



Where I work Asmeret Asefaw Berhe

Photographed for *Nature* by
T. A. Ghezzehei.

Humans are, of course, reliant on soil for food. But what many might not realize is that soil's rich biodiversity helps to regulate the composition of Earth's atmosphere by recycling and storing nutrients, such as carbon.

Growing up in Eritrea, my scientific training focused on the soil of east Africa – home to the earliest land cultivators, but now suffering from deforestation and desertification. I studied how carbon is lost through soil disturbance and degradation.

I've been in California since 2000, and in my work as a biogeochemist I study how physical changes to soil – from erosion, fire or changing climatic conditions – affect carbon dynamics, and how Earth helps to balance carbon levels.

I'm interested in how some soils hold on to organic carbon for hundreds, even thousands, of years without degrading – and how that stability controls the amount of carbon emitted to the atmosphere. My team at the University of California, Merced, has found that more than 70% of soil carbon in some temperate regions can be stored

long-term at depths of up to 10 metres; this keeps it out of the atmosphere, where it can accelerate climate change.

To get such insights, we have to dig pits or collect samples to understand what happens deep underground. In this image, I'm on my belly (after a recent foot injury) examining clods at Merced Vernal Pools and Grassland Reserve soil pit, where I teach students how to describe soils in terms of their colour, clay content and ability to form stable clumps.

Earth and soil science is an area that desperately needs more diversity in its participants. My goal as professor and associate dean for graduate education is to create a welcoming environment that will attract under-represented groups. If we continue to exclude scholars from minoritized communities, we're not just hurting them, we're hurting the science needed to help us adapt to climate change.

Asmeret Asefaw Berhe is a biogeochemist at the University of California, Merced, and director of the US Department of Energy Office of Science. **Interview by Virginia Gewin.**

Clarification

This Where I work article mistakenly referred to Asmeret Asefaw Berhe as Asmeret Berhe.