

# Quantifying climate impacts: New comprehensive model comparison launched

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Climate change has impacts on forests, fields, rivers -- and thereby on humans that breathe, eat and drink. To assess these impacts more accurately, a comprehensive comparison of computer-based simulations from all over the world will start this week. For the first time, sectors ranging from ecosystems to agriculture to water supplies and health will be scrutinized in a common framework.

The models will be provided by more than two dozen research groups from the United States, China, Germany, Austria, Kenya, and the Netherlands, among others. The scientists will investigate which results are robust, where there are uncertainties and why. The project will be coordinated by the Potsdam Institute for Climate Impact Research (PIK) and the International Institute for Applied Systems Analysis (IIASA).

Some results of the study will be available within 12 months from now for consideration and integration into the development of the [Intergovernmental Panel on Climate Change](#) (IPCC) fifth Assessment Report, due for completion in 2014. The simulations will be based on the latest generation of [climate scenarios](#) covering a wide range of possible futures.

"We want to better understand how [climate impacts](#) differ between a global warming of two degrees compared to three degrees," says Katja Frieler of the Inter-Sectoral Impact Model Intercomparison Project coordinating team (ISI-MIP). The international community has set a target of two degrees, but unfettered emission of [greenhouse gases](#) sets

the world on a path to three degrees or more. This seemingly small difference could have drastic impacts." These are calculated on the basis of observations and current understanding of the relevant processes," says Frieler. "We will examine to what extent they agree across models and quantify the uncertainty that remains."

## **"The project will help to fill a sore gap in the IPCC's report"**

The global model comparison puts the focus squarely on humans. [Water shortages](#) in a region in Africa for instance could make it difficult for farmers to cultivate their fields, poor crops could lead to malnourishment and thus to a higher vulnerability to diseases, Frieler explains. The comparison could help to identify possible regional hotspots.

"The project will help to fill a sore gap in the IPCC's report," says Hans Joachim Schellnhuber, PIK director. Until now, there have been comprehensive model comparisons for the physics of the climate system as well as for the economy of climate protection and for climate impacts on specific sectors. To address all climate impacts at once is both an ambitious and necessary intent, says Schellnhuber. "It provides an essential strengthening of the grounds for the 2014 IPCC report."

Chris Field of the Carnegie Institution for Science in Stanford, California, expressed enthusiasm for the project. "As co-chair of IPCC Working Group II, I greatly appreciate the initiative required to get this activity underway, and I appreciate the commitment to fast-track components that will yield results in time for inclusion in the IPCC Fifth Assessment Report", says Field. The products that ISI-MIP envisions "will make a real difference for the assessment process." The IPCC Working Group II assesses impacts, adaptation and vulnerability.

## "The time has come for this comparison"

Working Group III co-chair Ottmar Edenhofer from PIK also explicitly encouraged the impact intercomparison project. "A sound impact analysis is of high relevance for mitigation and adaptation assessment as well", says Edenhofer. "It enables us to do cost-benefit estimates that are critical for providing decision-makers with the information they need. We therefore strongly endorse the impact model intercomparison effort." Working group III of the IPCC focuses on [climate change](#) mitigation.

"The time has come for this comparison," says Pavel Kabat, Director of IIASA. "A multi-model cross-sectoral approach to projections of climate change impacts has not been available in the past. The ISI-MIP project is a significant and positive development in this regard. We have access to sophisticated models, vast quantities of high-quality data from many sectors and regions and an urgency to deliver a highly integrative analysis of our current knowledge about global impacts of climate change. We are confident that this project can deliver such an analysis."

Provided by Potsdam Institute for Climate Impact Research (PIK)

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