

Amazon's recovery from forest losses limited by climate change

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Uncontacted indigenous tribe in the Brazilian state of Acre. Credit: Gleilson Miranda / Governo do Acre / Wikipedia

Deforested areas of the Amazon Basin have a limited ability to recover because of recent changes in climate, a study shows.

Limited growth in a drier [climate](#) has restricted the amount of carbon that new trees can lock away from the atmosphere, reducing their ability to counteract the effects of global warming.

Forests replanted today would likely be able to recapture only two-thirds of the carbon that they have lost to the atmosphere in the past 20 years through deforestation and climate change, researchers say.

The findings could inform conservation strategies, including goals set out in the Paris Agreement, in which many countries have committed to reforestation.

Scientists say that while replanting forests remains an effective way to counter the effects of climate

change, their latest findings show that this may prove to be challenging.

Researchers used artificial intelligence to combine satellite data and [climate records](#) to reconstruct annual maps of [forest](#) changes due to deforestation and climate in the Amazon Basin.

Teams from the University of Edinburgh, UK National Centre for Earth Observation (NCEO) and Nanjing University of Information Science and Technology in China took part.

Over two decades to 2012, the overall amount of carbon lost to deforestation and climate change combined was 2.2 billion tonnes. This is equivalent to about 10 years' worth of [fossil fuel emissions](#) from countries spanning the Amazon Basin.

The study is the first to differentiate between the impact of human activity in the Amazon - such as [deforestation](#) or changes in land use - and the impact of climate change to quantify the carbon-storing potential of new forests.

Further studies of tropical regions involving new satellites should enable scientists to work with affected countries to better conserve and manage their forests.

The research, published in *Scientific Reports*, was funded by the Natural Environment Research Council.

Professor Mathew Williams, of the University of Edinburgh's School of GeoSciences, said: "Owing to the impact of [climate change](#), replanted and recovering forests may not grow to the sizes found in the undisturbed Amazon."

Dr Jean-François Exbrayat, of the NCEO, who led the study, said: "Technological advances are enabling us to build a clearer picture of the resilience of the Amazon and other [tropical forests](#),

which will help develop strategies to safeguard these environments."

NCEO scientists will share their research with the public at UnEarthed: Explore the world at your feet, a free interactive showcase of environmental science at Our Dynamic Earth, Edinburgh, from 17-19 November.

More information: Jean-François Exbrayat et al, Impact of deforestation and climate on the Amazon Basin's above-ground biomass during 1993–2012, *Scientific Reports* (2017). [DOI: 10.1038/s41598-017-15788-6](https://doi.org/10.1038/s41598-017-15788-6)

Provided by University of Edinburgh

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