



WORLD
METEOROLOGICAL
ORGANIZATION



**Barcelona
Supercomputing
Center**
Centro Nacional de Supercomputación

SECOND WMO WORKSHOP ON OPERATIONAL CLIMATE PREDICTION

30 May - 1 June 2018, Barcelona, Spain

CONCEPT NOTE

Background

Over the past decade, the number of centres responsible for generating real-time operational climate prediction (OCP) products, with dedicated computing and information delivery mechanism, has significantly increased. In the meantime, demand of various types of users for climate predictions on timescales of weeks to decades has also been accelerating, as decision-makers in different sectors increasingly recognize their relevance for longer-term decisions and planning, including for adapting to and mitigating climate change. A dialogue and interaction between the centres engaged in OCP would help them to share the knowledge and expertise, identify good practices and recognize gaps in order to meet increasing requirements and expectations.

Advances in research, and their transition to operations, have significantly improved climate predictions over the past decades. Further increases in skill of long range forecasts are likely to come from improvements in the forecast models and tools and increasing scientific understanding of climate variability and change. It is very important, therefore, to foster the transition of climate predictability research results into operational use, while in the meantime, communicating gaps and requirements from the operational to the research to guide future research foci.

With this in mind, World Meteorological Organization (WMO) initiated a series of workshops on Operational Climate Prediction, to be held regularly and serve as a platform for operational and research communities to share experiences, to review the progress in the operational practices and scientific studies related to climate prediction and to address incorporation of recent research advances in developing new operational forecast products. First Workshop in this series was held in Pune, India, on 9-11 November 2015.

Second WMO Workshop on Operational Climate Prediction (OCP-2)

The Second WMO Workshop on Operational Climate Prediction (OCP-2) will be held from 31 May to 1 June 2018 in Barcelona Spain, hosted by the Barcelona Supercomputing Centre (BSC). The goals of the OCP-2 are to facilitate a dialogue between various operational climate prediction centres, and to strengthen interaction and enhance partnership between the operational and research communities.

OCP-2 Objectives

The key objectives of the workshop will be, inter alia, to:

- discuss technical issues, and to promote innovative approaches for operational climate prediction, from sub-seasonal to decadal timescales;
- highlight recent research advances that can be integrated into operational approaches, articulate research needs and gaps to improve operational practices, as well as

- outstanding research issues confronted by the operational community, and build and promote two-way linkages between the research and operations;
- showcase success stories in operational climate prediction at regional and national scale, and identify major challenges;
- agree on the way forward for improved operational climate prediction through bringing research results into operational use.

Expected Benefits and Outcomes

It is expected that the Workshop will accelerate improved implementation and functioning of the Climate Services Information System (CSIS) at regional and national level in support of service delivery for policy and decision making.

The OCP-2 is expected to deliver the following outcomes:

- Enhanced delivery of forecast information cascading from global to regional scale (e.g., to Regional Climate Centres, Regional Climate Outlook Forums), allowing effective and optimized use of global-scale information in preparation of products for the concerned region, including for use it further at national scales;
- Strengthened collaboration and feedback mechanisms between the operational and research communities;
- Articulation of research needs to improve operational climate prediction in terms of enhanced skill and an expanded range of forecast products;
- Identification of mechanisms for bringing research results into operational climate prediction;
- A roadmap for improving operational climate prediction on sub-seasonal, seasonal and decadal scales;
- A position paper reflecting the outcomes of the OCP-2 workshop, which will be presented and discussed at the Research to Operations session of the International Conferences on Subseasonal to Decadal Prediction organized by WCRP on 17-21 September 2018 in Boulder, USA.

Workshop format and themes

The Workshop will discuss different operational aspects, and links to research developments, of climate prediction at time scales ranging from sub-seasonal, to seasonal and decadal, including current challenges and limitations. It will comprise a number of keynote talks, open discussions in panel as well as in break-out groups.

