

GDPFS User Requirements for S2S Prediction: SERCOM/SC-CLI

Rupa Kumar Kolli

Vice-Chair, SC-CLI & Co-Lead, ET-CSISO

&

Wilfran Moufouma-Okia

Head, Regional Climate Prediction Services Division, WMO



WMO OMM

World Meteorological Organization

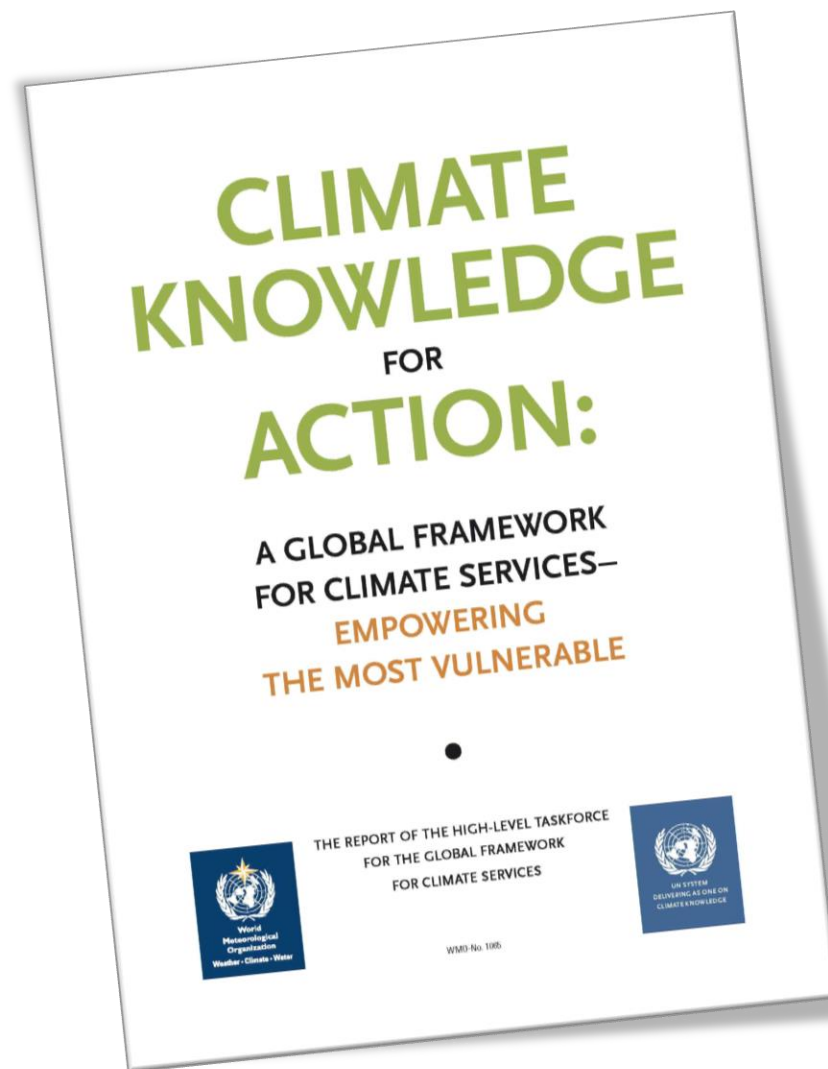
Organisation météorologique mondiale

**GDPFS Symposium on Requirements
for NWP Data and Products**

Geneva, 29-31 August 2022

Climate Service Information System (CSIS)

- The CSIS is the component of the GFCS most concerned with the generation and dissemination of climate information.
- It is the 'operational centre' of the GFCS. It deals with climate data, monitoring, prediction (monthly, seasonal, annual to decadal) and projection (multi-decadal to centennial) activities.
- "CSIS is the system needed to collect, process and distribute climate data and information according to the needs of users and according to the procedures agreed by governments and other data providers." (High Level Taskforce on GFCS)



