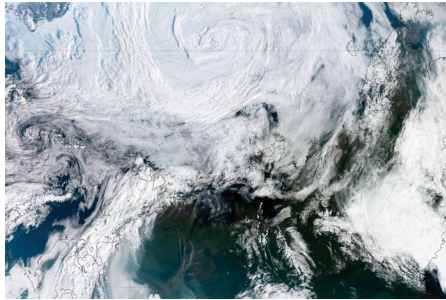


ATMOSPHERIC DYNAMICS

Arctic storms

J. Clim. **30**, 9847–9869 (2017)



Stocktrek Images Inc/Alamy Stock Photo

Arctic storms significantly influence sea-ice conditions, contributing, for example, to the record-breaking low sea-ice extent observed in 2012. During the summer, cyclogenesis — the development or strengthening of storms — is impacted by the Arctic frontal zone (AFZ), a band of strong temperature gradients that straddle the Arctic coastline in response to land–sea thermal contrasts. Using the CESM large ensemble and a cyclone detection and tracking algorithm, Alex Crawford and Mark Serreze from the National Snow and Ice Data Center, Colorado, examine how summertime cyclone activity in the Arctic will be affected by future changes in the AFZ.

By comparing the period 2071–2090 with 1990–2005, it is found that the June AFZ is strengthened throughout much of the troposphere, highlighting a shift toward its earlier seasonal development. These changes occur in response to antecedent snow melt and a resulting amplification of land–sea temperature

contrasts. As a consequence, increased and intensified Arctic cyclogenesis is projected over the Eurasian coastline, but little change is observed in cyclone frequency overall. Thus, future changes in the AFZ impact regional cyclogenesis and have associated impacts on sea-ice melt, temperature, and snowfall. GS

<https://doi.org/10.1038/s41558-017-0050-4>

CLIMATE ACTION

Business as usual

Acad. Management J. **60**, 1633–1661 (2017)



William Brooks/Alamy Stock Photo

Anthropogenic causes of climate change are intimately related to economic behaviour and businesses are increasingly being called on to respond. Christopher Wright and Daniel Nyberg explain how corporations, over time, make sense of, negotiate the meaning of, and adapt to the challenge of climate change.

Using data collected from public information on organizational responses, proprietary business documents, and

successive interviews with key managers, the authors create five in-depth case studies of major Australian corporations. Comparative analysis of the cases reveals a three-stage process of engagement with climate change, consisting of: framing — the process of interpreting climate change as something that is compatible with business; localizing — an effort to create local conventions and practices that respond to climate change; and normalizing — a final stage in which earlier climate change initiatives are unwound or realigned in a return to business as usual.

The framing of climate change in terms of profit maximization and shareholder value allows for the creation of business-compatible local practices, but leads naturally back towards business-as-usual. The authors argue that the inevitability of this process suggests that corporations are poorly suited to provide the dramatic decarbonization needed to avoid severe climate change. AY

<https://doi.org/10.1038/s41558-017-0051-3>

BIOGEOCHEMISTRY

African tropical forest carbon

Glob. Change Biol. <http://doi.org/cg5q> (2017)

Net primary productivity (NPP) of tropical forests is a key source of uncertainty in the global carbon cycle. African tropical forests in particular constitute Earth's second largest tropical forest block but have received far less research attention than South American and Southeast Asian forests.

Sam Moore from the University of Oxford and colleagues begin to redress this balance by providing a comprehensive analysis of NPP and carbon allocation to wood, canopy and root growth at contrasting lowland West African forest sites — evergreen (EF), semi-deciduous (SDF), dry forests (DF) and woody savannah (WS) — spanning a rainfall gradient.

They find that above and belowground carbon stocks follow the climate gradient more closely than NPP. Total NPP is highest in SDF, followed by EF then DF and WS sites, with each forest type having distinct carbon allocation patterns. Woody growth rate is found to be a poor proxy for overall forest productivity — canopy and root growth rates perform better. Residence time is the primary driver of observed patterns of wood, leaf and root biomass across the rainfall gradient. These findings point to the importance of directly measuring the main components of above and belowground NPP, requiring the establishment of permanent monitoring plots across the tropics. AB

<https://doi.org/10.1038/s41558-017-0052-2>

Written by Alastair Brown, Jennifer Richler, Graham Simpkins and Adam Yeeles

CLIMATE CHANGE THREAT

Ethnocentrism as a defence Group Processes Integr. Relations <http://doi.org/cg4j> (2017)

Climate change presents multiple threats to human health and wellbeing via impacts on extreme weather events, agriculture, and pathogen prevalence. Information about the nature and scope of these negative consequences has been used to try to convince people of the urgent need for direct action. However, such threatening information may instead induce more symbolic defensive behaviours, such as ethnocentrism or nationalism, which reduce existential anxiety.

Isabella Uhl and colleagues from the University of Salzburg and the University of Groningen conducted an experiment in Austria and Argentina, two countries where the majority of the population believe that climate change is an important problem that must be acted on. Austrian but not Argentinian participants exposed to threatening information about climate change reported lower intention to engage in pro-environmental behaviours and scored higher on a measure of ethnocentrism than participants presented with neutral information about the Earth. These effects were mediated by affect, which was more negative following exposure to threatening information. These results suggest information about the threat of climate change triggers symbolic rather than direct defences, particularly in individualist (versus collectivist) cultures. JR

<https://doi.org/10.1038/s41558-017-0047-z>