

## A framework for WCRP regional activities

WCRP Joint Scientific Committee, April 2016

### Background and Goals of the Discussion:

WCRP's mission is to facilitate analysis and prediction of Earth system variability and change toward direct relevance, benefit and value to society. WCRP focuses largely on climate issues that transcend national boundaries and that require multinational and multidisciplinary approaches. When we focus on specific ocean upwelling or terrestrial drought regions, we seek in-depth understanding of regional processes in a context that will help us develop knowledge transferable to similar regions and which allows upscaling of the information to global levels. WCRP projects and activities work directly at this global-regional interface, confronting the scientific challenge of developing effective global and regional predictive capabilities. Often, WCRP's scientific activities and outcomes have global and regional impacts simultaneously.

At the same time we recognize urgent demands for regionally-relevant climate information. Ideally this information should develop through local consultation and derive from appropriate service providers, within a global context and consistent with best methods and practices promulgated by WCRP. WCRP's Working Group on Regional Climate (WGRC) attempted to straddle this divide, between the computational earth system modeling aspects of understanding climate on regional scales and the need for higher-quality reliable regional climate information based on observations, assessments and predictive models

Regionally-focused activities in WCRP occur within and across many projects and activities. Amidst a constant redefinition of regional scales, WCRP's CORDEX Project coordinates a broad suite of enhanced regional outcomes and products tailored to domains that cover densely populated areas as well as special interest (e.g. Arctic) regions of our planet. CORDEX connects with regional components of the sixth Coupled Model Intercomparison Project (CMIP6) - MonsoonMIP, HiResMIP – and through strong interactions with the impacts analysis community plays a key role in ensuring regionally relevant products from the overall CMIP6 effort. The WCRP Core Projects and Grand Challenges devote explicit attention to regional sea level changes and coastal impacts, regional climate extremes, water availability for breadbasket regions, changes in atmospheric storm tracks, eastern boundary ocean current upwelling systems, major ice sheets in Greenland and Antarctica, etc., often through topical or geographic regional panels and projects. Through these broad and substantial community-wide efforts on regional climate research, the overall impact, visibility, efficiency and coordination of WCRP's regional activities could become better coordinated and more prominent. In particular *WCRP should resolve tensions and challenges and develop clear opportunities for regional climate as a worthy topic of high-resolution earth system modeling research simultaneous with rigorous development of methods and practices for assessing and distilling model outcomes, observations and assessments into effective and timely regionally-specific climate information.*

Considering the increasing demand for regional climate information, the WCRP JSC must refine and revitalize WCRP regional activities. This paper, prepared for JSC members at their 37<sup>th</sup> session (2016), proposes an improved framework taking into account current capabilities and financial restrictions. The paper seeks to establish a clear vision and much-improved coordination and oversight of on-going and planned WCRP regional activities.

### A proposed framework for regional climate research activities:

Overall we promote a vision in which the WCRP community plays a prominent leading role in supporting and promoting internationally-coordinated climate science with global and regional impacts. We recognize and accept the intellectual and creative challenges of improved understanding and reliable prediction on smaller spatial scales. On the basis of needs identified by regional stakeholders and in close partnership

with climate service partners, WCRP will enhance the scientific basis for identifying, quantifying and delivering high quality, reliable and accessible regional climate information.

To meet the first goal we propose a closer link of CORDEX with CMIP, under auspices of the WCRP Modeling Advisory Council. To meet the climate information goal we propose Frontiers of Climate Information (FoCI) initiatives, flexible in scale and outcomes but *emerging from any relevant point within WCRP*. To coordinate the range of WCRP regional activities, including CORDEX and FoCI activities, we propose to replace the Working Group on Regional Climate with a WCRP Regional Advisory Council (WRAC). The WRAC should serve as WCRP's interface to external regional programmes and activities.

Terms of reference for the WRAC should include:

1. Regular assessment of regional activities across WCRP to encourage cooperation and efficiency;
2. Guidance on the development, implementation and progress of Frontiers of Climate Information projects to emphasize the role of those activities as scientific contributions to climate services;
3. Attention to and interface to national and regional climate assessments;
4. Facilitating and promoting regional activities that advance research and capacity development; and
5. Reporting the JSC on overall progress, identified gaps, and opportunities for improved coordination on regional climate research.

#### Points for JSC decisions:

Success of WRAC will require a holistic view of WCRP. WRAC will oversee regional activities across the WCRP, promote WCRP activities in regions, and serve as an interface to external partners. WRAC members should understand WCRP regional activities and have experience and capabilities to mobilize regional communities and resources. We suggest populating the WRAC with not more than 12 members including 2 co-chairs, primarily based on recommendations from within WCRP but, as needed, also through invitations to external partners. The JSC is invited to nominate the interim leadership (2 interim co-chairs) who will guide the establishment of the WRAC and its 2-year workplan according to the ToR and JSC guidance, and to agree on initial membership. After an initial stage, the JSC should review nominations of co-chairs and members, and WRAC workplans, following usual procedures.

WCRP's approach to regional initiatives should remain clearly and emphatically based in science topics and motivations. Because capacity development, which remains a pervasive challenge across WCRP, has strong regional flavours and impacts, JSC should direct WRAC to encourage activities across WCRP that promote an array of opportunities distinctive and useful for specific regions, that demonstrate relevance to climate issues specific to those regions, and that connect to and support existing capacity development initiatives.

The WGRC drafted a concept note on a framework for Frontiers of Climate Information (FoCI) projects. The JSC is invited to ask WRAC to serve as the oversight group for FoCI even when, as expected, those projects develop more broadly within WCRP.

CORDEX has worked in parallel with the WGRC to address science-driven questions related to regional downscaling. JSC is invited to encourage CORDEX to actively coordinate with other WCRP modelling and data groups - primarily, closer engagement within WMAC and perhaps WDAC - as well as to maintain strong cooperation with research and diagnostic aspects of CMIP6.

The JSC should charge the WRAC to support and guide the emerging discussion on urban climate (See the JSC document on this issue). A useful WCRP urban effort will require solid partnerships with the UN system, urban decision makers (e.g. EU Covenant of Mayors), and a wide range of cross-disciplinary research communities. The WRAC should serve as the home for WCRP urban climate initiatives and activities.