Amazon rainforest losses impact on climate change, study shows

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Solimões, the section of the upper Amazon River. Image: Wikipedia.

Human activity has removed more than one-tenth of trees and plants from the Amazon rainforest since the 1960s, a study shows.

Widespread removal of trees has contributed to a rise in the amount of carbon dioxide in the atmosphere, increasing the potential impact of climate change, researchers say.

Deforestation of the Amazon accounted for 1.5 per cent of the increase in carbon dioxide levels seen since the mid-nineteenth century, the team says.

However, this increased the total amount of carbon found in the atmosphere only very slightly compared with fossil fuel emissions,

which account for the vast majority of the increase.

Had this deforestation not taken place, the rainforest would store 12 per cent more carbon in its vegetation, and cover a much larger area than at present, the team adds.

The study is the first to show the extent of Amazon deforestation by determining the impact humans have had on the ability of the rainforest to store carbon.

Trees absorb carbon dioxide from the atmosphere in order to grow. This can help offset fossil fuel emissions of carbon dioxide, reducing the rate of climate change, the team says.

The team made maps to show what size the Amazon would be today if humans had not deforested large areas of it.

High-resolution satellite images have been available only since 2000, so the team made virtual models to work out how the rainforest changed in earlier decades. Researchers used these to study how the loss of trees reduced the rainforest's ability to store carbon.

Destruction of large areas of the Amazon also impacts on the biodiversity of the rainforest and could lead to the loss of many animal and plant species, researchers say.

The study, published in the journal *Geophysical Research Letters*, was funded by the Natural Environment Research Council.

Dr Jean-François Exbrayat, of the University of Edinburgh's School of GeoSciences, who led the research, said: "Our study indicates that the impact of large-scale deforestation on the Amazon carbon balance has been partially offset by ongoing regrowth of vegetation, despite

sustained human activity. Overall, our results provide a baseline to better understand the global carbon cycle."

Provided by University of Edinburgh