GFCS/CSIS in GDPFS

- Resolution 23 (EC-73) on Amendment of GDPFS Manual
 - *inter alia*, requests the president of INFCOM, in close collaboration with the president of SERCOM, to make proposals regarding the further integration of CSIS aspects into GDPFS
- ET-CSISO has the primary responsibility to assist development of such proposals, through SC-CLI/SERCOM channels, for consideration by INFCOM
- Draft Technical Reference Document on CSIS went through further internal review and revisions, and is being finalized for external review within the concerned stakeholders in SERCOM and INFCOM
- New initiatives for global entities for CSIS operations (e.g., ENSO information) getting traction
- Resolution 3.1(1)/1 (EC-75) – GFCS Strategy and Measures for Enhanced Visibility, Effectiveness and Implementation
 - Improved articulation of end-use demand for climate services
 - Strengthen operational weather, water, climate and environmental systems and services on sub-regional scales, to increase Member access, and capacity to add value

Regional Approach Rationale

- The country-focused results-based framework for WMO contributions to the GFCS focuses on creating the regional delivery systems, tools and methods, and national capacities for improving climate-related outcomes;
- A focused regional effort would facilitate systematic strengthening of early warning services in a comprehensive manner that would help countries in the region achieve this goal;
- Facilitated access to optimized regional information is an essential input for national climate services, ensuring consistency in understanding and interpreting shared regional climate drivers;
- WMO is actively engaged in demonstrating the approach in a few target regions and upscaling to other regions.



Image Credits: [The Sentinel](#)

Decision 9 (EC-72) – Operationalization of Objective Seasonal Forecasts and Tailored Products on Sub-regional Scales

- Endorsed the proposal on operationalization of objective seasonal forecasts and tailored products on sub-regional scales with country-level service delivery, as the basis for:
 - Guiding further development of operational CSIS on sub-regional scale and support country-level service delivery;
 - Development of normative and regulatory material;
- Requested all relevant WMO bodies to support in their respective areas of responsibility;
- Urged
 - RCCs, RCOFs and other relevant entities to actively contribute to the implementation of the proposal;
 - GPCs/LCs to facilitate access to required data sets and ensure timely and regular provision of objective sub-seasonal and seasonal forecast products, in suitable formats to RCCs, RCFs and NMHSs.

Components of Proposal Endorsed by Decision 9 (EC-72)



