

Working Group on Subseasonal to Interdecadal Prediction (WGSIP) Report

1. Highlights for JSC

[WGSIP](#)'s mission is to foster (i) the application of climate-system models and other methods to climate prediction on subseasonal to interdecadal time scales, and (ii) enabling of associated societal benefits through improved forecasts and services. It works toward these goals through numerical experimentation aimed at improving knowledge of predictability in the climate system and how practical skill can be realized from it. In addition it seeks to coordinate and promote climate prediction-related activities across groups and initiatives within and beyond WCRP.

To further these goals, a diverse and well-connected membership is essential. WGSIP members currently represent 7 of WMO's 13 Global Producing Centres ([GPCs](#)) for seasonal forecasts and several of the initial GPCs for annual to decadal climate prediction. There is cross membership, including in leadership roles, with the WCRP's Decadal Climate Prediction Project ([DCPP](#), which reports to WGSIP), Subseasonal to Seasonal ([S2S](#)) Prediction Project, Grand Challenge on Near-Term Climate Prediction ([GC-NTCP](#)) and GEWEX Global Land/Atmosphere System Study ([GLASS](#)), as well as the WMO's Polar Prediction Project ([PPP](#)) and Expert Team on Operational Predictions from Sub-seasonal to Longer-time Scales ([ET-OPSLs](#)).

WGSIP currently supports four sub-projects. These include the long-term Climate System Historical Forecast Project ([CHFP](#)), whose profile was enhanced in 2017 by a [BAMS article](#) highlighting CHFP's function as a "CMIP for seasonal forecasting" and its [data archive](#) at CIMA. This has likely contributed to an increase of nearly 50% in registered users over the preceding year. The CHFP presently hosts hindcast data from over 20 seasonal forecasting systems, from which $\sim 10^5$ data files were downloaded on 2017.

WGSIP's current generation (since 2014) of sub-projects on snow initialization ([SNOWGLACE](#)), tropical-extratropical [teleconnections](#), and initialization [shock/drift](#) were highlighted in a 2017 [EOS article](#) and in additional publications and presentations at conferences and workshops.

At the Pan-WCRP Modelling Meeting the DCPP experimental design for CMIP6 was finalized, and WGSIP held a session convening leaders of DCPP, GC-NCTP and the new WMO Lead Centre for Annual to Decadal Climate Prediction (LC-ADCP) to facilitate coordination in decadal prediction in advance of CMIP6, the provision of climate services by the GC, and LC operations.

2. Early success and/or planned activities in 2018/2019

WGSIP is co-organizing, along with S2S, the [International Conferences on Subseasonal to Decadal Prediction](#), to be held 17-21 September 2018 in Boulder, USA.

Following a joint session between WGSIP and the ET-OPSLS co-chairs at the Pan-WCRP Modelling Meeting, it was agreed that subsets of WGSIP and the ET will form a joint task group to plan and facilitate activities such as publications, meetings and modelling experiments in order to fill knowledge gaps enabling improvements in operational procedures and products (R2O), as well as to promote the application of operational outputs for research (O2R). This group will interact mainly remotely and through meetings of opportunity, starting at the 2nd WMO Workshop on Operational Climate Prediction in May/June 2018.

WGSIP and GEWEX have agreed (informally at this stage) to collaborate on the development of a coordinated set of modelling experiments that will explore sensitivities of climate forecasts to initialization of the land surface. Other such efforts from S2S Phase 2, the predictive component of [LS3MIP](#), and the proposed [GLACE-ESM](#) experiment will be invited to participate.

During this period WGSIP and DCPD will also be involved in

- running and analyzing DCPD CMIP6 experiments, leading to a paper on multi-model results
- setting up the network of GPCs for the LC-ADCP
- collaborating with GC-NTCP to produce annual to decadal climate outlook (first draft in 2018, then updated each year)
- coordinating foci of WGSIP and S2S Phase 2 teleconnection sub-projects
- advancing and publishing results from its current set of sub-projects
- adding to the CHFP archive hindcast data for sea ice and from additional models including those in the North American Multi-Model Ensemble ([NMME](#))
- planning WGSIP 20 & associated climate prediction summer school, June 2019 in Moscow
- contributing leadership and expertise, leveraging WGSIP ties to GPCs and modelling centre, to community climate prediction-related initiatives including
 - [PA-MIP](#), a CMIP6 project to study polar climate linkages with lower latitudes
 - [Blue Action](#), a H2020 project aimed at better understanding Arctic variability/predictability
 - [FRAMS](#), a Canada-led project to develop multi-model, user-relevant seasonal sea ice forecasts from GPC outputs for WMO's new [Arctic Polar Regional Climate Centre](#)

3. Issues and challenges

As described under (1), WGSIP currently maintains cross-membership (in addition to DCPD) with S2S, GC-NTCP and GEWEX/GLASS. However, due to the limited size of WGSIP (13 members at present), and the desirability and indeed necessity due to its dual research/operational outlook of maintaining ties to WMO GPCs, the ET-OPSLS,

etc., WGSIP currently lacks strong connections to several of the Core Projects and GCs whose remits encompass important and emerging aspects of climate prediction. As a result, there are under-exploited linkages with [CliC](#) for sea ice prediction, [GC on Weather and Climate Extremes](#) for subseasonal to decadal prediction of risks of weather and climate extremes, and [GC on Carbon Feedbacks in the Climate System](#) for carbon cycle prediction on multi-annual to decadal time scales, which may be relevant to the [Global Stocktake](#), to name a few. WGSIP will aim going forward to strengthen these connections through available mechanisms, including inviting guest experts to WGSIP meetings and, where feasible, cross-membership. However, larger WCRP-led measures, such as coordinated joint meetings across multiple groups and having specific foci in some instances would assist as well.

The above situation suggests that there may be benefits to a more networked and less compartmentalized WCRP structure, ideally including a stronger and more inclusive centre of gravity for climate prediction on subseasonal to decadal timescales within WCRP. The likely pending evolution of WCRP in response to the recent programme review should provide opportunities for such realignment.

WGSIP views its future role as including stronger links to climate services (in the sense of providing research capacity for developing enhanced products and services rather than providing services). The increased cooperation with WMO's ET-OPSLs outlined above provides an initial basis for WGSIP to strengthen its links to services, and conversely, for WMO to strengthen its links to climate prediction research. While WGSIP has reasonably strong ties to WMO generally that are enabling this envisaged progress, its connections to [GFCS](#) are not strongly developed and in theory could provide a further platform for such efforts. WGSIP is glad to see stronger linkages to climate services advocated in the programme review and draft Strategic Plan, and itself advocates that this direction be pursued in the Implementation Plan.
