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## **FUTURE WORK OF THE IPCC**

### **Proposal for an IPCC Workshop on Regional Climate Projections and their Use in Impacts and Risk Analysis Studies**

(Submitted by the Co-Chairs of Working Group I on behalf of the Working Group I Bureau)

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### Proposal for an IPCC Workshop on Regional Climate Projections and their Use in Impacts and Risk Analysis Studies

#### Background

Regional climate change projections provide the quantitative basis for studies of projected impacts from climate change and associated risks, which are essential building blocks for the comprehensive assessment of climate change science by the IPCC. There exist a number of climate modelling initiatives aimed at producing regional climate change projections, but they overall have not yet reached the maturity necessary for their wide spread use by the impacts assessment community and relevant stakeholders. Therefore there is a real opportunity to strengthen the link between regional projections and the assessment of projected impacts and risks by the IPCC. This will enhance the information the IPCC can provide to its users and stakeholders.

Working Group I (WGI) in its contribution to the IPCC Fifth Assessment Report (AR5) did provide a comprehensive assessment of climate change projections from global to regional scales. This assessment, however, relied largely on information derived from large-scale, multi-model initiatives using global climate models. The WGI Atlas of Global and Regional Climate Projections, for example, a new feature of the AR5 that provides maps and regionally averaged time series of annual and seasonal multi-model means, with uncertainties, of changes in surface temperature and precipitation over the 21<sup>st</sup> century for 37 regions covering the entire world, is based entirely on global climate models. Although model data underlying the WGI Atlas is electronically available from the IPCC websites as part of the WGI Supplementary Material of AR5, it is not yet widely used in studies of regional impacts and risks of climate change to human and natural systems around the world. Regional impacts and risks studies would substantially benefit from the inclusion of information coming from regional climate models or from statistical downscaling methods used to drive impacts models (e.g., crop models, hydrology models, etc.).

Since the finalization of the WGI AR5 in September 2013, important activities in the physical science community have evolved which will be crucial for an enhanced interaction between IPCC WGI and WGII in the area of assessing projections of climate change impacts at a regional scale. These concern, for example, the definitional phase of Phase 6 of the Coupled Model Intercomparison Project (CMIP6) which will include the next generation of comprehensive climate models. It is expected that there will be a further increase in model resolution which will provide even more regional details to users and stakeholders from global models. A second area of rapid progress is the Coordinated Regional Climate and Downscaling Experiment (CORDEX) of the World Climate Research Programme (WCRP). The initial focus was on Africa, but currently 14 regional domains around the world are being considered in CORDEX and the data base of this coordinated regional modelling initiative is rapidly growing.

It is therefore timely for the IPCC to convene a Workshop to explore ways how to enhance the convergence of information on projections of climate change and resulting risks and impacts, and to improve the consistent use and application of information in the next IPCC assessment cycle. The Workshop should bring together scientists from both the WGI and WGII communities, i.e., from the climate modelling community (e.g., CMIP5 and CMIP6), the regional modelling and downscaling community (e.g., CORDEX) and the climate impacts and risk community. It is important to hold such a Workshop early, and even before the decision on the scope and outline of the next IPCC assessment cycle, in order to help establish closer links between these communities and to facilitate the IPCC assessment process in the future. This would also be beneficial to the IPCC scoping process and subsequent author nomination and selection, in particular with regard to the regional representation in the WGI and WGII scopes and cross-WG topics, if the Panel decides to carry out a 6<sup>th</sup> assessment cycle.

## **Aims of Workshop**

- Critically reflect on the assessment of regional climate change projections and of regional projections of climate change impacts and risks, and their limitations, in the IPCC AR5;
- Collect views and perspectives on how IPCC assessment of regional projections could be better supported/improved from leading world experts on issues related to regional information from climate model projections and dynamical downscaling as well as from the broader community of impacts studies and climate risk analyses which use physical climate information;
- Discuss the latest, post IPCC AR5 results from regional climate modelling and downscaling efforts and obtain an overview of the status of information currently available or foreseen on a time scale relevant for the next assessment cycle for all regions of the world;
- Explore ways how the IPCC could facilitate the collaboration and exchange between the climate modelling and impact and risk communities in issues related to projections of climate change, risks and impacts, including ensuring an effective flow and quality control of information and data;
- Identify numerical data requirements (climate variables, derived quantities, proxies, and statistics) by the impacts and risk communities from the climate modelling community that could help facilitate the assessment process in the next IPCC assessment cycle and that would help provide the basis for a comprehensive IPCC assessment.
- Draft an Information Paper covering, inter alia, (i) how the collaboration of the climate modelling and impacts and risk analysis communities could be facilitated by the IPCC, (ii) data quality requirements and perhaps a data protocol to feed emerging data bases, and (iii) potential problems IPCC users and others need to be aware of. If available, a report would also present a few specific case studies in which regional climate model or high-resolution global climate model results are used and successfully applied for impacts studies.

## **Organizing Group (about 10 members)**

Dahe Qin (WGI Co-Chair, China)

Thomas Stocker (WGI Co-Chair, Switzerland)

Fredolin Tangang (WGI Vice Chair, CORDEX South East Asia, Malaysia)

Bruce Hewitson (WGII Coordinating Lead Author, TGICA Co-Chair, South Africa)

Filippo Giorgi (WGII Lead Author, CORDEX Chair, Italy)

Geert Jan van Oldenborgh (WGI Lead Author, The Netherlands)

Caroline Vera (SREX Lead Author, Argentina)

Gian-Kasper Plattner (WGI TSU Head, Switzerland)

A Scientific Steering Committee with broad regional representation will be formed.

**Timing:** time window mid-August to mid-September

**Duration:** 4 days

**Location:** TBD

## **Participants**

About 100 expert participants in total. In order to ensure broad international representation, it is proposed that there should be a call for governments to nominate scientific experts to attend the workshop. We envisage an allocation of 40 journeys from the IPCC Trust Fund to support experts from developing countries and countries with economies in transition. This allocation is being requested from the Panel at IPCC-XLI.

## **Expertise**

Global climate modelling (CMIP5, CMIP6), regional climate modelling (e.g., CORDEX), downscaling, extreme events, climate statistics, impact studies, climate risk analysis.