FOREST ECOLOGY

Congo forest browning

Nature **509,** 86–90 (2014)

Tropical forests are globally important for biodiversity and have the potential to modulate climatic changes through feedbacks to the climate system. Central African tropical forests — the second largest forests globally after those of South America — are experiencing a long-term drying trend but the large-scale ecological response remains poorly studied.

To overcome the paucity of on-the-ground observations, Liming Zhou from the State University of New York, and co-workers, use satellite-based measurements (optical, thermal, microwave and gravity) to detect vegetative changes over the Congo Basin. They find a widespread trend — over the past decade — towards declining forest greenness along with decreases in rainfall and terrestrial water storage. Together, these results are consistent with reductions in water content in aboveground wood and leaves, and changes in the structure and moisture of the upper forest layers — findings that indicate Central African forests may be sensitive to chronic drought. *AB*

HYDROLOGY

Arctic wetting

Nature **509,** 479–482 (2014)

Global warming will lead to an increase in atmospheric moisture due to increases in evaporation and the holding capacity of the atmosphere. The Arctic is expected to have one of the highest global increases in precipitation under climate change and enhanced poleward moisture transport is typically reported as the cause.

Richard Bintanja and Frank Selten, of the Royal Netherlands Meteorological Institute, investigate projected Arctic precipitation trends, up to the year 2100, using output from 37 global climate models (which contribute to the Coupled Model Intercomparison Project phase 5, CMIP5). The projected increase in precipitation is found to be caused by retreating winter sea ice, which enhances evaporation and intensifies the Arctic hydrological cycle. Precipitation increases are projected to peak in late autumn and winter. Poleward moisture transport does contribute to precipitation changes (particularly those occurring in late summer and autumn) but to a lesser extent than warming and reduced sea ice. *BW*

SOCIAL SCIENCES

Broadening energy research

Energy Res. Soc. Sci. http://doi.org/sr5 (2014)

Published energy research has traditionally focused on the physics, engineering and economic aspects of energy with little attention to the human dimensions. Broader energy studies that include human behaviour can lead to better informed decisions in the energy sector.

Benjamin Sovacool, of Aarhus University, Herning, Denmark, analyses the content of articles published in three leading energy journals over the period 1993–2013. The sample includes 4,444 research articles from 9,549 authors citing 90,079 references. He finds that only 19.6% of authors have had training in any social science discipline. Of all the articles considered, only 12.6% present analysis based on qualitative methods and less than 5% include citations to social science and humanities journals. He proposes to expand the field of energy research by increasing the use of methods typical of the social sciences — including interviews and field research — and by covering topics such as energy poverty, psychology, consumer behaviour and the communication of energy information. *MC*

POLICY

Forest management in Zambia

For. Pol. Econ. http://doi.org/sqw (2014)

IMAGENATURE, ALEXANDER BELOKUROV / ALAMY

The implementation of REDD (reducing emissions from deforestation and degradation) projects should preserve the rights and interests of the communities involved. Failure to benefit local people would undermine the success of REDD initiatives.

In sub-Saharan Africa, community-based natural resource management (CBNRM) could safeguard communities' rights to economic development under REDD. Julia Leventon, of the University of Leeds, UK, and colleagues, analyse a specific CBNRM initiative in Zambia: the Joint Forest Management (JFM) — established in the 1990s to enhance the involvement of local communities in forest sector decisions. In 2012, the team identified and interviewed all relevant forest management stakeholders. The data show that JFM has only focused on the non-economic benefits of forest conservation, as forest policy lacks the legal framework for sharing timber management and revenue with the community. Therefore, JFM activities do not allow local communities to manage all aspects of forest use or increase forest-related benefits. Consequently, the project does not incentivize local participation in forest conservation. *MC*

CRYOSCIENCE

Himalayan melt

Atmos. Chem. Phys. **14,** 4237–4249 (2014)

Black carbon is an anthropogenic pollutant that reduces surface reflectivity — albedo — when deposited on snow and ice. This can reduce the duration of the snow-cover season and the extent of cover. Martin Ménégoz, of Laboratoire de Glaciologie et Géophysique de l'Environnement, Grenoble, France, and colleagues, use a global climate–chemistry model to investigate the effect of black carbon deposition on Himalayan snow during the period 1998–2008.

Using a model resolution of 50 kilometres, the team manage to reproduce observed snow-cover duration and the timing of maximum and minimum black carbon concentrations in the atmosphere and in the snow. Using simulations of spring surface-snow black carbon concentrations, they estimate a reduction in snow-cover duration of between one and eight days for the Hindu-Kush, Karakorum and Himalayan mountain ranges. In these regions, the effect of black carbon is expected to account for a local warming of 0.05–0.3 °C during the period investigated, whereas black carbon has limited impact on the Tibetan Plateau due to lower snow cover. *BW*

Written by Alastair Brown, Monica Contestabile and Bronwyn Wake.