Pedology Key to Understanding Our Changing Earth in the ‘Age of Humans’

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Upon approaching land after sailing the South Pacific Ocean, visitors to Easter Island are greeted by enormous statues. The statues, called moai, are huge figures carved out of stone—some full-bodied and standing guard over the island and others just heads looking out to the ocean. Recent excavations of moai have uncovered something surprising below the gigantic stone heads, though—attached bodies.

As more excavation work is done on the island, it is becoming obvious that many of the moai that appear to be heads are in fact full figures with varying amounts of their bodies buried beneath the ground. And the theory of how they became buried intrigues Cynthia Stiles, the USDA state soil scientist for Hawaii.

“The bodies were likely buried by erosional materials—soils that came down from higher elevation,” Stiles explains. “As the early residents of the island intensified their land use and stripped off trees, forests, and vegetative cover, the soils may have become vulnerable to water and wind erosion.”

Striking examples of land degradation caused by human activity are in no way relegated to the past. In fact, humans now manage over half of the land on earth, which means our influence is greater than at any other time in history. Dan Richter, professor of soils and ecology at Duke University, believes it is critical that we move from seeing ourselves merely as agents disturbing the soil to agents actually helping to form it. In recent years, geomorphologists and stratigraphers, geoscientists who study erosion, landscapes, and earth’s history, have advanced the idea that humans have become a geologic force on a global scale.

“It’s quite humbling to realize that humans today are the planet’s major geomorphic agent, sculpting the earth’s landscapes at a rapidly increasing rate,” Richter says.

The Age of Humans

The significant role that humans are now playing in changing the earth has led to the possible renaming of the current geologic age from the Holocene to the Anthropocene (the Greek root “anthropo” means “human”). Stratigraphers, who study different layers of rock and are in charge of the geologic names of the ages, are currently unsettled as to whether or not the name should be changed. An international working group, of which Richter is a part, has been formed to address the issue.

“I think it’s most important that we move ahead and think about the earth system with this name,” he says. “Humans have long had an influence on the local and regional environments, but like it or not, we as a species are influencing earth’s soils and main biogeochemical cycles at a global scale today.”

While Richter is excited about the prospect of a name change to reflect the input of humans, he cautions that the Anthropocene should not only be taken to be the “Age of Humans.” By focusing on humans alone, he says, that phrase diminishes all of the ongoing natural processes and the profound interactions of humans and nature. “The Anthropocene is really the age of people and nature,” Richter states.

Regardless of what the geologic age is named, the fact that people have an extensive impact on soils is undeniable. Evidence can be seen in many places. In Hawaii, land management practices by early Polynesians have left lasting impressions on the land, actually changing the way the water flows.

“Streams don’t always flow from high elevation to the ocean here,” Stiles explains. “Rather, they flow laterally across the landscape because of early Hawaiians’ efforts to channel the water for irrigation.”