

## Julie Pullen

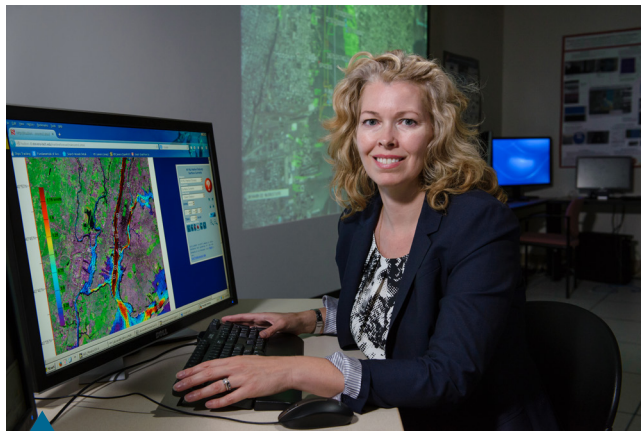
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I apply coupled ocean-atmosphere modeling toward understanding and forecasting the dynamics of coastal urban regions throughout the world. My specific research interests encompass the ocean's response to atmospheric flows around island topography and sea-breeze interactions with city morphology during heat waves. My work synthesizes meteorology and oceanography as well as transport and dispersion modeling for research and also for national security applications relevant to groups such as the US Coast Guard and the Navy.

As a child, I often floated sticks down the rivulets that would form in the dirt road in front of our farmhouse. I spent hours mapping out the various paths, twists, and turns the sticks would make as they traveled down the incline toward the pond. As an undergraduate, I learned that my sticks had been showing me chaos theory, and I was eager to learn more. I wrote to the Santa Fe Institute and the staff invited me to join them as their first visiting undergraduate student. I was mentored by an evolutionary biologist, who guided me as I explored a variety of complex systems. After pursuing applied mathematics in graduate school, I transferred to oceanography, acknowledging my abiding passion for fluid dynamics.

I thrive at the boundaries of disciplines, forging collaborations across multiple realms. I ground my modeling efforts with a healthy dose of field participation, so I work hard to include this key reality check in my schedule. I enjoy being part of research cruises where I can run high-resolution air/sea prediction models and verify the results in real time. Sometimes I can even influence the sampling because of what the forecasts are showing!

I enjoy seizing new opportunities like creating a graduate class on nuclear security and terrorism that I'm teaching for the first time this year. My interest in this area grew out of my time as a Science Fellow at Stanford's Center for International Security and Cooperation post-9/11, and being a principal investigator on the largest urban tracer release study in the United States (NYC Urban Dispersion Program).



Julie in her lab at Stevens Institute looking at the New York Harbor and Observing System (NYHOPS) forecast.

One of my favorite things is sharing my interest in oceanography with my two young boys. They visit my lab on school field trips, and I bring science to their classrooms. I am collaborating with a local nonprofit, The River Project, to develop a curriculum that introduces Hudson River species into the schools and offers tabletop water experiments on salinity and temperature.

I travel for work, and that takes me away from my family. Often, however, we find ways to be together on my work trips. For example, my husband has brought the boys down to Puerto Rico after my meetings so we can all explore the island environment.

When I was a graduate student in oceanography, I remember being one of relatively few women at large national and international meetings. Happily, that seems to have changed throughout the Earth sciences. But biases, both subtle and overt, persist and have negative impacts on careers. I'm pleased to be on the steering committee of our Institute's National Science Foundation ADVANCE initiative that will address some of these issues.