Fischer, *Cogent Geoscience* (2018), 4: 1432284
https://doi.org/10.1080/23312041.2018.1432284

cogent geoscience

ATMOSPHERIC SCIENCES | EDITORIAL

Women in Geoscience : An interview with Emily Fischer

Emily Fischer[1]*

*Corresponding author: Emily Fischer, Department of Atmospheric Science, Colorado State University, Fort Collins, CO, USA
E-mail: evf@rams.colostate.edu

Additional information is available at the end of the article

Figure 1. Emily Fischer.

About you

1. What made you decide to be a geoscientist?

I've always been fascinated by the atmosphere. Hurricane Bob hit the state of Rhode Island when I was 11 years old, and I was awestruck. I called our local TV meteorologist to ask what made wind when I was in 5th grade. I really can't imagine a career that did not involve the atmosphere.

2. Tell us about your work as an Assistant Professor

I really love my job. Working with students is energizing. Teaching helps keep me sharp on fundamentals. I really enjoy the process of generating new ideas for research projects.

Research

3. What do you enjoy most about working in your research area?

I like the mixture of the work. I work with many tools (*in situ* observations, new satellite-based measurements, state-of-the science atmospheric chemistry models), and it's fun to see how each tool can teach you about the atmosphere from a different perspective.

4. What topics are you currently interested in learning more about? Are you following any research developments in particular?

I am always interested in emerging air quality issues. I particularly enjoy working on issues that are locally relevant. For example, I have projects that focus on the impacts of oil and gas development and wildfire smoke on air quality. Both are really relevant to people living in Colorado, but they are also national/international issues.

5. What are your biggest concerns for the future within the geoscience field?

The lack of diversity in our field is the biggest challenge we face. Our field will not be ready to face the challenges we need to face without a much more diverse workforce.

Generally, it is not understood that much of the science happens in teams, rather than driven by individuals. There is also the perception that this work is not compatible with family life.

6. Who or what inspires you?

My daughters and the atmosphere.

Figure 2. PROGRESS–Promoting Geoscience Research Education and Success.

7. How can others find you online and follow your activities?

http://fischer.atmos.colostate.edu

Women in Geoscience

8. How can geoscientists around the world support girls in pursuing STEM subjects, and geoscience in particular?

We need to take the gender imbalance seriously and there are several things that can really help:

1. We need to make the women that are currently succeeding more visible to younger women. This will help with recruitment and retention.
2. We need to clarify unwritten rules. Women are disadvantaged when there are unwritten rules about how things really work.
3. We need to all make sure that the implicit bias that lurks inside us does not actually dictate how we make decisions.
4. We need to remember that the geosciences are not a sport – physical ability is not a prerequisite to success.
5. We need to prepare everyone for working in diverse teams. Teams, not individuals, drive science forward.
6. We need to combat the perception that STEM is not compatible with family life. It is, and STEM jobs are higher paying jobs. STEM jobs allow women to support their families.

9. Have you had to overcome any gender barriers in your career?

Of course, but I probably can't see them.

10. **How are you personally working to support the next generation of women?**

Outside of my research, I serve on the leadership board for ESWN (Earth Science Women's Network)

and in 2014, a group of us decided to explore ways in which to build a network for early career women in the earth and environmental sciences.

https://geosciencewomen.org/

Along with several colleagues from the earth sciences (Amanda Adams (NSF) and Rebecca Barnes (Colorado College), I joined up with several social scientists, with expertise in gender and educational psychology. Together we built an experiment to test what would happen if female undergraduate geoscientists were exposed to a same-gender network of support and mentoring. The mentoring was facilitated by more senior women across the geosciences.

Our project, which is called PROGRESS (PROmoting Geoscience Research Education and SuccesS), aims to directly challenge a number of harmful stereotypes that exist within the Geoscience community. For example, geoscientists are often thought of as white male outdoorsy types.

The program shows the next generation of women that women are already succeeding in counter-stereotypical roles. By doing this, we can change their perceptions and their expectations for themselves. PROGRESS is tool for discussing stereotypes, building women's networks, and opening doors for mentoring.

10. What are the key results of PROGRESS

Our team has found that the persistence of undergraduate women in Geoscience-related majors is related to the number of female STEM career role models they identify. Their odds of persisting approximately doubles for each role model they identify, and this is incredible. Our program helps students connect to mentors. For example, students in the program are able to identify 3 or 4 individuals as a mentor, whereas undergraduates typically can only identify 1. Those students with a mentor are also more likely to perceive themselves as scientists.

PROGRESS has helped me and my team show just how important having a mentor or role model is for a scientific identity and to a women's intent to pursue the earth and environmental sciences. We also learned that a key aspect of retaining undergraduate women may be to increase their positive interactions with academic faculty. Students' inclusion in the program is random, and thus their original likelihood of success is equal to those outside of the program.

PROGRESS currently runs in the Carolina's, Colorado and Wyoming and the project is generally very scalable. If anyone reading this would like to start their own PROGRESS network, please reach out to me! I will help you get it started!

Funding
This work was supported by National Science Foundation [grant number DUE-1431795, DUE-1431823, & DUE-1460229].

Author details
Emily Fischer[1]
E-mail: evf@rams.colostate.edu

[1] Department of Atmospheric Science, Colorado State University, Fort Collins, CO, USA.

Citation information
Cite this article as: Women in Geoscience : An interview with Emily Fischer, Emily Fischer, *Cogent Geoscience* (2018), 4: 1432284.