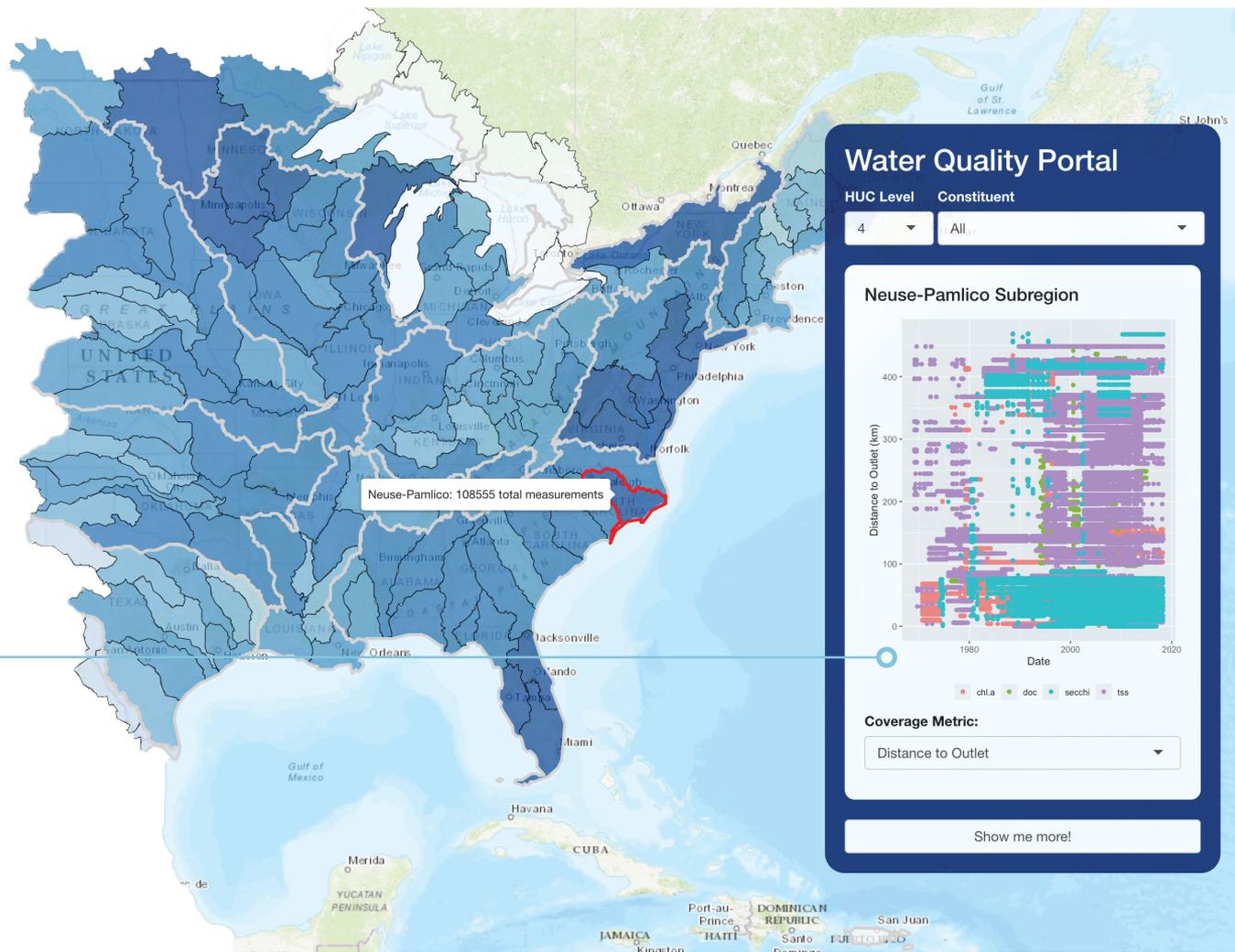
## From Raw Datasets to Responsive Plots



Chloropleth map shows measurement densities for national watersheds, with darker colors representing well covered regions

Users can select hydrologic unit code (HUC) levels and water quality parameters to reflect varying research goals and interests

A coverage plot for selected regions offers an at-a-glance overview of spatiotemporal measurement coverage



# Coverage in the Neuse-Pamlico Subregion

HUC4: 0302 — 36,985.18 sq. km in the South Atlantic-Gulf Region



## Measurement Site Selection

Filter by date:

Filter by upstream catchment area (sq. km):

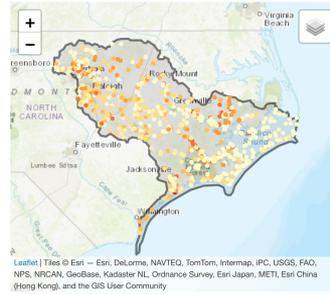
Filter by site location type:

Filter by constituent:

Filter by satellite overpass:

Filter by site location name:

## Site Map



## Settings

Cluster site locations

Show HUC10 Boundaries

Show HUC12 Boundaries

Refresh map

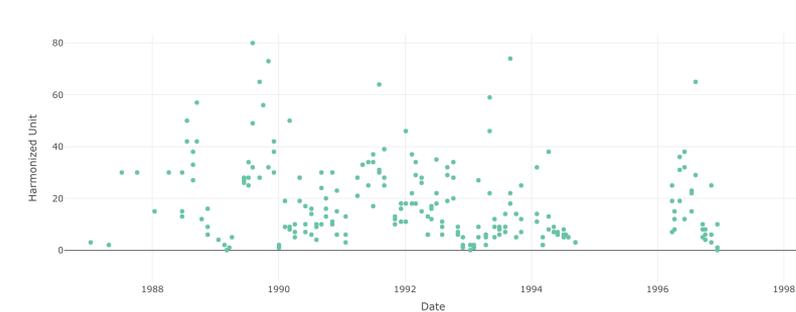
Coverage Metric:

Y-Axis:

Time Series

Generate time series for selected points

## Time Series



Y-Axis:

Download filtered data

An interactive measurement site map offers further insight into spatial density across distinct water bodies within a watershed

Filters allow users to quickly narrow down their search based on parameters such as water body type and satellite overpass availability

Settings for several visualization options provide more or less granular views of data depending on scope of the search

Users can quickly extract filtered data to a CSV file with WQP SiteIDs and Landsat scene IDs for further research

Time series presents measurement values over time for selected points