

POLAR CAREERS

I am a **paleoglaciologist**.
I am an **isotope geochemist**.

Hi, I'm Ryan Venturelli!

I use chemistry to study how **glaciers** and **ice sheets** changed before we started watching them.

I run a lab at a university that turns rocks and dirt into gas so we can measure their chemistry. My favorite days are when I get to be in the lab.

I put samples of rocks and dirt in my **carbon extraction system**, heat them up, and move gases around with really, really cold temperatures.

I work with my lab group to use our **data** to learn about the **Antarctic Ice Sheet**.



In Antarctica... I work on teams that drill holes through ice and collect mud and rocks from underneath them.

The best thing about working in Antarctica is... being part of a team all working toward the same mission.

Did you know that...

way up high in our **atmosphere**, there are **reactions** happening all the time that we can't even really see?

These reactions make special chemicals that accumulate in our ocean. When the ocean touches different places, it leaves these special chemicals behind and we can measure them to **reconstruct** places that the ocean no longer touches!



When I was a kid...

I loved reading books and being outside, which makes sense because now I read a lot of **papers** and work outside.

Becoming a scientist...

I actually didn't know that I wanted to be a scientist until I went to college. I took an introductory geology class that convinced me after about two classes that I wanted to be a scientist when I grew up. I learned that I really enjoyed that I got to go outside and play in the dirt. Now I get to play in dirt for a living!



My most memorable experience in Antarctica was drilling into Mercer **Subglacial Lake**. The coolest experience was pulling up **subglacial sediment** from beneath 1000 meters (about $\frac{2}{3}$ of a mile) of ice!

The biggest challenge in working in Antarctica is...

sleeping! It's hard to convince yourself that it's night time when the sun is always shining and there is exciting science going on all around you.

I like to bring my own pillowcase and lots of pictures of my dogs. :)



Pawson and Barkley are named after Douglas Mawson and Barclay Kamb, two of my favorite Antarctic scientists.



What I do for fun...

I live in Colorado, so I enjoy getting out in the mountains and hiking! I also do Olympic weightlifting.

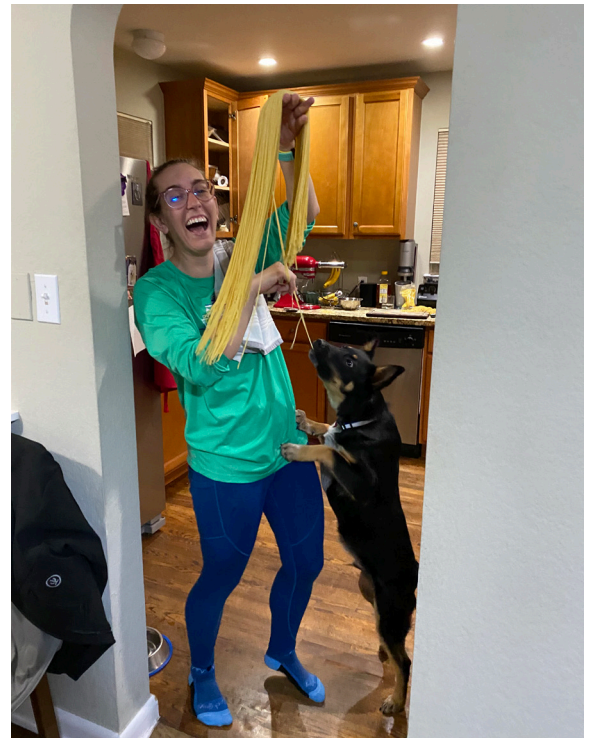
Want to be a scientist?

Ryan says:

There is a place for you! Keep:

- showing up
- being interested
- and asking questions.

The more people we have thinking about how glaciers and ice sheets react to changes in Earth's **climate system**, the more we learn!



Find out more about Ryan and her work [here](#).

If I weren't a scientist...
I would be a chef!

Glossary

Antarctic Ice Sheet – the thick sheet of ice that covers the continent of Antarctica

atmosphere – the big blanket of air surrounding the Earth, made of different gases, including the air we breathe

carbon extraction system – technology designed to extract carbon from geologic samples, turn it into carbon dioxide gas (CO₂), and clean the gas with cold and hot temperatures

climate system – a highly complex global system with five parts: the atmosphere (air), hydrosphere (water), cryosphere (ice and permafrost), lithosphere (Earth's rocky upper layer), and biosphere (living things), and the interactions between them.

data – information such as facts, numbers, observations, or anything that provides clues about something

glaciers – massive, thick, slow-moving rivers of ice that flow downhill due to their own weight and the effect of gravity

ice sheets – massive blankets of ice over a large area of land. They form over thousands to millions of years as snow falls, compacts, and hardens into ice, and they gradually flow down toward the sea.

isotope geochemist – a geologist or scientist who uses special tools to measure different types of the same element, called isotopes, to understand where things come from, how old they are, and how the Earth has changed over time

subglacial lake – a body of liquid water beneath a glacier or ice sheet (Mercer Subglacial Lake is in West Antarctica)

paleoglaciologist – a scientist who studies past glaciers and ice sheets, to understand their size, shape, and the way they moved and reacted to their environment

papers – detailed reports that scientists write to share their findings and ideas with other scientists

reconstruct – to use data and scientific clues and knowledge to understand what happened in the past

reactions – processes in which one or more substances are converted to one or more different substances

subglacial sediment – the material, such as rock fragments, sand, and clay, that is eroded from the bedrock and transported beneath a glacier or ice sheet

