Massive 'carbon sinks' detected beneath world's deserts

Researchers say carbon's journey to the middle of a desert aquifer takes 10,000 years.

Brooks Hays, United Press International, 7-29-15

URUMQI, China -- Keeping track of CO2 isn't easy. It's everywhere.

Most of the carbon dioxide released into the air by humans (roughly 70 percent) ends up in the atmosphere or the ocean, but the greenhouse gas is also soaked up by plant life. But plants can't account for all the missing gas.

New research suggests aquifers flowing beneath the world's deserts are hiding away large amounts of CO2. According to the new study, these "carbon sinks" may hold more carbon than all the planet's plants combined.

A team of international researchers suggest the process by which carbon makes its way into large underground pools was accelerated by the advent of large-scale farming some 2,000 years ago. Crops absorb carbon from the atmosphere. From there, the carbon is leeched into the soil and ultimately the groundwater below.

"The carbon is stored in these geological structures covered by thick layers of sand, and it may never return to the atmosphere," Yan Li, a desert biogeochemist with the Chinese Academy of Sciences in Urumqi, China, said in a press release. "It is basically a one-way trip."

Li is the lead author of a new study on the phenomenon, published in this week in the journal Geophysical Research Letters.

In an attempt to better understand the journey of carbon from air to plants to aquifer, Li and his colleagues analyzed a variety of groundwater samples from the Tarim Basin in Xinjiang, the northwest region of China. They found CO2 levels double as water flows through irrigated fields.

The water flowing from the mountains through farmland in the basin continually picks up dissolved carbon along, ultimately carrying it deep into the middle of the desert -- a process that takes some 10,000 years.

Based on their understanding of the Tarim Basin aquifer, researchers estimate that aquifers flowing beneath the world's deserts hold roughly one trillion tons of carbon -- a terrestrial carbon sink greater than all the planet's plants.

Scientists say additional research into the role of individual aquifers in carbon sequestration will help climatologists improve their global warming models.