Report to CLIVAR SSG-19

Panel or Working Group

WGSIP – N.B. we are about to move to report to the JSC

1. Contributions to developing CLIVAR science and fit, where appropriate, to the CLIVAR imperatives

WGSIP uses current ocean observations and climate models of Ocean-Atmosphere coupling to produce regional climate predictions out to years ahead

2. Briefly list any specific areas of your panel's activities that you think would contribute to the WCRP Grand Challenges as identified by the JSC at its most recent meeting[1]

Challenge 1: The CHFP (climate historical forecast project) will give a state of the art measure of the skill of regional climate predictions out to months ahead

Challenge 3: Several seasonal forecast centres (e.g. UKMO, CCCMA) now make real time seasonal to decadal forecasts with initialized sea ice. In addition the WGSIP Ice Historical Forecast Project is investigating the role this plays in the wider climate system (see WGSIP report)

Challenge 5: Seasonal and decadal predictions naturally output the full range of climatic variables from models and so there is real time information on precipitation available from these systems, albeit with large seasonal and geographical variations in skill. Nonetheless, these forecasts form the basis for future climate services in water availability out to years ahead.

Challenge 6: Prediction of extreme events is at the core of the seasonal to decadal prediction effort. Predicting the risk of a very cold winter or a very hot summer, an intense or failed rainy season, or the frequency of daily extremes at long lead times are all active topics. Encouragingly, the skill for extremes is often higher than the skill for average conditions. These forecasts form the basis for future warning of the risk of extreme events out to years ahead.

3. Key science questions that you anticipate your community would want to tackle in the next 5-10 years within the context of a more ocean-atmosphere orientated CLIVAR (1-3 suggestions)

Q1: Can ocean-atmosphere or sea ice-atmosphere coupling drive predictable year to year changes in extratropical atmospheric circulation and hence extreme events?

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[1]
1. Provision of skillful future climate information on regional scales (includes decadal and polar predictability)
2. Regional sea-level rise
3. Cryosphere response to climate change (including ice sheets, water resources, permafrost and carbon)
4. Improved understanding of the interactions of clouds, aerosols, precipitation, and radiation and their contributions to climate sensitivity
5. Past and future changes in water availability (with connections to water security and hydrological cycle)
6. Science underpinning the prediction and attribution of extreme events

Q2: Given that we nominally remove the model bias in both seasonal and decadal predictions, how do current ocean model errors affect the skill of predictions months to years ahead?

Q3: What are the key climate model changes needed to best represent the processes in Q1 and to minimize the errors in Q2 in our seasonal to decadal forecast systems?

4.   Cooperation with other WCRP projects, outside bodies (e,g. IGBP) and links to applications

5.   Workshops/meetings held

Annual WGSIP meeting, contributions to WCRP OSC presentations and papers.

6.   New activities being planned, including timeline

We have several active experiments under the CHFP which is a growing database of hindcasts. In particular we have subsets of hindcasts to examine the influence of sea ice and resolving stratospheric processes on seasonal forecast skill.

7.   Workshops / meetings planned

September 2012: Annual WGSIP meeting in collaboration with WGCM

8.   Issues for the SSG

WGSIP is moving to report to the JSC direct