



WCRP Statement to SBSTA 56

Anthropogenic climate change brings significant challenges and risks that affect almost all aspects of life on Earth. Droughts, heavy rain and flooding, heatwaves, extreme fire weather and coastal inundation are some examples of what is already occurring and where amplified risks and impacts will threaten achievement of many of the Sustainable Development Goals (SDGs) in the future.

To meet these challenges, the co-sponsored¹ World Climate Research Programme (WCRP) makes fundamental and significant contributions to humankind's ability to understand and predict climate through its unique role in spearheading climate science, modelling and predictions/projections. This has culminated in the capability of WCRP's Coupled Model Intercomparison Project² (CMIP) to provide climate change scenarios as input into the Intergovernmental Panel on Climate Change (IPCC) assessment process. Planning for the next phase (CMIP7) is underway and is supported by WCRP's new CMIP International Project Office hosted by the European Space Agency.

Building on CMIP, CORDEX³ is WCRP's framework to produce regional climate information. Recently, four new *Flagship Pilot Study*⁴ proposals have been endorsed: 'Rainfall responses to climate change in a convective-permitting model over Western Cape (HighResWC)', 'URBAn environments and Regional Climate Change (URB-RCC)', 'Dynamical downscaling experiments and hydrological modelling for Canada and Mexico' and 'North America: Assessing the Use of Regional Models in a Storyline Framework for Understanding Climate Hazards'.

WCRP's Strategic Plan⁵ (2019-2028) reorients WCRP's and partners' core research towards providing the science, knowledge and understanding needed to target and provide answers to frontier problems – such as disaster risk reduction, climate adaptation, mitigation, and intervention strategies. A sustainable future for society presupposes a stable and amenable climate and requires salient and credible information on current and future states of the climate system. The timescales in which society requires this information range from near-term extreme events to long-range planning horizons, while spatial scales range from local to global. Within this framework, WCRP has a new scientific objective that aims at "bridging climate science and society". To implement this, WCRP's new core project "Regional Information for Society (Rifs)" strengthens the science and capability needed for providing societally-relevant climate information for regions, including our flagship service-oriented CORDEX project.

WCRP has also established a new core project on Earth System Modelling and Observations (ESMO) to address critical scientific and technological priorities in the coming decade regarding modelling, observations and model-data fusion. ESMO will unite and strengthen global research activities on coupled modelling, including CMIP, numerical experimentation and near-term prediction, as well as observations and data. ESMO will also work to strengthen the strategic partnerships with the Global Climate Observing System (GCOS), and also with space agencies such as the European Space Agency (ESA) and European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

¹ WCRP is sponsored by the World Meteorological Organization (WMO), the International Science Council (ISC), and the Intergovernmental Oceanographic Commission (IOC) of the United National Educational, Scientific, and Cultural Organisation (UNESCO).

² <https://www.wcrp-climate.org/wgcm-cmip>

³ <https://cordex.org/about/>

⁴ <https://cordex.org/experiment-guidelines/flagship-pilot-studies/endorsed-cordex-flagship-pilote-studies/>

⁵ <https://www.wcrp-climate.org/wcrp-sp-overview>

WCRP has developed five new “Lighthouse Activities” that will make critical near-term progress towards meeting WCRP’s Vision, Mission, and Scientific Objectives⁶. The WCRP Lighthouse Activities are designed to be ambitious and multidisciplinary (integrating across WCRP and collaborating with partners) so that they can rapidly advance some of the new science and technologies, and institutional frameworks, that are needed to manage climate risk and meet society’s urgent need for robust and actionable climate information more effectively. The Lighthouse activities draw on WCRP’s core scientific and technical capabilities, and strategic partnerships.

Safe Landing Climates: Is exploring the routes to climate-safe landing ‘spaces’ for human and natural systems, on multi-decadal to millennial timescales; connecting climate, Earth System and socio-economic sciences. It is exploring present-to-future pathways for achievements of key SDGs.

Explaining and Predicting Earth System Change: Is designing and taking major steps towards delivery of an integrated capability for quantitative observation, explanation, early warning and prediction of Earth System Change on global and regional scales, with a focus on multi-annual to decadal timescale.

My Climate Risk: Is developing a new framework for assessing and explaining regional climate risk to deliver climate information that is meaningful at the local scale.

Digital Earths: Is developing a digital and dynamic representation of the Earth System, optimally blending models and observations, to enable an exploration of past, present and possible futures of the Earth System.

The WCRP Academy: Is determining the requirements for climate research education and building enabling mechanisms.

Partnerships are critical to the success of WCRP, which works with many different organisations, nations and institutions. As an example, the 2022 edition of the 10 New Insights in Climate Science (10NICS) is being prepared as a joint initiative between Future Earth, the Earth League and WCRP.

A WCRP Open Science Conference⁷ “Advancing Climate Science for a Sustainable Future” will be held in Kigali, Rwanda on 23-27 October 2023 and will focus on bridging climate science and society.

WCRP’s community stands ready to work with our co-sponsors and partners, and to support nations, to ensure that society has the climate knowledge and information needed to meet the challenges of our changing climate. To achieve this, we rely on countries to provide long-term support for fundamental science, model development and a sustained climate observing system.

⁶ <https://www.wcrp-climate.org/about-wcrp/wcrp-overview>

⁷ <https://www.wcrp-climate.org/wcrp-osc23>