Tony Hartshorn sees soil as a “common denominator or common currency” and his “universal translator.” Wherever he may travel in the world, he can dig a hole, look at the soils to get an idea what that place is like, and use the information as a starting point to talk to local people and learn more.

Hartshorn is an Assistant Professor in the Department of Land Resource and Environmental Sciences at Montana State University in Bozeman. And while soils may be his universal translator, knowing Spanish was helpful for a recent trip to Peru where the SSSA member traveled as a Fulbright Specialist.

The Fulbright Specialist program works to link U.S. scholars with colleagues from other parts of the world. Having completed research on soil remediation at mined sites in Montana, Hartshorn saw the Fulbright program as an opportunity to teach students in Peru about his work and learn from local soil scientists who work in a region with a long history of mining.

“We only have about a 150-year legacy of mining here, since the discovery of gold essentially, in Montana,” Hartshorn says. “You get a 1,000-year legacy when you go to Peru, and that’s because the Inca’s were mining for a long, long, long time before the Spanish arrived.”

Hartshorn wasn’t always fascinated by soils. He went to Dartmouth College in Delaware where he majored in English before making the switch to geography and environmental science because he “wanted to try to get outside a little bit more.” After graduating, he worked as an environmental consultant in Alaska for five years, which he says “started piquing my interest in soils because of these crazy, beautiful places in extremely remote Alaska.” While there, he also met Dr. Chien-Lu Ping and says that time spent with Ping is what put him on his trajectory to his current position teaching soil science. Hartshorn left Alaska and attended the University of California at Davis for a graduate degree in soil science.

“I feel incredibly lucky. I don’t know how I won that lottery, but I totally did.”

Hartshorn says the research program he is trying to build “fits into two boxes in the periodic table of elements: arsenic and carbon.” With a focus on previously mined sites, Hartshorn and his students are looking into what is happening with arsenic that has been released from mines—where it goes in the environment and how to minimize risks to human health. His lab’s carbon research focuses on CO₂ flux out of soils under different conditions. Hartshorn says he is guided by questions that ask what the loss of carbon looks like—before and after a forest fire and before and after an irrigation event.

Currently, Hartshorn advises three graduate students and has four undergraduates working on various projects. With both the students he advises and those taking his classes, he hopes to promote the importance of soils and convey his passion for the science, which has not waned. “I feel incredibly lucky,” he says. “I don’t know how I won that lottery, but I totally did.”