Regional climate data

Global forecast data access

Global model evaluation and selection

Regional calibration and bias correction

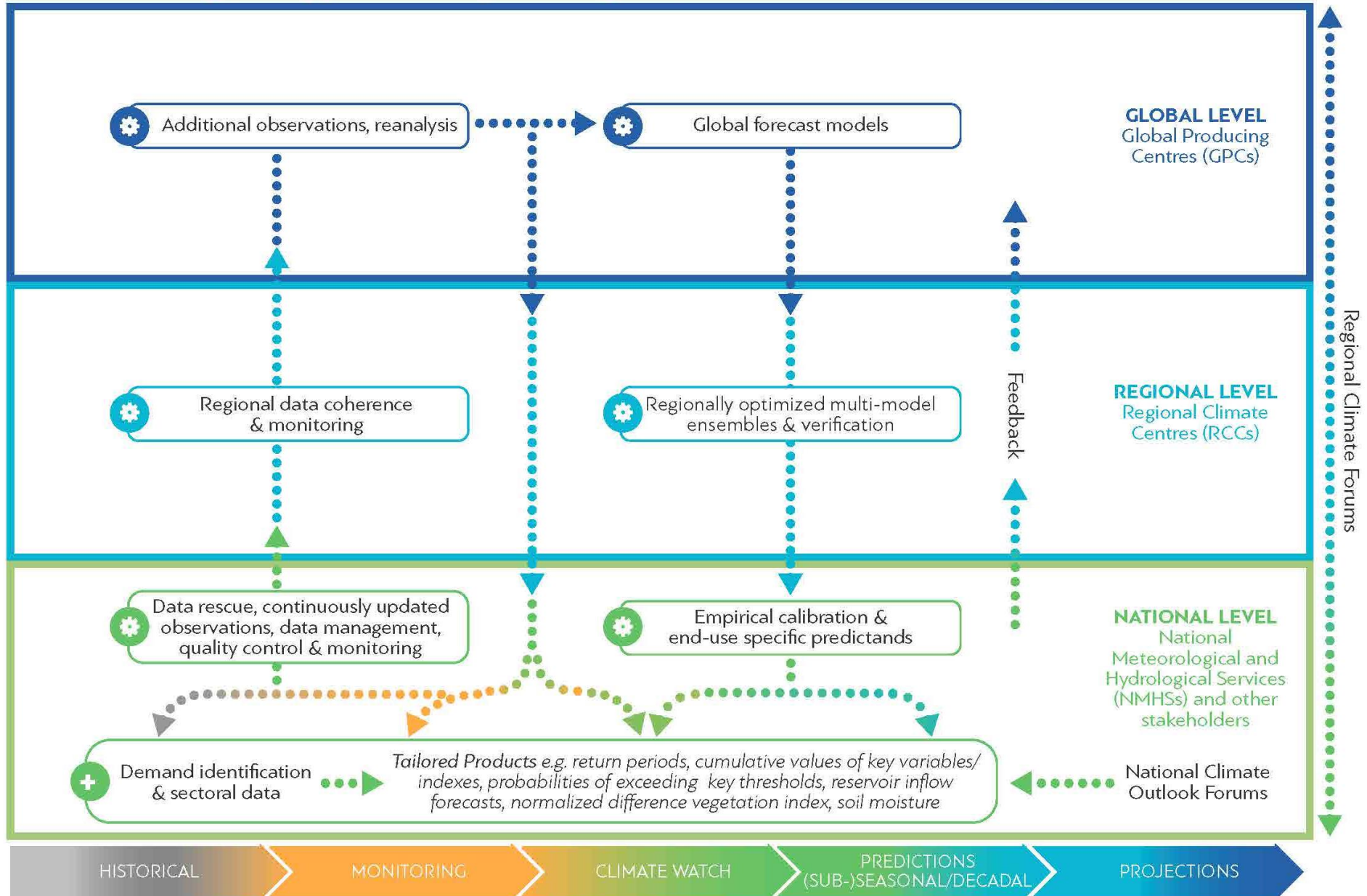
