

Humans causing erosion comparable to world's largest rivers and glaciers

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(PhysOrg.com) -- A new study finds that large-scale farming projects can erode the Earth's surface at rates comparable to those of the world's largest rivers and glaciers.

Published online in the journal *Nature Geoscience*, the research offers stark evidence of how humans are reshaping the planet. It also finds that - contrary to previous scholarship - rivers are as powerful as glaciers at eroding landscapes.

"Our initial goal was to investigate the scientific claim that rivers are less erosive than glaciers," says Michele Koppes, a professor of geography at the University of British Columbia (UBC) and lead author of the study.

"But while exploring that, we found that many of the areas currently experiencing the highest rates of [erosion](#) are being caused by [climate change](#) and human activity such as modern agriculture," says Koppes, who conducted the study with David Montgomery of the University of Washington.

In some cases, the researchers found large-scale farming eroded lowland agricultural fields at rates comparable to glaciers and rivers in the most tectonically active mountain belts.

"This study shows that humans are playing a significant role in speeding erosion in low lying areas," says Koppes. "These low-altitude areas do not have the same rate of tectonic uplift, so the land is being denuded at

an unsustainable rate."

Koppes says other significant causes of low-altitude erosion include glacier melting caused by climate change and volcanic eruptions.

The highest erosion rates have typically been seen at high altitudes where tectonic forces pit rising rock against rivers and glaciers, says Koppes, who with Montgomery created with an updated database of erosion rates for more than 900 rivers and glaciers worldwide, documented over the past decade with new geologic measuring techniques.

Contrary to previous scholarship, they found that rivers and glaciers in active mountain ranges are both capable of eroding landscapes by more than one centimetre per year. Studies had previously indicated that [glaciers](#) could erode landscapes as much as 10 times faster than [rivers](#), Koppes says.

More information: View the study at: www.nature.com/ngeo/journal/va...ent/abs/ngeo616.html

Source: University of British Columbia ([news](#) : [web](#))

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