Overarching Themes

O-1. Understanding the climate system

Identify and constrain processes that affect the climate system, notably the reservoirs and flows of energy and water – and other essential elements including carbon, aerosols, salt and other climate-active species/compounds – within and between the components of the Earth system.

O-2. Advance predictive skill on sub-decadal timescales

Quantify the uncertainties and enhance the prediction skill for shorter time scales of the climate system and its components.

O-3. Constraining projections on decadal to centennial timescales

Quantify the sensitivities, uncertainties and emergent constraints inherent in the chang-

O-4. Connecting climate science with policy and services

Improve the generation of decision relevant climate information and knowledge about the evolving Earth system.

Section 4 pre-amble

- Observations and their use need to made more visible in the text
  - **Measurements -> Observations**
  - **Processes -> from local to global scale**
  - **Field or laboratory -> remote sensing, field or laboratory**

O-1. Understanding the climate system

Identify and constrain processes that affect the climate system, notably the reservoirs and flows of energy and water - and other essential elements including carbon, aerosols, salt and other climate-active species/compounds - within and between the components of the Earth system.

- …constrain radiative forcing as well as physical and dynamical processes that affect the climate system and its variability
- …reservoirs and dynamical flows of water, energy and carbon….

- In general, need for broadening this to embrace current drivers of the overarching research questions in e.g. CLIVAR, GEWEX,…. Towards a more holistic approach – in particular to emphasize observations:
  - Bridging coordinated international field experiments with observational systems
  - Define novel and sustained observations and their synthesis required for future science needs

O-2. Advance predictive skill on sub-decadal timescales

Quantify the uncertainties and enhance the prediction skill for shorter time scales of the climate system and its components.

- sub-decadal -> sub-seasonal to decadal
- Predictability in a transient climate

O-3. Constraining projections on decadal to centennial timescales

Quantify the sensitivities, uncertainties and emergent constraints inherent in the changing climate system on longer timescales.

- Need to emphasize the role of radiative forcing
    - Projections of variability
    - Predictability in a transient climate

O-4. Connecting climate science with policy and services

Improve the generation of decision relevant climate information and knowledge about the evolving Earth system.

- Change heading -> **Improving climate science for policy and services**

- Wider form for collaboration needs to be better emphasized
  - Need to make visible that other sciences can be engaged with WCRP
  - Policy and decision makers <-> stakeholders – operations