Regional climate outlook statement

Tailored seasonal forecast products

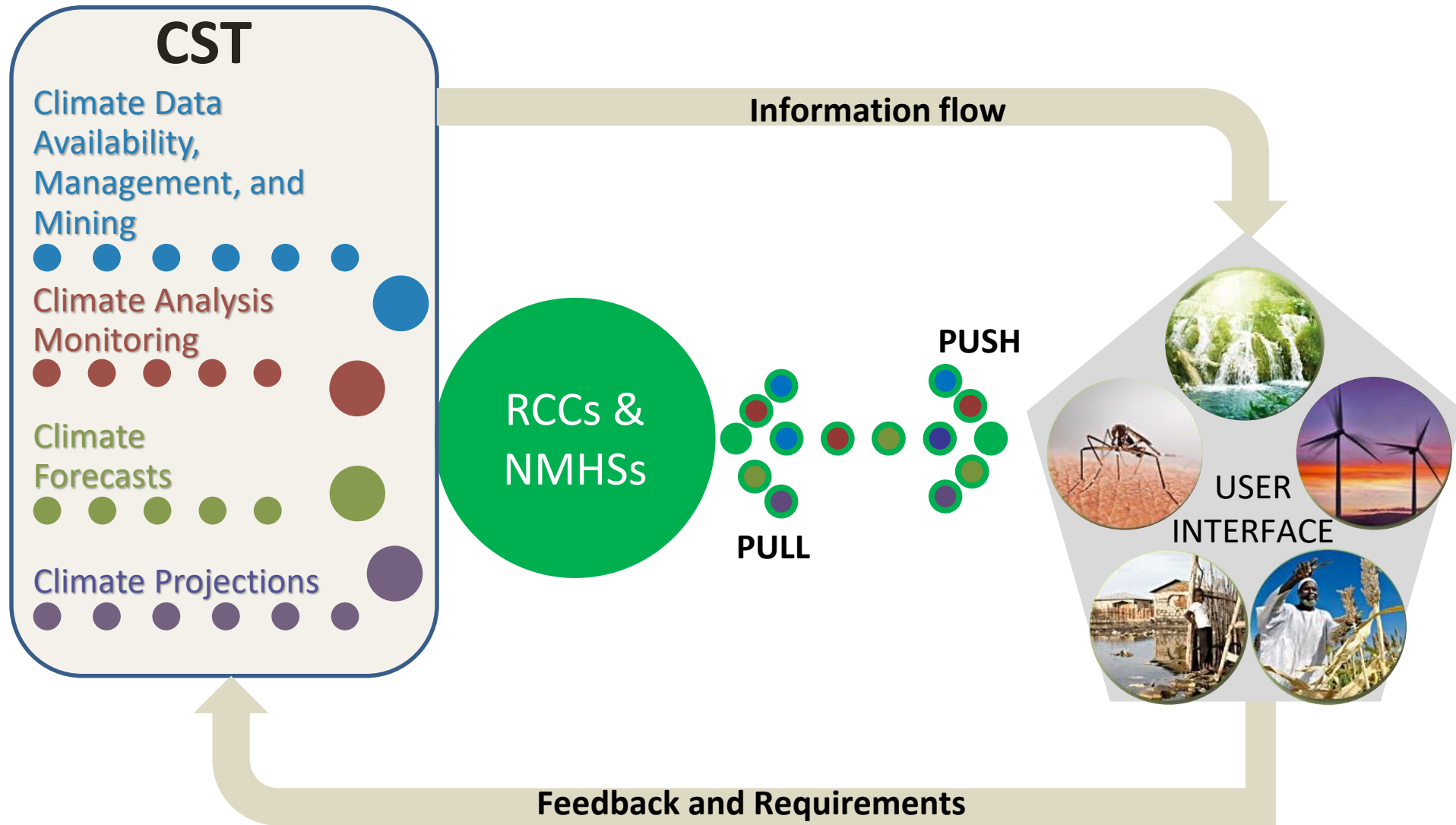
Forecast schedules and updates

Quality management

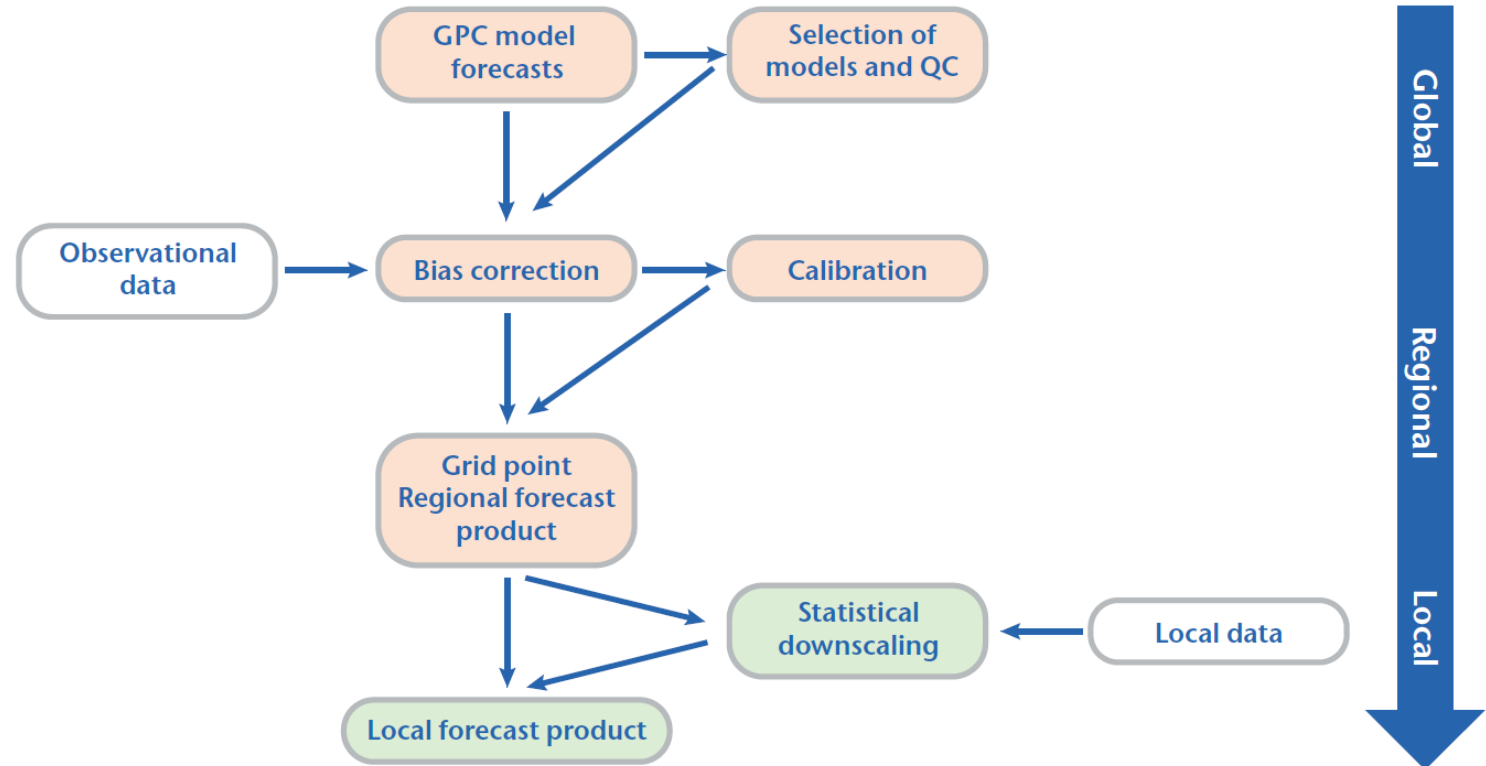
