

New climate scenarios offer alternative views of the future

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A new Special Issue of the journal *Climatic Change* describes four new key scenarios for the climate research community: the Representative Concentration Pathways (RCPs). The RCPs describe a wide range of potential futures for the main drivers of climate change: greenhouse gas and air pollutant emissions and land use. The scenarios cover the range from high emission futures to scenarios consistent with the 2 °C target.

A comprehensive global database of the RCPs, which is maintained by the Austrian based-International Institute for Applied Systems Analysis, is freely available to the climate modeling community to inform the development of these global climate scenarios. The database informs, among other things, the development of the next major climate reporting by the international climate modeling community - the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), due for completion in 2014.

Scenarios play a critical role in climate change research. They allow researchers to explore the long-term consequences of decisions made today, incorporating socio-economic and biophysical factors. They integrate information across the many disciplines involved in climate research to provide a comprehensive picture of the climate system and thus help to explore the costs and benefits associated with climate policy.

The Special Issue outlines four new, highly detailed scenarios of future emissions of greenhouse gases, air pollutants, and, for the first time, land-use change over the 21st century which will be used by the climate modeling community to develop the next generation of climate simulations. The scenarios also include 4 very long-term extensions up to 2300 - to explore possible long-term climate impacts.

Data on the RCPs has been publicly available since 2010 through the host institution, the International Institute for Applied Systems Analysis (IIASA). The new Special Issue now provides a detailed documentation of the main assumptions and characteristics of the RCPs in 10 separate papers. The papers describe the individual RCPs, but also the integrative steps that were necessary to complement the RCP development process.

Co editor of the Special Issue and lead author of the paper on high emission trajectories IIASA's Dr Keywan Riahi states that the scenarios explore mid range but also some of the highest and lowest potential trajectories of climate forcing. As such they are highly relevant to gain a better understanding of the costs and benefits of climate policies.

The RCP database is managed and maintained by IIASA on behalf of the Integrated Assessment Modeling Consortium. The scenario development process was led by the IAMC and marks the first time that the scientific research communities have employed a grass-roots scenario development process outside the IPCC. They are openly available via the IIASA Web site at: www.iiasa.ac.at/web-apps/tnt/RcpDb/.

Reference: *Climatic Change* (2011). *A Special issue on the RCPs*. Editors: van Vuuren, D.P., Edmonds, J.A., Kainuma, M., Riahi, K., Weyant, J. DOI: 10.1007/s10584-011-0157-y

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About the Integrated Assessment Modeling Consortium (IAMC)

The IAMC involves more than 40 research organizations around the world who collectively pursue scientific understanding of issues associated with integrated assessment modeling and analysis. The IAMC, initiated by the International Institute for Applied Systems Analysis, Stanford University, and Japan's National Institute for Environmental Studies, was created in 2007 in response to a call from the IPCC for a research organization to lead the integrated assessment modeling community in the development of new scenarios that could be employed by climate modelers in the development of prospective ensemble numerical experiments for both the near-term and long-term. <http://iamconsortium.org/>

About IIASA:

IIASA is an international scientific institute that conducts research into the critical issues of global environmental, economic, technological, and social change that we face in the twenty-first century. Our findings provide valuable options to policy makers to shape the future of our changing world.

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