

## Introduction

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## Introduction

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Climate change as a major scientific issue has figured prominently on the international scene for well over a decade, as witnessed by the ever more comprehensive reports by the Intergovernmental Panel on Climate Change (IPCC 1990, 1996, 2001). In contrast, *abrupt* climate change as a research focus is relatively young. Arguably, the first comprehensive review entirely devoted to abrupt climate change is barely more than one year old (NRC 2002).

Two complementary definitions of ‘abrupt climate change’ were suggested in NRC (2002). An impacts-oriented definition compares magnitude, extent and speed of climate change with the ability of societies and ecosystems to cope with change. In addition, a technical definition is given as follows.

Technically, an abrupt climate change occurs when the climate system is forced to cross some threshold, triggering a transition to a new state at a rate determined by the climate system itself and faster than the cause.

NRC (2002, p. 14)

The issue takes on some urgency because of the demonstrated possibility that abrupt climate change might be caused by a collapse of the Atlantic thermohaline circulation (THC). In particular, the possibility has been investigated that an increase in atmospheric greenhouse-gas concentrations might create a THC collapse. This attention underscores the importance of understanding the processes that might lead to abrupt change in THC and climate (and abrupt climate change in general), so that a rational assessment is possible of the probability of such an event.

We therefore decided to organize this meeting to discuss what is and what is not known about abrupt climate change. The timing is particularly fortunate as a large UK research program, RAPID, has just started to investigate abrupt climate change. We, the organizers of this meeting, are all in some way involved in this program, which is funded by the Natural Environment Research Council. This meeting has

One contribution of 14 to a Discussion Meeting ‘Abrupt climate change: evidence, mechanisms and implications’.

thus brought together a large active research community to discuss the science and implications of abrupt climate change.

We invited the speakers to address the following questions.

- (i) What abrupt climate change happened in the past?
- (ii) Why did it happen?
- (iii) Could it happen again in the future?
- (iv) What would be the ecological and economic consequences of abrupt climate change?

We are very pleased with the interest this meeting has created, as demonstrated by the capacity audience at all sessions and the lively discussions following the talks. We are also happy to see this volume appear so rapidly to document the latest in facts and ideas on abrupt climate change.

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