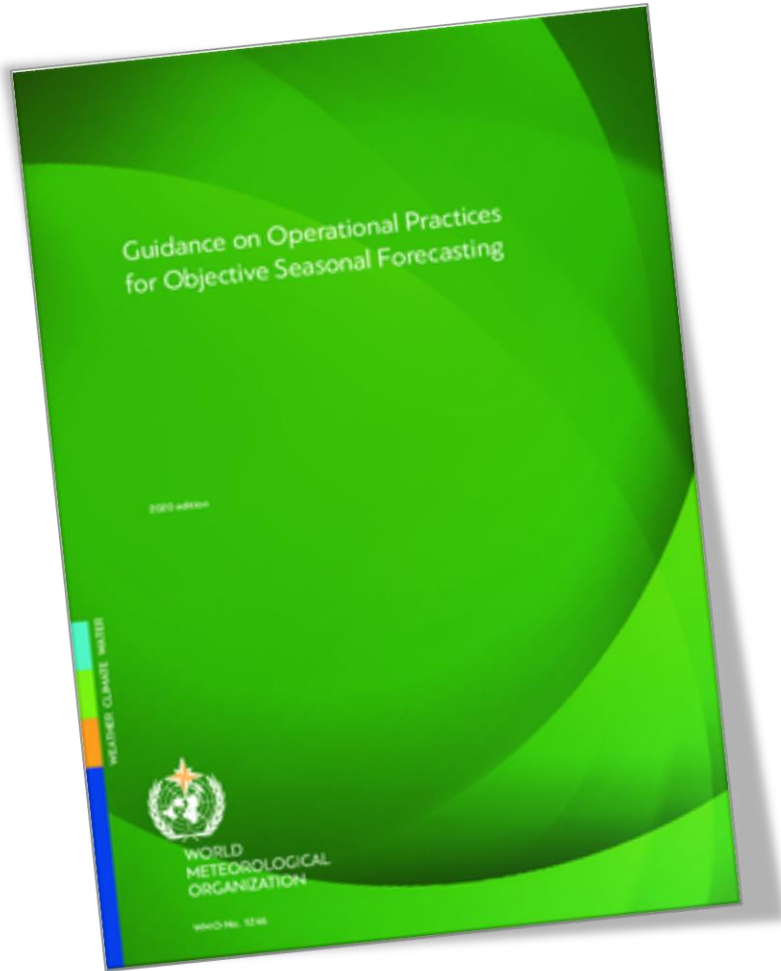
A Regional Approach to Implementing the Climate Services Information System (CSIS-R)



Climate Services Toolkit (CST)



