

FOREST CONSERVATION

Brazilian detection loopholes

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The rate of deforestation in the Brazilian Amazon has fallen steeply in recent years, according to official figures. These reductions are generally attributed to land protection policies put in place between 2004 and 2008. A perennial problem with protected areas, however, is the potential for transferral of forest clearance to other regions and neighbouring nations.

Peter Richards from Brown University, USA, and colleagues investigate a more cryptic form of deforestation displacement; the extent to which official figures reflect changes in practice that exploit monitoring and legislation loopholes. Satellite data from the 'official' Brazilian Amazon deforestation monitoring project (known as PRODES) is compared with two independent satellite measures of forest cover.

They find that following 2008 — when the PRODES system became integral to deforestation enforcement — a new pattern of deforestation emerged with activity shifting to dry, secondary and small forest patches (<6.25 hectares) that are not monitored by PRODES. Consequently, recent progress in protecting monitored forests in the Brazilian Amazon may be smaller than official figures suggest. AB

PSYCHOLOGY

Biased recall is polarizing

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Unlike other politically divisive issues, the discussion about climate change does not centre on how best to take action, but on whether there is a problem in the first place. This is surprising in the face of accumulating objective scientific evidence about the reality of anthropogenic climate change and its consequences.

Erin Hennes from Purdue University, USA, and co-authors tested whether system justification — the non-conscious motivation to justify current social, economic, and political arrangements — promotes polarization by biasing people to remember objective information to be more consistent with their views. Indeed, system justification motivation tends to be higher in political conservatives, who are also more likely to be climate change sceptics.

The authors report that participants higher in economic system justification were more likely to misremember scientific evidence about climate change presented in a documentary as less severe. This recall bias predicted self-reported belief in climate change after watching the film

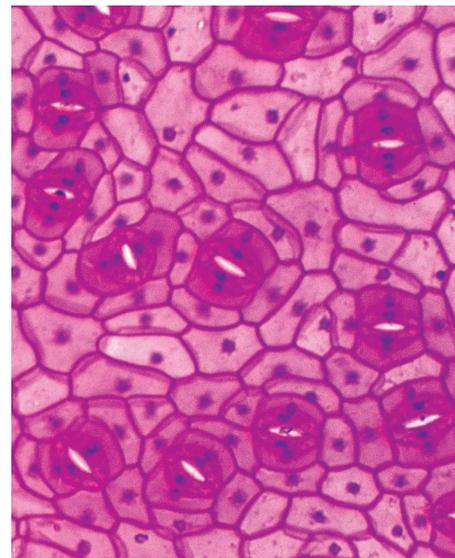
in a direction that increased polarization. Because information processing can be biased due to system justification, simply providing the public with scientific evidence is not sufficient for reducing climate change scepticism. JR

PLANT PHYSIOLOGY

Responses to drought

Proc. Natl Acad. Sci. USA

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DE AGOSTINI PICTURE LIBRARY / CONTRIBUTOR / DE AGOSTINI / GETTY

With many regions of the world expected to experience increasing drought, meaningful predictions of species and ecosystem responses to climate change are contingent on understanding of drought tolerance. Plants' drought tolerance is determined by many interacting physiological traits but general patterns of these plant-trait relationships have, perhaps surprisingly, not yet been assessed.

Megan Bartlett from the University of California, Los Angeles, USA, and co-workers address exactly this question. Using meta-analysis methods they synthesize published data for stomatal, hydraulic, and leaf tissue drought tolerance traits for 310 species from ecosystems worldwide. They find that most traits are correlated across species, and these associations are largely driven by co-selection with environmental water stress.

These findings lay the groundwork needed to improve representation of variation in multiple traits in dynamic global vegetation models used to simulate plant responses to drought and the associated ecological and biogeochemical implications. AB

Written by Alastair Brown and Jenn Richler.

CLIMATE FEEDBACKS

Decadal cloud dynamics

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Clouds strongly influence the amount of solar radiation absorbed into the Earth system and thermal radiation lost to space. Consequently changes in cloud cover and type, associated with the changing climate and the resultant balance of clouds' warming and cooling effects, are generally accepted to be the major source of uncertainty in our understanding of the Earth's climate sensitivity to a doubling of atmospheric CO₂ — equilibrium climate sensitivity.

Chen Zhou from the Lawrence Livermore National Laboratory, USA, and co-workers explore the relationship between cloud feedbacks and patterns of decadal climatic variability using climate model simulations. Their findings reveal that the global average cloud feedback effect has varied widely over time in association with patterns of sea surface temperature. In particular, increasing temperature gradients between the west and east Pacific facilitate an increase in the formation of low level clouds which then reflect a greater proportion of incoming solar radiation.

These findings provide a mechanism that could explain why climate sensitivity estimates based on recently observed trends are likely too low and may also help to account for the reduced warming between 1998 and 2013. AB