

Report back from CPs and CORDEX: Relevance to WCRP Strategic Plan



CORDEX

- CORDEX and regional climate phenomena at the nexus of two SP issues:
 - Product of multi-scale interactions between large-scale processes and smaller scale processes
 - A direct link between climate science and the communities impacted by climate variability and change
- Particularly relevant to the (old) « E5 The regions in the climate system » and the proposal for « Regional Networks »
 - E.g. regional analysis of global coupled models; focii on convective systems, frontal behaviour; processes producing « hotspots » that have global impacts; advancing the production of regional climate information ...
- Important links to partners e.g. WWRP
- **Key Need:** high quality, fine scale, mutivariate observations

SPARC

- Primary science issues :
 - **Atmospheric Dynamics and Predictability**
How can the impact of weather and climate be reduced?
 - **Chemistry and Climate**
How can we limit the future impacts of air quality and climate?
 - **Long-term records for climate understanding**
What is happening and how sure are we of that?
- Cross linkages to many WCRP activities e.g. other CPs, MIPs, S2S (and to all Objectives in SP)
- Strong link to e.g. WMO (WMO/UNEP 2018 Scientific Assessment of Ozone Depletion) and Montreal protocol issues

GEWEX

- Integrated approach to quantify the links between **energy** and **water** and critical **Earth System** feedbacks (cf the new “Emphasis” Section in SP)

- Stewardship of observations, observing system assessment and definition



- Advance process understanding (hydrological, weather and climate)



- Promote improvement in global, regional and climate modelling, in obs. analysis and observing system definition

CLIVAR

- CLIVAR science relevant to all Objectives in WCRP SP
- Integrated view on climate system (heat, water, carbon) critical for WCRP SP (e.g. Earth's Energy Imbalance workshop)
- CLIVAR Science Plan issues for WCRP SP e.g.:
 - Identify ocean and coupled **climate processes** that are critical for global and regional climate variability and change
 - Identify temporal and spatial scales of **climate predictability**
 - Quantify constraints on **climate sensitivity**, air-sea exchange and Earth's energy budget / ocean heat content
 - Quantify **regional impacts** of climate change on sea level, the cryosphere and water cycle
 - Quantify past/present/future ocean role in **CO₂ and heat uptake** and **links between climate and ocean ecosystems**
 - Facilitate the provision of **actionable forecast information**



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- Emphasise need for **underlying observations**
 - Glacier mass balance, sea ice thickness,...
- Ensure role of **snow** remains prominent (old E4)
- Closer **integration** with modelling (CORDEX, WGSIP, S2S...)
- Need to emphasise **societal linkages**
 - Regional variability and change (e.g. snow cover, water availability)
 - Glaciers and water availability
 - Ice sheets and sea level rise (links to CLIVAR and GC)
 - Cryospheric tipping points (e.g. WAIS stability)