WMO Recommended Procedure for LRF



Hindcasts

- Harmonization of GPC hindcast periods to meet RCC and NMHS needs
- Currently uneven among GPCs
- Adequate length to facilitate model evaluation and calibration
- Regularly updated along with model upgrades

Observational Data

- Facilitate discovery, access and exchange of observational data and products
- Support RCC data needs for their LRF and climate monitoring functions
- Support establishment of regional reference databases, including promotion of optimal national inputs and use of WMO-recommended climate database management systems (CDMSs)
- Extend GPC concept to historical data (including merged and reanalysis data) and climate monitoring products, to complement the associated RCC functions

GPC-LRF and GPC-SSF Data

- Access to model output data from GPCs-LRF and GPCs-SSF, for hindcasts as well as archived and current real-time predictions (to support both operational and research communities)
- Increased spatial (at least 150 km for LRF and 100 km for SSF) and temporal resolutions (preferably daily)
- Address the needs of MME and MOS-based forecasting by RCCs and NMHSs, including for generation of secondary and tailored products (e.g., vegetation indices, soil moisture, reservoir inflow, etc.)
- Additional variables for both mandatory and highly-recommended functions (e.g., sea ice, wind, humidity, soil moisture, additional upper levels, etc.)
- Sustained access to lateral boundary conditions in real time to support dynamical downscaling, where possible, through special arrangements
- Support more widely used data formats (e.g., netCDF, CPT, etc.)

Forecast Schedules

- Use of global forecasts by RCCs and NMHSs is constrained by the availability of global forecasts at the desired time
- Standardization and compliance of GPC forecast schedules in close consultation with other global forecast providers (e.g., NMME, C3S) will help RCCs and NMHSs to consolidate their efforts in making use of all the available global inputs
- Forecast schedules may also be evolved for RCCs in close alignment with GPC schedules

Regional Optimization of GPC Products

- Enable MME approaches to optimize the available potential predictability on regional scale
- Involves selection of models with adequate skills for the region of interest and regionally tailored MME predictions
- Diagnostics of regional climate drivers
- Common approaches for probabilistic sub-seasonal and seasonal prediction
- Enhanced focus on forecast verification, both for GPCs and RCCs
- Need to consider varied operational practices by different RCCs in this regard

Capacity Development of RCCs and NMHSs

- Enable RCCs/NMHSs to better access, understand and interpret GPC-LRF and GPC-SSF products
- Enhance capacities to objectively select and combine model forecasts for given periods and regions
- Enhance awareness about LRF and SSF products through better data visibility and access
- Improve understanding of forecast performance and reliability
- GPCs to actively support training activities of RCCs and RCOFs
- Guidance documents and operational manuals
- Integration into Climate Services Toolkit

Tailored Products

- Support co-identification, co-development and co-production of tailored products addressing both national and regional policy priorities and sectors including water, agriculture, disaster risk reduction, energy and health, identified in countries' Nationally Determined Contributions (NDC) to the Paris Agreement
- Facilitate harmonization of the interpretation and use of LRF and SSF products on the regional scale by countries sharing common regional climate drivers, including through RCCs and RCOFs
- Special attention is needed to address the growing demand by humanitarian agencies to strengthen their preparedness to cope with the impacts of extreme weather/climate events, through a seamless transition from LRF products through SSF and weather forecast products
- Fully exploit the benefits of the increasingly more precise and reliable SSF products by promoting applications in collaboration with the concerned sectors (e.g., agriculture and food security, water management, public health, energy, marine fisheries and aquaculture, wildfires, etc.)
- Facilitate operationalization of such tailored products by RCCs, RCOFs and NMHSs

