

## **Not My Fault: The whiteness Problem in earth sciences**

Lori Dengler/For the Times-Standard  
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Two weeks ago, the HSU Geology Department sent an email to students expressing the faculty and staff's deep concern over racism and the systemic exclusion of substantial communities. The letter acknowledged that this has been a problem for a long time and that the Geology Department is committed to change.

The Geology Department letter included a link to a paper published in Nature last December, "Race and racism in the geosciences (<https://www.nature.com/articles/s41561-019-0519-z?proof=trueMay%2525252F>). The author is Kuheli Dutt, the Diversity Officer at the Lamont-Doherty Earth Observatory, one of the most prominent earth sciences research institutions in the country. She used recent statistics and presented new analyses of the reason for racial disparities, but there was little that I hadn't already heard. There has been little change in the diversity mix over the past forty years.

A National Center for Science and Engineering Statistics study in 2015 called the geosciences the LEAST diverse of all the science, technology, engineering, and math (STEM) fields (<https://eos.org/science-updates/increasing-diversity-in-the-geosciences>). The statistics point to deficiencies among all underrepresented groups but Black Americans stand out. Not only is the percent of Black graduate students, post-docs and professionals low in the geosciences, it hovers around half the rate of Black participation in other STEM fields.

Why so low? One can point to all the usual reasons for STEM barriers such as poor preparation in math and science at the precollege level, lack of role models in STEM fields as teachers and mentors and implicit bias. But this doesn't explain why black students are less than half as likely to pursue careers in the earth sciences compared to the other STEM disciplines. Several reasons have been proposed. One is that Black Americans are more likely to have grown up in urban environments and are just less familiar with outdoor disciplines and went to high schools less likely to offer earth sciences or field trips. I'm not sure that I buy this reason – earth science is still not widely offered as a college prep class in high

school and in my experience, most students didn't become aware of the field until college.

Another reason is unfamiliarity with the field. Geoscience is not as well known as other STEM disciplines. Relatively few high school students or undergrads are going to put geology near the top of their list of good places to find a job. They are much more likely to list engineering, medicine, or biology. This perception is unfortunate because the US Department of Labor consistently rates the outlook for geoscience fields in both job opportunities and salary as high.

A third suggestion is negative role of stereotypes. The image in countless documentaries, especially older ones, is the virile, athletic white male leaping from rock to rock, oozing in enthusiasm and a delivering flawless lectures with no shortness of breath. When introduced to actual geology departments on university campuses, what you see is different – the professors are older but still primarily white men. Nowadays you will find women - white females now make up more than a third of the geoscience workforce according to the American Geosciences Institute, but it is extremely rare to find an instructor of color.

I contend that it is not only the lack of Black professors, but lack of students that creates an unwelcoming impression. Take a walk down the halls of any geology department and peek into the labs. You will find it hard to spot any Black faces. In disciplines with more students, it is more likely that there will be at least a few people of color. It becomes a negative feedback loop – no students like me, so I won't consider this field.

Why does diversity matter? Why do many of my colleagues call the lack of Black participation one of the most significant problems facing my discipline? You might think that as long as there are plenty of competent young people entering the field, the needed work will get done – consulting positions will be filled, there will be plenty of employees for resource fields and research efforts – and the earth sciences will continue along the same path we have been on.

Complacency is the enemy of science. We need out-of-the-box thinkers. Different backgrounds means new perspectives and ways of thinking and we need all of them in the mix right now. Whether it's climate change, epidemiology, resource use or building communities resilient to disaster, we need the entire bandwidth of human abilities. STEM fields are not isolated to the ivory tower. How a research project is chosen, carried out,

interpreted and communicated has societal consequences for all of us. Relegating this effort to one race or sex will skew both process and results.

Every community must feel they have a stake in science and how it contributes to their lives. Black Americans have plenty of reasons to be suspicious of scientific studies from past experience and feeling excluded only exacerbates the mistrust. Whether it's vaccines or what to do in an earthquake or tsunami, Black voices must be heard.

I've been an earth scientist for over 55 years. In those years, I have had hundreds of colleagues from other countries and other nationalities. Their perspectives have added immeasurably to my work. Only one of those people was Black and he wasn't an American. In 1998 I spent two weeks in Papua New Guinea on a post tsunami survey. My right hand person was Michael Nongkas, a senior honors student at the University of Papua New Guinea. I have wonderful memories of Michael - the biggest, blackest, and most linguistically savvy person I have ever worked with. He was thoughtful and funny and had encyclopedic knowledge of previous survey team results. Most importantly he could communicate with all the tribal groups affected.

I never thought of myself as racist during my career. But I need to fess up – I was part of the problem and like almost all of my geoscience colleagues, the state of our discipline is our fault. We are smart people and we needed more than implicit bias trainings, workshops and affirmative action postings to change the culture in earth sciences. The letter my colleagues wrote is a small beginning. I just hope they will be more successful than I was. A good place to start is the book "How to be an Antiracist", by Ibram X. Kendi.

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