

Representative Concentration Pathways (RCP's)

A new *Special issue of the journal Climatic Change* describes four new key scenarios for the climate research community: the Representative Concentration Pathway (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.

Cooperative process across various disciplines

The RCPs were developed by a cooperative process across various disciplines involved in climate research. The quantification was led by the Integrated Assessment Modeling Consortium (IAMC), involving participation of many institutes around the world, including PBL Netherlands Environmental Assessment Agency, International Institute for Applied Systems Analysis (IIASA), Pacific Northwest National Laboratory (PNNL), Japan's National Institute for Environmental Studies (NIES), Potsdam Institute for Climate Impact Research (PIK), National Center for Atmospheric Research (NCAR), Stanford University, University of Maryland and several others. The scenarios form a basis for new climate research, including experiments for the IPCC report.

- The introduction of the Special Issue of *Climatic Change* journal can be found here. <http://www.springerlink.com/content/xv6r454mv3140008/>

New input into climate research, the RCPs break new ground in several ways:

1. They include some of the highest and lowest scenarios of greenhouse gas emissions examined by the climate modelling community and now include scenarios with explicit climate mitigation, unlike the SRES scenarios (Special Report on Emissions Scenarios), which focused on no-climate policy worlds only. The lowest scenario is consistent with the aims to limit the increase of global mean temperature to less than 2°C;
2. They provide gridded information on land use for the first time, and include gridded information on emissions relevant for short-lived climate forcers, such as sulphur aerosols, in addition to emissions of long-lived greenhouse gases;
3. They include four very long-term extensions to the year 2300 to explore very long-term climate impacts.

Special issue of the journal *Climatic Change*

The special issue of the journal *Climatic Change* includes 10 papers that describe the individual RCPs, the various integrative activities that were necessary to produce the RCPs, and extensions of the RCPs to the year 2300.

Climate scenarios

Scenarios are designed to allow researchers to explore the long-term consequences of decisions made today, while taking account of the inertia in both the socio-economic and physical system. As such,

scenarios help to explore the costs and benefits of climate policy. RCPs will be used directly in experiments run by climate and Earth system models. Among others, they form a direct input into the experiments run for the new IPCC report. The scenarios will also provide an important reference point for new research with technological and economic models.

Data on the RCPs are available for download at <http://www.iiasa.ac.at/web-apps/tnt/RcpDb/>.

The papers can be found online at the Climatic Change on-line first website (<http://www.springerlink.com/content/f296645337804p75/> for the overview paper).

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1. D. P. van Vuuren, J.A. Edmonds, M. Kainuma, K. Riahi and J. Weyant. A special issue on the RCPs.
<http://www.springerlink.com/content/xv6r454mv3140008/>
2. D. P. van Vuuren et al. The representative concentration pathways: an overview.
<http://www.springerlink.com/content/f296645337804p75/fulltext.pdf>
3. Riahi et al. RCP 8.5—A scenario of comparatively high greenhouse gas emissions.
<http://www.springerlink.com/content/q5024170k1t504t7/fulltext.pdf>
4. Masui et al. An emission pathway for stabilization at 6 Wm⁻² radiative forcing.
<http://www.springerlink.com/content/2558w01458131545/fulltext.pdf>
5. Thomson et al. RCP4.5: a pathway for stabilization of radiative forcing by 2100.
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6. D.P. van Vuuren et al. RCP2.6: exploring the possibility to keep global mean temperature increase below 2°C.
<http://www.springerlink.com/content/701751t54248643j/fulltext.pdf>
7. Granier et al. Evolution of anthropogenic and biomass burning emissions of air pollutants at global and regional scales during the 1980–2010 period.
<http://www.springerlink.com/content/m72616127617wht3/fulltext.pdf>
8. Lamarque et al. Global and regional evolution of short-lived radiatively-active gases and aerosols in the Representative Concentration Pathways. <http://www.springerlink.com/content/231207127112k026/fulltext.pdf>
9. Hurtt et al. Harmonization of land-use scenarios for the period 1500–2100: 600 years of global gridded annual land-use transitions, wood harvest, and resulting secondary lands.
<http://www.springerlink.com/content/y1n5n86570r356q5/fulltext.pdf>
10. Meinshausen et al. The RCP greenhouse gas concentrations and their extensions from 1765 to 2300.
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