Expansion of RCC Functional Descriptions

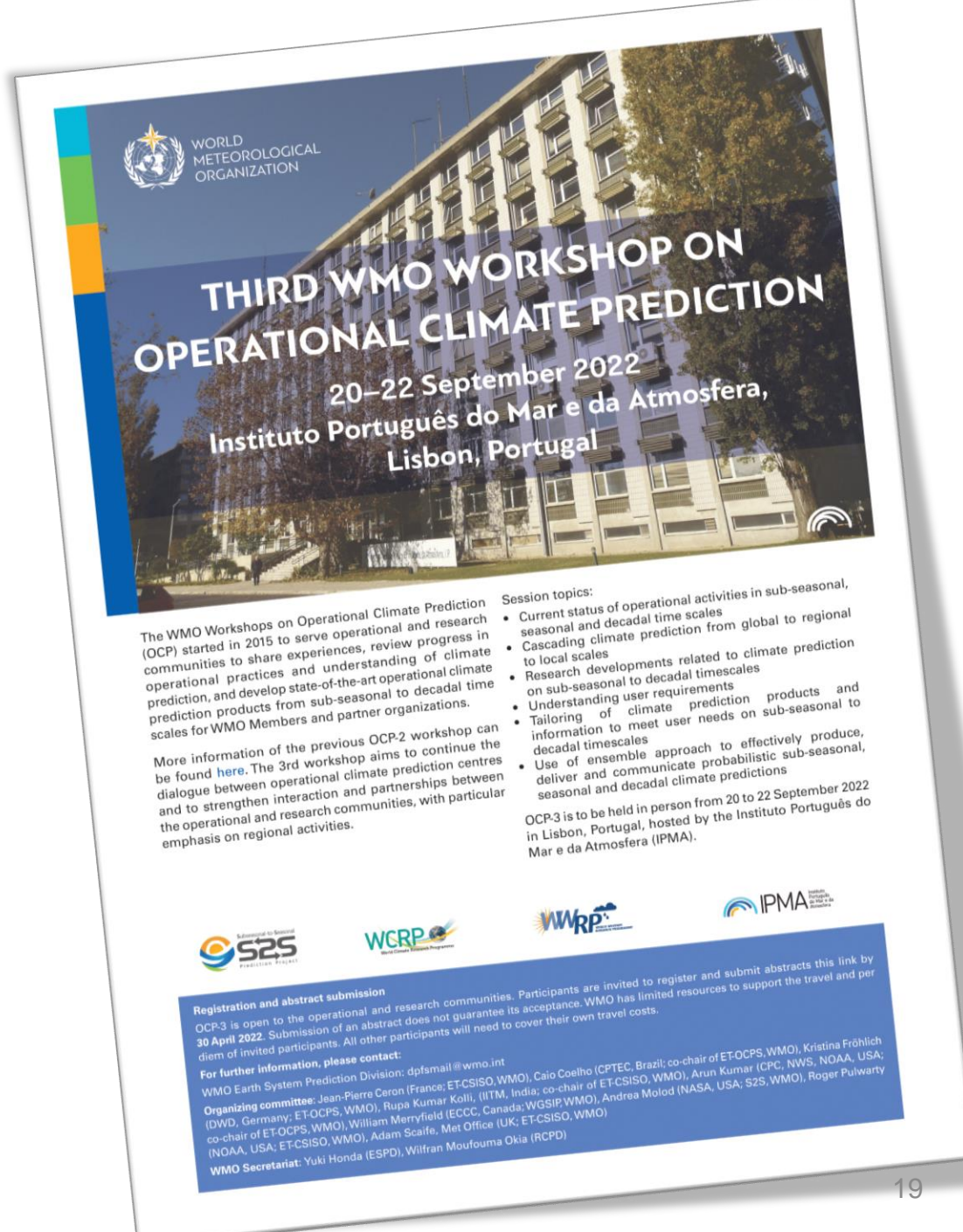
- RCC functional descriptions, both mandatory and highly-recommended, need to be elaborated and updated to make the best use of the emerging capabilities of GPCs-LRF and GPCs-SSF
- Role of RCCs in promoting objective sub-seasonal and seasonal forecasting in RCOFs and NMHSs
- Digital data access for NMHSs to RCC products

Other Regional Aspects

- Regional coordination of National CSIS Focal Points (NCFPs) and elaboration of their role in the relevant GDPFS aspects at the national level, to make sure that
 - the CSIS is fully implemented at the national level and properly linked to the regional and global entities;
 - all the CSIS core functions are appropriately put in place at the national level, including operational generation of S2S prediction products, in close alignment with the relevant GDPFS elements;
- SERCOM/SC-CLI Guidance on RCC Establishment and Operations in final form – needs to be regularly updated and expanded to dynamically align with the GDPFS evolution
- Review, refinement and update of the existing RCC material in the Manual on GDPFS (ET-CSISO already engaged);
- Draft concept note on NextGen RCOFs under review, ClimSA project outputs can be consolidated and generalized to produce guidance on RCOF operations
- Collaboration with Regional Associations

