Agricultural soil erosion is not adding to global warming

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Agricultural soil erosion is not a source of carbon dioxide to the atmosphere, according to research published online today (October 25) in the journal *Science*. The study was carried out by an international team of researchers from UC Davis, the Catholic University of Leuven in Belgium, and the University of Exeter in the U.K.

Carbon emissions are of great concern worldwide because they, and other greenhouse gases, trap heat in the Earth's atmosphere and are a major cause of global climate change.

"There is still little known about how much carbon exactly is released, versus captured, by different processes in terrestrial ecosystems," said Johan Six, a professor of agroecology at UC Davis and one of the study's authors. "We urgently need to quantify this if we are to develop sensible and cost-effective measures to combat climate change."

In their new study, the researchers found that erosion acts like a conveyor belt, excavating subsoil, passing it through surface soils and burying it in hollows downhill. During its journey, the soil absorbs carbon from plant material; when the soil is buried, so is the carbon.

Erosion, therefore, creates what can be described as a "sink" of atmospheric carbon.

The team improved previous estimates of the amount of carbon being sunk. Said lead author Kristof Van Oost of the Catholic University of

Leuven, "Some academics have argued that soil erosion causes considerable emissions of carbon, and others that erosion is actually offsetting fossil-fuel emissions. Now, our research clearly shows that neither of these is the case."

They found that erosion captures the equivalent of about 1.5 percent of annual fossil-fuel emissions worldwide. Earlier studies suggested a broad range of erosion's effects, from a sink equaling 10 percent of fossil-fuel emissions, to a source equaling 13 percent.

Even without major carbon impacts, the researchers said, erosion is a problem that must be addressed, because it has a detrimental effect on agricultural productivity and the surrounding environment.

Source: University of California - Davis