

## CLIMATE SCIENCE

### Antarctic warming

*Geophys. Res. Lett.* **39**, L06704 (2012)



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In recent times, the Antarctic has not experienced the same level of warming as the Arctic. The ‘bipolar seesaw’ has been proposed by some to be the major reason for this difference. However, Antarctic temperature data for the early twentieth century is limited, which may result in an artificial estimate of the climate trend for this region. Before the mid-1940s only one subantarctic station provided the data.

David Schneider and David Noone of the National Center for Atmospheric Research and the University of Colorado at Boulder, USA compared temperature data from the subantarctic station, the reconstructed Southern Annular Mode index and ice-core reconstructions of Antarctic temperature to estimate climate variability and discern its drivers.

Individually, none of these data sets were significantly correlated with the Arctic or North Atlantic climate records, or the Atlantic Multidecadal Oscillation — the proposed driver of the bipolar seesaw. The data sets showed correlation with tropical Pacific sea surface temperatures, which may partly explain strong regional warming in the Antarctic Peninsula and West Antarctica. This work rejects the bipolar-seesaw theory as applied to recent trends, but notes that a combination of factors are needed to fully explain all variability and trends in the Antarctic. BW

## SOCIOLOGY

### Women and climate change

*Soc. Sci. Res.* <http://doi.org/hsx> (2012)

Empirical evidence has shown that women support environmental protection more than men, and that women’s status is connected to nature exploitation. However, the social forces

affecting carbon dioxide emissions have rarely been analysed in light of gender inequality.

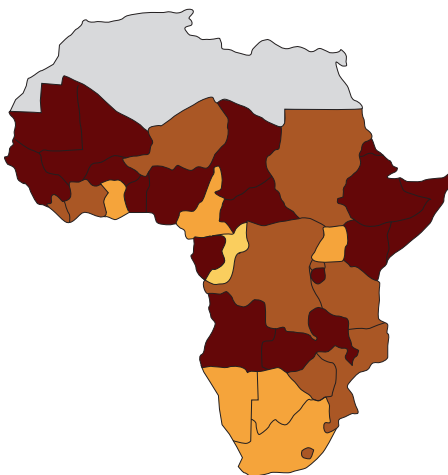
Christina Ergas and Richard York of the University of Oregon, USA, used 2003 and 2004 cross-national data to analyse the relationship between women’s political status — measured by the length of time women have had the right to vote and women’s representation in parliament and ministerial government — and carbon dioxide emissions per capita. In their analysis, they include socio-economic development in terms of per capita gross domestic product, urbanization, industrialization and the age structure of the population. The researchers also include measures of militarization, world-system position, foreign direct investment and level of democracy.

They found that, even when controlling broadly for modernization, per capita carbon dioxide emissions are lower in nations where women have higher political status. MC

## POLICY

### Monitoring forest carbon

*Environ. Sci. Policy* **19–20**, 33–48 (2012)



Countries active under the Reducing Emissions from Deforestation and Forest Degradation plus (REDD+) scheme need to report changes in forest carbon stock. Yet many of them lack the capacity to implement a national monitoring system.

Erika Romijn, of Wageningen University, The Netherlands, and colleagues integrated different global data sources to assess the status and development of national monitoring capacities between 2005 and 2010 in 99 developing countries. They combined four indicators — national engagement in the REDD+ process, existing monitoring capacities, country-specific challenges with REDD+ monitoring and technical challenges for the use of remote sensing — to calculate the capacity gap. They

found large capacity gaps in 49 countries, mostly in Africa, and small capacity gaps in only China, India, Mexico and Argentina, where forest area is increasing.

The researchers emphasize the need to design REDD+ monitoring systems and capacity building efforts based on the specific REDD+ characteristics and circumstances of each country. They suggest that countries with good existing capacities could have an important role in south–south cooperation. MC

## ECONOMICS

### Carbon tax revenues

*Energ. Econ.* <http://doi.org/hsz> (2012)

The effects of environmental policies on low-income groups have always been a concern of policymakers. Carbon taxes in particular are opposed by politicians, especially in developing countries, as they are thought to hit poor people the most.

Fidel Gonzalez of the Sam Houston State University, USA, developed an analytical model to examine the impact of a carbon tax on different income groups in Mexico when the tax revenues are earmarked in two different ways. When the revenues from the tax are used to cut taxes in the manufacturing sector, low-income groups’ purchasing power decreases and that of high-income groups increases. However, when tax revenues are given back in the form of a food subsidy, the outcome is reversed and the inequalities in income distribution tend to diminish.

The researcher then calibrated his model with US data and, despite different magnitudes, the findings were confirmed. He concludes that the viability of carbon taxes depends on how their revenues are redistributed in the economy. MC

## OCEANOGRAPHY

### Ocean oxygenation

*Biogeosciences* **9**, 1159–1172 (2012)

Increased global temperatures could lead to an expansion of low oxygen waters (dead zones) in the open ocean. Reduced oxygen solubility and increased stratification are expected to cause this increase, which would have wide reaching implications for marine life.

A modelling study by Anand Gnanadesikan — from Johns Hopkins University, Baltimore and the National Oceanic and Atmospheric Administration Geophysical Fluid Dynamics Laboratory, Princeton, USA — and colleagues found that most deoxygenation occurs in waters with relatively high levels of oxygen. The volume of very low oxygen waters (suboxic) does not increase globally.