Students bring sixty years of data to life on the web

October 9 2017, by Daniel Egitto

The site's navigation shows users what kinds of data they might explore in beautiful fashion. Credit: Duke Research Blog

For fields like environmental science, collecting data is hard.

Gathering results on a single project can mean months of painstaking measurements, observations and notes, likely in limited conditions, hopefully to be published in a highly specialized journal with a target audience made up mostly of just other specialists in the field.

That's why when, this past summer, Duke students Devri Adams, Camila Restrepo and Annie Lott set out with Professor Emily Bernhardt to combine over six decades of data on the Hubbard Brook Experimental Forest into a workable, aesthetically pleasing visualization website, they were really breaking new ground in the way the public can appreciate this truly massive store of information.

Spanning some 8,000 acres of New Hampshire's sprawling White Mountain National Forest, Hubbard Brook has captured the thoughts and imaginations of generations of environmental researchers. Over 60 years of study and authorized experimentation in the region have brought us some of the longest continuous environmental data sets ever collected, tracking changes across a variety of factors for the second half of the 20th century.

Now, for the first time ever, this data has been brought together into a comprehensive, agile interface available to specialists and students alike. This website is developed with the user constantly in mind. At once in-depth and flexible, each visualization is designed so that a casual viewer can instantly grasp a variety of factors all at the same time—pH, water source, molecule size and more all made clearly evident from the structures of the graphs.

Additionally, this website's axes can be as flexible as you need them to be; users can manipulate them to compare any two variables they want, allowing for easy study of all potential correlations.

All code used to build this website has been made entirely open source, and a large chunk of the site was developed with undergrads and high schoolers in mind. The team hopes to supplement textbook material with a series of five "data stories" exploring different studies done on the forest. The effects of acid rain, deforestation, dilutification, and calcium experimentation all come alive on the website's interactive graphs,

demonstrating the challenges and changes this forest has faced since studies on it first began.

The team hopes to have created a useful and user-friendly interface that's easy for anyone to use. By bringing data out of the laboratory and onto the webpage, this project brings us one step further in the movement to make research accessible to and meaningful for the entire world.

Provided by Duke University