

Elizabeth Hunke: piloting polar warning of climate change

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Piloting polar warning of climate change

Modeling sea ice phenomena can be very difficult. But Elizabeth Hunke makes it look simple.

As part of the Lab's Climate, Ocean and Sea Ice Modeling (COSIM) team, Hunke develops advanced ocean and ice models for evaluating the role of ocean and ice in climate change and projecting the impact of such change globally. The team applies models to sea level rise, rapid changes in the Arctic, global circulation of the ocean and biogeochemical ecosystem interactions such as methane release.

One solution that may help predict the Arctic's future is a clever numerical solution Hunke and her colleagues developed. It is called CICE and is a user-friendly advanced and flexible thermal model. It is available online and is used by forecasting centers, climate modelers and researchers worldwide.

A fascination with the weather

Growing up, Hunke noticed her family never missed a weather forecast. The Tennessee farmers depended on the sky to water their crops, yet they kept a watchful eye on hurricanes that could destroy their livelihood.

Weather could make or break many lives, so of course Hunke was thrilled to study it.

Career focus—music or science?

Hunke devoured all kinds of math and science in college. While she loved music, she says she opted to not major in music, fearing her interest would dwindle once her love became “work”. Second, she quickly realized it would be much easier to make a living in science, playing music for fun, than it would be to make a living playing music and pursuing math or science as a hobby.

Science it is!

She accepted a summer job at Bell Laboratories, where she was immediately enamored with life in a lab.

She spent that entire summer focused on physics, trying to make a software program simulate the way certain atoms attach to other atoms in a potential superconductor; but she found much of the physics to be esoteric whereas she thought a mathematics degree would provide her with the basic skills to work on any scientific application.

Climate change and its connection to sea ice

A relatively new topic when Hunke was finishing her Ph.D. in Arizona, climate change science and its connection to sea ice intrigued her.

Sea ice is very reflective and therefore contributes significantly to the delicate balance between the energy delivered to Earth as sunlight and the energy radiated from its surface as heat.

Later, she joined the Lab’s theoretical division as a sea ice modeler.

Ice movement similar to how music flows

Recently named one of the Lab’s Women Who Inspire, Hunke spent weeks of the coast of Antarctica sampling and measuring ice.

However she spends most of her time in front of a computer screen, creating simulations of how the ice grows and melts, crumples and moves—a creative process akin to making music, according to the researcher.

Love of discovery remains a source of inspiration

Whether she’s in the skies, flying a plane and analyzing wind patterns, or wondering how climate change affects the growth of the tender plants she’s trying to raise in her backyard, Hunke always has weather on her mind.

But it is founded on her love of discovery, and she spends a lot of time encouraging girls to Expand Their Horizons in aptly named science workshops of the same name. She urges them to spread their wings and to be independent—to be courageous in whatever field they chose, whether they want to become a musician, a scientist or a pilot.

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