

College of Earth, Ocean, and Atmospheric Sciences

# College Highlights

2023



**Oregon State**  
University

# This way to your future!



Here at the College of Earth, Ocean, and Atmospheric Sciences, our scientists and students are on the front lines of discovery, from the depths of the ocean to remote mountain peaks, from our backyards to the ends of the Earth, and from the state-of-the-art labs that line our halls to the communities that we serve with our research. We're a small and friendly college within a big university, and the Earth is our laboratory, our classroom and our passion. Learn more here and come join us!

## THINGS WE CARE ABOUT (AND YOU SHOULD, TOO)



### Affordability

How will I afford college or grad school? Good question! For undergrads, taking advantage of our Degree Partnership Program, summer courses and online opportunities can drastically lower tuition costs. Most graduate students are fully funded by research and teaching assistantships; most finish with less than \$5,000 in debt and find a job within three months of graduating.



### Community

Find your friends and your future. Our student clubs and peer-to-peer mentoring help you connect with classmates and find ways to complement your degree.



### Your Future

We have a career specialist to help you discover opportunities for your life beyond college or grad school. Some of our recent graduates are making maps of river systems, teaching science in France, starting law school or working as a field geologist!

# People

## Students

### Graduate

110  
women

57  
men

2  
unreported  
gender\*

### Undergraduate

624  
women

389  
men

8  
unreported  
gender\*

\*This category includes people who either did not report their gender or who are gender non-conforming. OSU is working on a process to allow for better reporting of gender identity categories.

### Faculty-to-student ratio

**1:10**

**What does this mean for you?** Faculty and advisors who know your name and opportunities to find your cohort.

### Research Awards

**\$85M**

**during 2021-22 fiscal year**

**What does this mean for you?** Research awards give you the opportunity to see science in action. This money can enable students like you to work in a lab, collect data in the field or participate in a research cruise.

## Faculty

**109** Teaching and research faculty

**15** Fellows of the American Geophysical Union

**14** Fellows of the Geological Society of America

**11** Fellows of the American Association for the Advancement of Science

**9** Fellows of The Oceanography Society

**8** Fellows of the American Meteorological Society

**7** Distinguished Professors

**3** Members of the National Academy of Sciences

## Programs

### Undergraduate

Climate Science  
Environmental Sciences  
Geography & Geospatial Science  
Geology  
Oceanography

### Graduate

Geography & Geospatial Science (M.S., Ph.D.)  
Geology (M.S., Ph.D.)  
Marine Resource Management (M.S.)  
Ocean, Earth & Atmospheric Sciences (M.S., Ph.D.)

- Atmospheric Sciences concentration
- Geological Oceanography concentration
- Geophysics concentration
- Ocean Ecology & Biogeochemistry concentration
- Physical Oceanography concentration

CEOAS also offers a variety of minors and certificates to complement your degree. Visit [ceoas.oregonstate.edu/academics](http://ceoas.oregonstate.edu/academics) to learn more.

# CEOAS LEADS the way



## Raising hazard awareness

We are collaborating with coastal communities to improve hazard communication

When it comes to communicating coastal hazards to help communities prepare for events like earthquakes and tsunamis, one size does not fit all. For example, on the Oregon coast, traditional outreach efforts have not connected well with the growing Latina/o/x population. Now an outreach project called ¡Peligro LISTO! (“Hazard Ready”), is using a community-first approach to get the word out about preparedness. The project will assess existing outreach materials, work with community members to develop inclusive approaches, and then train community members to promote the materials.

The investigators on the project — Oregon Sea Grant’s Felicia Olmeta-Schult, CEOAS Assistant Professor Jenna

Tilt and Marine Resource Management graduate student Josh Blockstein — agree that the question of how to share this information with this specific community goes beyond language barriers. Tilt explains, “Who is affected by hazards and why has a lot to do with who you are and what your background is — not just your social demographics like income, race or ethnicity, but your lived experience and worldview.”

Even though the project is only a one-year pilot, the team knows that it is important to build strong partnerships now to ensure that future efforts are successful. “We want to see longevity to the project. Even after the project ends, it’s important to make sure to stay in touch, to maintain a line of communication,” Olmeta-Schult says.

