CONNECTING ANTARCTIC CLI

In this period of rapidly moving climate science and increasing policy focus on the issues surrounding climate change, it is interesting to look at how the climate-related science of the Australian Antarctic programme interacts with policy.

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Policy outcomes from Antarctic climate research require the integration of this research into the global understanding of climate.

A substantial portion of the Australian Antarctic programme is directly focussed on the Australian Government's goal to *Understand the role of Antarctica in the global climate system*, which involves work within the Australian Antarctic Division, CSIRO, Bureau of Meteorology and universities. This effort has its focus within the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC), which extends the work of the earlier Antarctic CRC.

So how does this research find its way into policy and how does it respond to policy demands? These are difficult questions that have challenged those on both sides of the science-policy interface. This article aims to outline some of the key ways that these connections are made. With something as large as climate change, the connections between the science and policy communities are necessarily multi-layered and complicated.

Climate science, particularly that of the Australian Antarctic programme, is mostly concerned with large, globally interlinked issues, such as sea-level rise, and with probing large-scale climate processes – which requires basic research and an understanding of climate components. It differs from other applied research that serves policy interests (such as monitoring or measuring), in that the ultimate outputs typically cannot be appreciated from the results of a single project or experiment. The big results and answers for which policy implications are apparent, depend on integrating the research into a global understanding of climate. It is the vastness of this task that necessitates a body like the Intergovernmental Panel on Climate Change (IPCC) to synthesise an overall assessment of climate change for use by policy-makers. The IPCC is the primary vehicle for conveying climate science to the policy arena, and it is for its efforts in this area that the IPCC shared the Nobel Peace Prize this year (see box).

The IPCC provides its synthesis in the form of an Assessment Report, issued approximately every 5-6 years. The most recent, the Fourth Assessment Report, was produced in 2007 and captures key research findings up until early 2006. The process of producing these reports – by distilling the published scientific literature – is a huge undertaking. The Report is authored and reviewed by hundreds of scientists and constitutes the most complete snapshot of our understanding; albeit a snapshot that is soon made out of date by fresh results!

Australia's Antarctic research and researchers play an important role within the IPCC process and, in this dynamic environment, continue to conduct work that will be picked up in the next IPCC assessment. But there are other ways that Antarctic climate science interacts with and serves policy needs, and these also depend on a vibrant climate programme.

MATE SCIENCE AND POLICY

Good policy requires good public education. Scientists communicate their research through such avenues as public displays (pictured), lectures, and the media.

Firstly, the climate expertise across the whole Australian Antarctic programme provides advice to Government in evaluating and interpreting new developments (political responses, environmental events etc.), and in assessing the impacts and effectiveness of various policy options. This includes advice on setting research directions that both consider national priorities and needs, and that address major international research needs. This dialogue takes place through a range of channels including formal ministerial briefings, government policy responses, learned academies, non-government policy bodies and parliamentary committees.

Secondly, as a major Southern Hemisphere nation with a considerable Antarctic claim, Australia's ability to drive research in the geographical area, which is tailored to our own specific interests, is a key capability with obvious policy imperatives. Specifically, the proximity of Australia to Antarctica and the Southern Ocean, and our unique vulnerabilities to climate change, shape our priorities. Our high quality national programme allows us to attract and influence international efforts, harnessing external resources (such as ship time and satellite data) to further our national priorities in this area.

A third strand of interaction between policy and climate science is through contracted research. Specific studies, often on more local or targeted issues, are requested by local, state or federal governments, and these often draw in the expertise of the Antarctic and Southern Ocean research community.

A final connection between science and policy arises from public interest. There is a public thirst for high quality information and a clear interest in the issues. Also, it is the public who fund the great majority of climate research, and public opinion has an obvious impact on the long-term framing of policy. If this public push is to be towards good policy, then good public education is also an important function of science programmes. Scientists generally take this role seriously and make efforts to communicate their science in accessible ways through such avenues as public lectures and the various media.

This is a challenging and rewarding time to be working in climate science. The relevance of the research to major policy concerns, and the urgency of these issues, provides strong impetus for the work. The difficulties of conducting large and complex science programmes, which can take years to plan and execute, while providing timely advice across a broad and interlinked field, are considerable. To do this well requires a strong science programme and robust use of all the channels that link policy-makers and scientists.

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More information

Climate research at the Antarctic Division: www.aad.gov.au/default.asp?casid=248 and www.acecrc.org.au

Nobel Peace Prize

The Intergovernmental Panel on Climate Change (IPCC) shared the 2007 Nobel Prize for Peace with climate change champion Al Gore. Work undertaken by Australian Antarctic Division scientists, largely through the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC), is highly relevant to the work of IPCC, and will continue to be so into the future. A number of Antarctic Division staff contributed to the IPCC's Fourth Assessment Report, released in 2007. Ian Allison, leader of the Ice, Ocean, Atmosphere and Climate programme, sea ice scientist, Tony Worby, and biologist, Harvey Marchant, were lead and contributing authors to the IPCC Working Groups 1 and 2 reports, while glaciologist, Tas van Ommen, was an IPCC reviewer.

Other Australian Antarctic programme colleagues who contributed to the reports as either lead or contributing authors were Nathan Bindoff (ACE CRC), John Church, Steve Rintoul and David Etheridge (CSIRO), Kurt Lambeck (Australian National University), Ian Simmonds (University of Melbourne), and Helen Fricker (formerly of the University of Tasmania). John Hunter and Will Howard of the ACE CRC were also IPCC reviewers.

A number of Bureau of Meteorology staff who are not directly involved in the Australian Antarctic programme, also contributed directly to the IPCC through their Antarctic and sub-Antarctic weather and climate observations.

Congratulations to these individuals and to their teams and colleagues who support the Australian Antarctic programme.