
AMAZON FORESTS FAILING TO KEEP UP WITH CLIMATE CHANGE

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Moisture-loving tree species are dying more frequently. Canopy species in the upper levels of the forests, and pioneer trees, which outcompete smaller plants and prosper in gaps between dying trees.

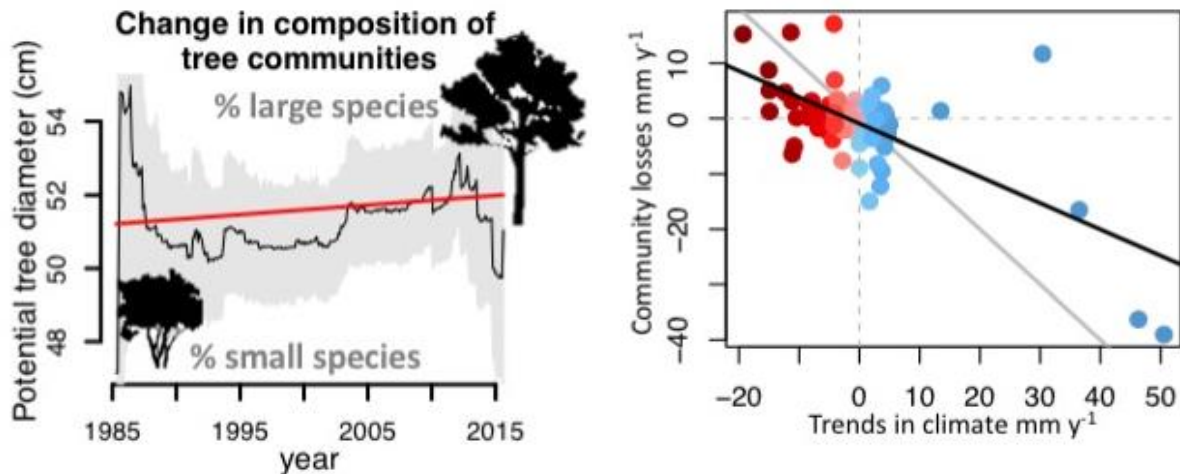
RESEARCH SUMMARY

The Amazon is the largest tropical rainforest in the world, and evidences on trees diversity loss are a concern to all. A team of more than 100 scientists, led by University of Leeds in collaboration with more than 30 institutions around the world, has assessed the impact of global warming on thousands of tree species across the Amazon to discover the winners and losers from 30 years of climate change.

The team used long-term records from more than a hundred plots as part of the Amazon Forest Inventory Network ([RAINFOR](#)) to track the lives of individual trees across the Amazon region.

KEY FINDINGS

Their results reveal that since the 1980s, the effects of global environmental change – stronger droughts, increased temperatures and higher levels of carbon dioxide in the atmosphere – has slowly affected specific tree species' growth and mortality. Analysis found the effects of climate change are altering the rainforest's composition of tree species but not quickly enough to keep up with the changing environment. With higher mortality in tree species most vulnerable to droughts and not enough compensatory growth in species better equipped to survive drier conditions, the findings highlight the need for strict measures to protect existing intact rainforests.



(Left) Canopy species would be climate change “winners” as they benefit from increased carbon dioxide, which can allow them to grow quicker. (Right) Moisture-loving tree species are dying more frequently than other species and those suited to drier climates were unable to replace them.

This further suggests that higher carbon dioxide concentrations have a direct impact on rainforest composition and forest dynamics – the way forests grow, die and change.

The species most vulnerable to droughts are doubly at risk, as they are typically the ones restricted to fewer locations in the heart of the Amazon, which make them more likely to be extinct if this process continues.

This work has important implication on the future of the forest, such as a dramatic change that might occur to the services this ecosystem provides as a result from the changes in the biodiversity of the trees. The information collected is used to provide guidance for trees species management. Our results also imply that species might need to move across the Amazonian, therefore to save the diversity of the forest we will need to build corridors of parks and reserves.

The network have monitored thousands of trees in the Amazon for the last 30 years. This work is based on a long term partnership between over 80 institutions and the involvement of over hundred researchers from several countries all willing to helping to collect the data, share it and support the standardisation of the findings and collaborate in the large-scale analysis. While collecting the data, new trainings and best practices were developed and delivered, influencing hundreds of students.

We hope that the forest and the people who live in the forest will be directly benefiting from the research findings. We aim to gain the attention of researchers from other disciplines so our outputs could be contributing to findings which will enable to predict events influenced by future climate scenarios.

This briefing is based on a peer-reviewed research article published in the journal *Global Change Biology*, which can be accessed here: <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14413>

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