# Believe It!

## We are working toward climate solutions

What if CEOAS climate researchers had access to one of the most powerful supercomputers in the nation, right on the Corvallis campus? They will tell you that such a tool would set them on a path to solving some of the planet's biggest problems. They will tell you that they could use that tool in transdisciplinary

and community-focused research, simulating climate scenarios and assessing impacts to help determine our best path forward.

They will also tell you that all this is on the horizon, thanks to Oregon State's new campaign, Believe It!, which was jump-started by a \$50 million donation from NVIDIA



founder and CEO Jen-Hsun Huang and his wife, Lori.

Believe It! will design and build, from the ground up, a new collaborative innovation complex that will also house the powerful supercomputer. The new center will enable natural and social scientists,

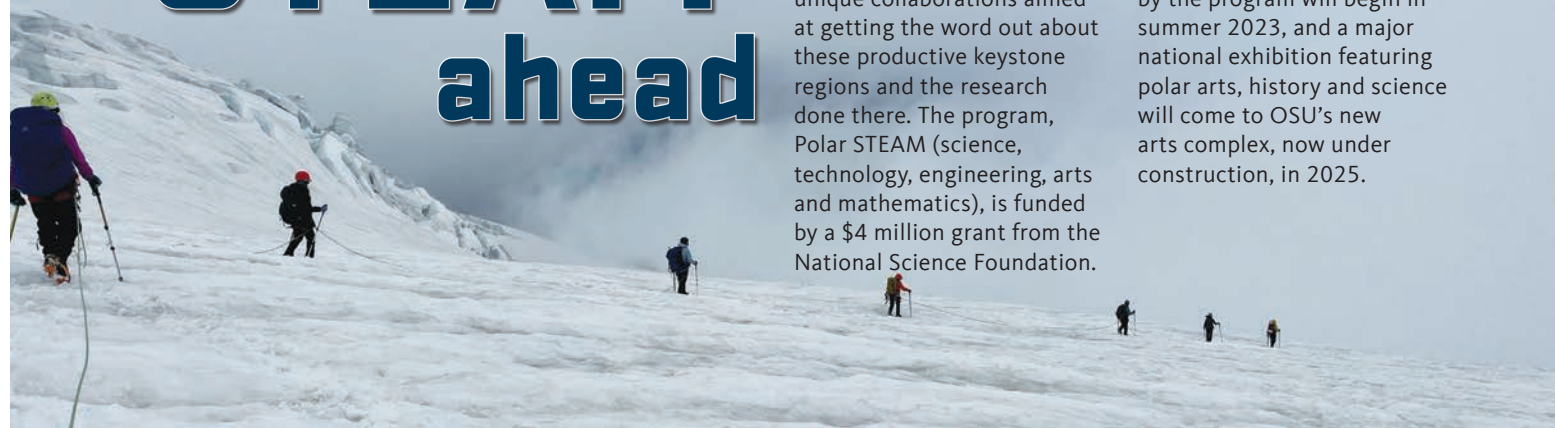
engineers, thought leaders and artists from across the university to come together to co-create solutions to the world's greatest challenges.

We can't wait to get started, helping to bend the curve toward a more sustainable future.

# Full STEAM ahead

The Earth's polar regions — critical yet fragile ecosystems heavily impacted by climate change — provide inspiration to scientists, teachers and artists alike. Now Oregon State will bring these folks together to foster unique collaborations aimed at getting the word out about these productive keystone regions and the research done there. The program, Polar STEAM (science, technology, engineering, arts and mathematics), is funded by a \$4 million grant from the National Science Foundation.

Polar STEAM will connect middle and high school educators, artists, writers and scientists to collaborate through research station residencies and virtual and in-person learning experiences. Field expeditions sponsored by the program will begin in summer 2023, and a major national exhibition featuring polar arts, history and science will come to OSU's new arts complex, now under construction, in 2025.