Suggested initial topics include:

- Current status of operational activities and research developments related to climate prediction on sub-seasonal, seasonal and decadal time scales (including the current WMO infrastructure, activities of the WCRP/WWRP Subseasonal to Seasonal (S2S) project, Copernicus Climate Change Services (C3S), WGSIP perspective, and Research to Operations (R2O) aspects,);
- Procedures for optimizing climate prediction information from various sources (Global Producing Centres) for specific regions of interest of NMHSs and RCCs: calibration, combination, verification;
- Managing expectations: what is predictable and what is not predictable;
- Delivery and communication: Interpretation of probabilistic predictions.

Break-out group discussions will focus on (i) sub-seasonal, (ii) seasonal and (iii) decadal scales, to develop some key actions and agree on the recommendations on the ways to advance further operational predictions and delivery mechanisms.

Participation

Participation in the workshop is by invitation only, and the expected number of participants will be around 50 including the members of the CBS/CCI Inter-Programme Expert Team on Operational Prediction from Sub-seasonal to the Longer-time Scales (IPET-OPSLS). The target audience of the workshop includes experts with the knowledge and expertise from various operational climate prediction centres, including those established under WMO umbrella, other international centres, such as APEC Climate Centre (APCC), International Research Institute for Climate and Society (IRI), Copernicus Climate Change Services (C3S), as well as from research community, including WCRP/WGSIP and WWRP/S2S.

WMO has limited resources to support the travel and per diem of invited participants, and where possible, they are urged to explore internal resources to cover their participation costs, at least partially.

Provisional Agenda Outline

Day 1: 30 May 2018 (Wednesday)

Session 1: Setting the Scene

- Opening remarks
- Background, concept and expected outcomes
- Update on CSIS implementation, including Climate Services Toolkit
- Global RCOF Review recommendations on operational practices

Session 2: Technical aspects of operational climate prediction and current practices (input from WMO entities as well as partners)

- Sub-seasonal forecasts
- Long Range Forecasting
- Decadal prediction
- Forecast verification
- Multi-Model Ensemble (MME) schemes (APCC)
- Global Climate Assessment products, including Global Seasonal Climate Update (GSCU), Global Annual to Decadal Updates (GA2DU)
- Copernicus Climate Change Service (C3S)
- International Research Institute for Climate and Society (IRI)

Session 3: Research-Operations Linkages

- World Climate Research Programme Working Group on Seasonal to Interdecadal Prediction (WGSIP) activities
- IPET-OPSLS perspectives on research needs
- S2S project - examples of application of sub-seasonal products
- Transition of research results into operational practice

Day 2: 31 May 2018 (Thursday)

Session 4: Global and regional aspects: understanding sources of predictability

- El Niño–Southern Oscillation (ENSO)
- Pacific Decadal Oscillation (PDO)
- Madden Julian Oscillation (MJO)
- North Atlantic Oscillation (NAO)
- Arctic Oscillation (AO)
- Teleconnections
- Asian Monsoons
- Other regional and sub-regional patterns

Session 5: Break-out Groups Discussions

- Sub-seasonal Forecasting
- Seasonal Forecasting, including development of the Guidance on Operational Practices and objective seasonal prediction aspects

- Decadal prediction

Day 3: 1 June 2018 (Friday)

Session 6: Advancing operational climate prediction and delivery mechanisms

- Reporting from the breakout sessions
- Plenary discussion on the way forward on improved operational prediction
- Outline of a Position Paper on Operational Climate Prediction

Session 7: Delivery and communication of operational climate prediction products

- Data exchange and calibration
- Co-production aspects
- Impact-based forecasts
- Communication of climate prediction products, including uncertainties

Session 8: Recommendations for developing the Roadmap to improved operational climate prediction based on examining sub-seasonal, seasonal and decadal aspects

- Input to the WWRP/WCRP Conferences on Sub-seasonal to Decadal Prediction (17-21 September 2018, Boulder, USA)

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