

Transcript of Katja Fennel, Oceanographer

The coolest part of my job is... I have an opportunity to make a difference for the better, doing something I love!

I develop computer simulation models, and use them to better understand processes in the ocean and to make predictions. So here at Dalhousie, I built the Marine Environmental Modelling Group, and we develop oceans models for various regions—from Atlantic Canada and the Gulf of Mexico, to remote locations like the Red Sea. These computer models run on advanced computing infrastructure, so we need powerful computers to run them. But when we have access to powerful computers, we can simulate the ocean at an amazing level of detail and realism. Advanced computing allows us to take the coastal ocean into the laboratory, essentially and conduct experiments that we can never do in the real world. The ocean is hugely important. Early life arose in the ocean, that's where it all started. The ocean maintains habitable condition on our planet. The ocean determines climate, so climate change, global warming, is really ocean warming. More than ninety percent of the additional heat that is absorbed by our planet because of greenhouse gases ends up in the ocean. So it's an exciting time to study the ocean, and there's a bit of urgency to it as well. You can think of these ocean models as analogues to numerical weather prediction models, so models of the atmosphere. Computationally, the atmosphere is a fluid just like the ocean, and the model allows us to make projections into the future. What will happen 50 to 100 years from now? It's our only means really to look into the future. It's really powerful. Basically anywhere that complex problems have to be solved, advance computing is a key tool— Science, Engineering, Industry, Government, and because it's so powerful with such broad applications it's a really good skill to have.

My advice to girls is to invest in the math skills. Math might not always be the most attractive subject, and the easiest subject, but it's an investment that's going to pay off. It's so powerful, it'll open doors, and it will be fun too!