# YOU BELONG HERE

## CEOAS students soar



### **Maria Cristina Alvarez**

**G**rowing up in a small town in Panama, Maria Cristina dreamt of being a scientist — maybe a chemist, maybe an oceanographer. She leaped into her dream by winning a scholarship from the Panamanian government to study oceanography as an undergraduate at Oregon State. Her time here was so rewarding that she continued on as a graduate student, studying oxygen dynamics in the Arctic basin with oceanographer Laurie Juranek and participating in a two-month Arctic research cruise. Maria Cristina loves how easy it has been to participate in lab and field research at CEOAS: “My professors always encouraged us to talk to them about helping in their labs; that’s how I got involved with my first lab internship, where I was able to build experience and confidence,” she says. She is also interested in science communication, especially writing for Spanish-speaking audiences. When she finishes her degree, she intends to go back to her home country to help promote the field of oceanography and build bridges between non-scientists and academia.



## Deepa Dwyer

Deepa Dwyer has come a long way from her roots in India and New Jersey. Moving to Oregon was a huge change, but her life-long love of science helped her adjust, as did her CEOAS mentors. She credits them with helping her in both her research and personal journeys. Deepa is a Ph.D. student exploring how changes in the Earth's magnetic field are recorded in ocean sediments — specifically in the Gulf of Alaska — and how that information can be used to better understand past climates. A super-star scientist, she has received two prestigious graduate scholarships but knows how to unwind: either by playing with her rescue dog, Audrey, or with role-playing video games.



## Carter Hvam

Growing up and attending high school in Oregon City near Portland, Carter Hvam loved science but wanted to find a way to apply it to real-world problems. He designed his own course of study to do just that, by majoring in climate science and minoring in political science, giving him the background he needs to wrestle with some of the world's biggest challenges. He has expanded his horizons beyond the classroom as well: Carter is conducting paleoclimate research with CEOAS atmospheric scientist Nick Siler, and he spent the fall 2022 term on an exchange program in Japan. Carter couldn't be happier with his choice of Oregon State, and CEOAS in particular. He says, "I'm happy to have the opportunity to combine multiple interests into one curriculum. I like that I can have an academic focus on STEM with a few liberal arts courses for additional real-world context."



The planet's melting ice sheets have obvious implications for sea-level rise, but could loss of ice be related to increases in volcanic eruptions? Recent CEOAS research suggests there could be a link.

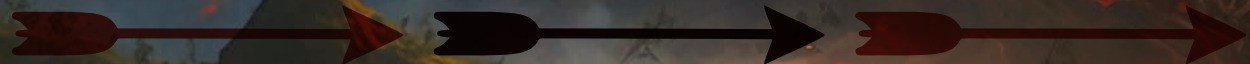
CEOAS Distinguished Professor Alan Mix and then-graduate student Jianghai Du examined sediment cores collected from the Pacific Ocean to catalog and compare volcanic eruptions from areas that were covered by the Cordilleran ice sheet against those areas that were ice-free during the last ice age.

"We found a distinct pattern of many eruptions during warming and ice retreat in the areas where glaciers were present, and much less change in the frequency of eruptions outside the ice-covered zone," Du says. The researchers speculate that the rapid melting of ice covering volcanoes in the study area induced increased volcanic activity.

"Ice cover to volcanoes is like a cork in a champagne bottle. Remove the icy cork and boom, the eruptions begin," Mix says.

"These surprising linkages between parts of the Earth we usually think of as separate highlight how interconnected the whole system really is," he says. "Solving environmental problems, such as those we face in the ongoing climate crisis, demands that we look with open minds at the whole linked system and not just at isolated parts."

# The cork in the champagne bottle







# Of moss and metals

Once heavy metals like lead enter the environment, they tend to linger, continuing to cause health problems for humans and wildlife long after the source has been turned off. CEOAS Associate Professor Alyssa Shiel has been using an unusual monitor to look for a legacy of lead contamination in Portland: moss. Lacking roots but high in surface area, moss gathers contaminants that settle out of the air around it. By determining the unique mixes of lead isotopes present in moss samples, Shiel can pinpoint the source of the lead. She has found lead hotspots in some unlikely residential neighborhoods, and hypothesizes that it may be coming from decades-old chipping and peeling lead paint used on some house exteriors. She is now working to determine how the lead is being released, and may work with state environmental agencies if formal health warnings are to be issued.

# What are they up to now?

CEOAS alums solve problems using maps, menus and more.