OCP-3

- A joint effort led by INFCOM/SC-ESMP/ET-OCPS and SERCOM/SC-CLI/ET-CSISO in close partnership with RB/WCRP/WWRP;
- 20-22 Sep 2022, Lisbon, Portugal
- <https://community.wmo.int/meetings/ocp-3>
- ET-CSISO and ET-OCPS to meet on 19 & 23 September 2022 at the same venue, including through a joint session
- Expected to consider more detailed aspects relevant to the GDPFS



The poster features a photograph of a large, modern building with a glass facade, identified as the Instituto Português do Mar e da Atmosfera in Lisbon. The WMO logo is in the top left corner. The main title is 'THIRD WMO WORKSHOP ON OPERATIONAL CLIMATE PREDICTION' with dates '20-22 September 2022' and location 'Instituto Português do Mar e da Atmosfera, Lisbon, Portugal'. The poster includes a list of session topics, a paragraph about the workshop's history and goals, and a registration section with contact information for the WMO Earth System Prediction Division and an organizing committee.

THIRD WMO WORKSHOP ON OPERATIONAL CLIMATE PREDICTION
20-22 September 2022
Instituto Português do Mar e da Atmosfera,
Lisbon, Portugal

The WMO Workshops on Operational Climate Prediction (OCP) started in 2015 to serve operational and research communities to share experiences, review progress in operational practices and understanding of climate prediction, and develop state-of-the-art operational climate prediction products from sub-seasonal to decadal time scales for WMO Members and partner organizations.

More information of the previous OCP-2 workshop can be found [here](#). The 3rd workshop aims to continue the dialogue between operational climate prediction centres and to strengthen interaction and partnerships between the operational and research communities, with particular emphasis on regional activities.

Session topics:

- Current status of operational activities in sub-seasonal, seasonal and decadal time scales
- Cascading climate prediction from global to regional to local scales
- Research developments related to climate prediction on sub-seasonal to decadal timescales
- Understanding user requirements
- Tailoring of climate prediction products and information to meet user needs on sub-seasonal to decadal timescales
- Use of ensemble approach to effectively produce, deliver and communicate probabilistic sub-seasonal, seasonal and decadal climate predictions

OCP-3 is to be held in person from 20 to 22 September 2022 in Lisbon, Portugal, hosted by the Instituto Português do Mar e da Atmosfera (IPMA).

Registration and abstract submission
OCP-3 is open to the operational and research communities. Participants are invited to register and submit abstracts this link by **30 April 2022**. Submission of an abstract does not guarantee its acceptance. WMO has limited resources to support the travel and per diem of invited participants. All other participants will need to cover their own travel costs.

For further information, please contact:
WMO Earth System Prediction Division: dpts@mail@wmo.int

Organizing committee: Jean-Pierre Ceron (France; ET-CSISO, WMO), Caio Coelho (CPTEC, Brazil; co-chair of ET-OCPS, WMO), Kristina Fröhlich (DWD, Germany; ET-OCPS, WMO), Rupa Kumar Kolli, (IITM, India; co-chair of ET-CSISO, WMO), Arun Kumar (CPC, NWS, NOAA, USA; co-chair of ET-OCPS, WMO), William Merryfield (ECCC, Canada; WGSIP, WMO), Andreea Molod (NASA, USA; S2S, WMO), Roger Pulwarty (NOAA, USA; ET-CSISO, WMO), Adam Scaife, Met Office (UK; ET-CSISO, WMO)

WMO Secretariat: Yuki Honda (ESPD), Wilfran Moufouma Okia (RCPD)

Logos for S2S, WCRP, WWRP, and IPMA are displayed at the bottom of the poster.

Thank You

rkolli.wmo@gmail.com
wmokia@wmo.int



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale