

Nature Climate Change

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Editorial

Having an impact

As the journal's first impact factor is released, it is time to reflect on journal metrics and how *Nature Climate Change* has been making its mark. **p.601**

Correspondence

Anthropogenic CO₂ emissions

M. R. Raupach, C. Le Quéré, G. P. Peters & J. G. Canadell **p.603-604**

Reply to 'Anthropogenic CO₂ emissions' **p.605**

Roger J. Francey, Cathy M. Trudinger, Marcel van der Schoot, Rachel M. Law, Paul B. Krummel,

Threats to coastal aquifers **p.605**

Chunhui Lu, Adrian D. Werner & Craig T. Simmons

Reply to 'Threats to coastal aquifers'

Grant Ferguson & Tom Gleeson

Blood product safety **p.605-606**

Mitchell Berger

Commentaries

Managing risk with climate vulnerability science

Climate information alone cannot be sufficient for anticipating and reducing climate impacts. Enhanced vulnerability science is needed, including local to global monitoring, to support effective anticipatory efforts to increase societal resilience to potentially disruptive events. **p.607-609**

Paul C. Stern, Kristie L. Ebi, Robin Leichenko, Richard Stuart Olson, John D. Steinbruner &

Fostering knowledge networks for climate adaptation

We must forge network connections among rapidly changing communities of decision-makers and researchers to foster the social learning necessary for effective adaptation to climate risks.

David Bidwell, Thomas Dietz & Donald Scavia

p.610-611

Mitigation win-win

Win-win messages regarding climate change mitigation policies in agriculture tend to oversimplify farmer motivation. Contributions from psychology, cultural evolution and behavioural economics should help to design more effective policy.

Dominic Moran, Amanda Lucas & Andrew Barnes

p.611-613

Policy Watch

EU adaptation policy sputters and starts

The road ahead for the European Union's new climate adaptation strategy is a long and bumpy one, reports Sonja van Renssen.

p.614-615

Research Highlights

Carbon dioxide fertilization: Hot, dry and greening

Species redistribution: The devil's in the detail

Meteorology: Weather and climate

Adaptation: Relocation hurdles

Climate impacts: Thirsty biofuels

News and Views

Public opinion: Stunted policy support

Energy policy is widely debated, with regards to climate change, alternative energy use and responsibility for policy. Research now highlights the role of citizens in public debates about energy and how it can be swayed.

James N. Druckman

p.617

Oceanography: Has global warming stalled?

Following a period of rapid warming from the 1970s, global temperatures seem to have stalled. New analysis of the uptake of heat by the upper ocean sheds light on the cause and suggests that the slowdown could have been predicted.

Doug Smith

p.617-618

Atmospheric Science: Volcanic rain shift

The distribution of dust particles in the stratosphere affects the location of the tropical rainband. The possible implications of this for geoengineering — by injection of particles — need to be taken into account before implementation.

Yochanan Kushnir

p.619-620

Correction

Correction

p.620

Perspectives

Integrated analysis of climate change, land-use, energy and water strategies

The use of land, energy and water can contribute to climate change, which, in turn, affects the systems that provide those resources. Efficient resource management can limit climate impacts and support adaptation practices. An approach integrating resource assessments and policy-making is proposed to manage land, energy and water effectively.

p.621-626

Mark Howells, Sebastian Hermann, Manuel Welsch, Morgan Bazilian, Rebecka Segerström,

Characteristics of low-carbon data centres

Increased use of IT services can contribute to reducing carbon emissions, given the improvements in efficiency of IT devices and data-centre operations. However, credible metrics to reward the data centres for minimizing carbon emissions are still lacking. This Perspective identifies the characteristics of low-carbon data centres and the factors that govern carbon performance.

Eric Masanet, Arman Shehabi & Jonathan Koomey

p.627-630

Building resilience to face recurring environmental crisis in African Sahel

Access to timely climate information is critical for empowering proactive decision-making to absorb climate shocks that would otherwise lead to large-scale humanitarian crises. The value of Rainwatch — a prototype geographical information system designed to increase interactions between local climate information users, their providers and supporting groups — is illustrated in the case of the unfavourable West African 2011 monsoon.

Emily Boyd, Rosalind J. Cornforth, Peter J. Lamb, Aonover Tarhule, M. Issa Lélé & **p.631-637**

Letters

Effects of climate change on US grain transport

Climate-induced shifts in crop mix may affect the grain transport system. In the US, evidence now shows that changing crop mixes reduce the importance of Lower Mississippi River ports, but increase the role of ports in the Pacific Northwest, Great Lakes and Atlantic. **p.638-643**

Witsanu Attavanich, Bruce A. McCarl, Zafarbek Ahmedov, Stephen W. Fuller & Dmitry V. Vedenov

Intensification of winter transatlantic aviation turbulence in response to climate change

Most weather-related aircraft incidents are caused by atmospheric turbulence; however, the effects of changing climate are not known. Climate model simulations show that clear-air turbulence, associated with jet streams, changes significantly for the transatlantic flight corridor when atmospheric carbon dioxide is doubled. These results suggest that climate change will lead to bumpier transatlantic flights by the middle of this century. **p.644-648**

Paul D. Williams & Manoj M. Joshi

Retrospective prediction of the global warming slowdown in the past decade

In recent years the global warming trend has plateaued, despite increasing anthropogenic emissions. Now research attributes this plateau to an increase in ocean heat uptake, through retrospective predictions of up to 5 years in length. The ability to hindcast this warming plateau strengthens our confidence in the robustness of climate models. **p.649-653**

Virginie Guemas, Francisco J. Doblas-Reyes, Isabel Andreu-Burillo & Muhammad Asif

Upper bounds on twenty-first-century Antarctic ice loss assessed using a probabilistic framework

Estimating the probable magnitude of future sea-level rise under global warming is complicated by a limited understanding of long-term ice-sheet dynamics. This study presents a probabilistic approach for assessing upper bounds on twenty-first-century Antarctic ice-sheet loss, and its effect on sea level.

Christopher M. Little, Michael Oppenheimer & Nathan M. Urban

p.654-659

Asymmetric forcing from stratospheric aerosols impacts Sahelian rainfall

Sahelian drought is investigated by analysing de-trended observations between 1900 and 2010, which show that substantial Northern Hemisphere volcanic eruptions preceded three of the four driest summers. Modelling both episodic volcanic eruptions and geoengineering by continuous deliberate stratospheric injection shows that large asymmetric aerosol loadings in the Northern Hemisphere are a precursor of Sahelian drought, whereas if the aerosol loadings are concentrated in the Southern Hemisphere greening of the Sahel is induced.

Jim M. Haywood, Andy Jones, Nicolas Bellouin & David Stephenson

p.660-665

Multiple greenhouse-gas feedbacks from the land biosphere under future climate change scenarios

The sensitivity of the terrestrial biosphere to changes in climate constitutes a feedback mechanism with the potential to accentuate global warming. Process-based modelling experiments now indicate that under a business-as-usual emissions scenario the biosphere on land is expected to be an increasingly positive feedback to anthropogenic climate change, potentially amplifying equilibrium climate sensitivity by 22–27%.

p.666-672

Benjamin D. Stocker, Raphael Roth, Fortunat Joos, Renato Spahni, Marco Steinacher,

Shifts in Arctic vegetation and associated feedbacks under climate change

This study shows that climate change could lead to a major redistribution of vegetation across the Arctic, with important implications for biosphere–atmosphere interactions, as well as for biodiversity conservation and ecosystem services. Woody vegetation is predicted to expand substantially over coming decades, causing more Arctic warming through positive climate feedbacks than previously thought.

p.673-677

Richard G. Pearson, Steven J. Phillips, Michael M. Lorant, Pieter S. A. Beck, Theodoros Damoulas,

Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss

Climate change is expected to significantly influence biodiversity, but the performance of climate change mitigation strategies in reducing these impacts is not yet known. Simulations of the future ranges of common and widespread species indicate that mitigation could reduce range loss by 60% if emissions peak in 2016, or by 40% if emissions peak in 2030.

R. Warren, J. VanDerWal, J. Price, J. A. Welbergen, I. Atkinson,

p.678-682

Spatial community shift from hard to soft corals in acidified water

Research combining the analysis of coral distribution in volcanically acidified waters with laboratory culture experiments indicates that reef communities may shift from reef-building hard corals to non-reef-building soft corals under CO₂ partial pressure (p_{CO_2}) levels of 550–970 μatm that are predicted to occur by the end of this century.

Shihori Inoue, Hajime Kayanne, Shoji Yamamoto & Haruko Kurihara

p.683-687