**Jillian Pihulak**  
(B.S. '20)

Jillian may have only graduated in 2020, but she is already navigating her next moves. After earning a degree in geography and geospatial science and a certificate in GIS, she landed a job as a

GIScience Analyst for PBS Engineering and Environmental, an engineering design firm. Jillian earned certified map whiz status after winning the Best Analysis and People's Choice awards for the Maps 'n Apps Competition at the 2021 NWGIS Conference. As a student, she collaborated with the Extension Service Fire Program to create a StoryMap to help educate and aid communities in Oregon impacted by wildfire. The project was recently published in the Esri Map Book 2022 Vol. 37.

**Julie Pullen**  
(Ph.D. Oceanography '00)

Julie Pullen has earned many monikers: oceanographer, meteorologist, climate scientist, and now, active angel investor in climate tech. Her unique perspective and skills as a former engineering professor and government scientist have netted her a trove of accolades:

leadership council for the American Meteorological Society, Fulbright Visiting Professor, National Academy of Sciences panelist and more. She is now a partner at Propeller, a new climate-tech investor with ambitions that approach the mythical. The company aims to invest in "tomorrow's narwals" — those rare unicorns of the sea that represent the boldest, most unique solutions to planetary change.



**Laura Anderson**  
(M.S. '00)

If you've visited the central Oregon coast, perhaps you have enjoyed a crab po'boy or plate of rockfish tacos at the popular Newport eatery, Local Ocean. The restaurant, which earns its name by serving fresh-off-the-boat, mostly local fish, is the brainchild of CEOAS alum Laura

Anderson. After two decades at the helm of Local Ocean, Laura recently transitioned the restaurant to an employee-owned company and launched her next venture; Yaquina Lab. The lab is a seafood hub that brings together the Oregon fishing industry and wholesale buyers, local and State governments, universities, and nonprofits to support a local seafood system.

**Tyler Schlieder**  
(B.S. '14)

Tyler stepped into a geology classroom at Oregon State out of curiosity; now he can't imagine his life without it. Originally a sports science major, Tyler's chance encounter with geology helped him to discover a fascinating framework to

understand the world. A first-generation college student, Tyler excelled at OSU and eventually earned a Ph.D. focused on the origin of volcanoes. He is now a post-doctoral research scientist at Pacific Northwest National Laboratory. At PNNL, Tyler is using his skills in data science and geochemistry to study dark matter, that mysterious material thought to account for approximately 85% of the matter in the universe.





# Leave the classroom behind!

**A**t CEOAS, we give all students real-world learning opportunities, from field trips to internships to working in cutting-edge research labs. Want to see what it's like to do science at sea? Want to work in a lab with a world-class scientist? Want to get up close and personal with Oregon's amazing landscapes? Want to travel abroad? We've got you! Go to [ceoas.oregonstate.edu/experiential-learning](http://ceoas.oregonstate.edu/experiential-learning) to learn more.

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Kylie Lampe, an undergraduate studying oceanography, diving at the Silfra Fissure in Iceland, where she worked as a summer tour guide in Thingvellir National Park.



# We'd love for you to join us!

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## Apply

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### Undergraduate students

For best availability of scholarships, the priority application deadline is February 1, 2023 for fall 2023 admittance of first-year undergraduates. Go to [admissions.oregonstate.edu](https://admissions.oregonstate.edu) for more information. For CEOAS-specific information, go to [ceoas.oregonstate.edu/future-undergraduate-students](https://ceoas.oregonstate.edu/future-undergraduate-students).

### Graduate students

We encourage applicants to apply for early consideration starting December 15, 2022 for fall 2023 admittance. The application deadline is January 5, 2023. For more information, go to [ceoas.oregonstate.edu/future-graduate-students](https://ceoas.oregonstate.edu/future-graduate-students).



**Oregon State University**  
**College of Earth, Ocean,  
and Atmospheric Sciences**

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### On the Cover

This Antarctic krill weathervane shows wind direction at Palmer Station in Antarctica. CEOAS oceanographer Kim Bernard and two of her students spent the entire Austral winter, May to October 2022, at the remote research station to study the ecology of krill, which form the base of an extremely productive food web that is being impacted significantly by climate change.

Photo: Kim Bernard