

WGNE-WIPPS Collaboration

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WGNE-39 Session 3



WORLD
METEOROLOGICAL
ORGANIZATION

Seamless GDPFS → WIPPS

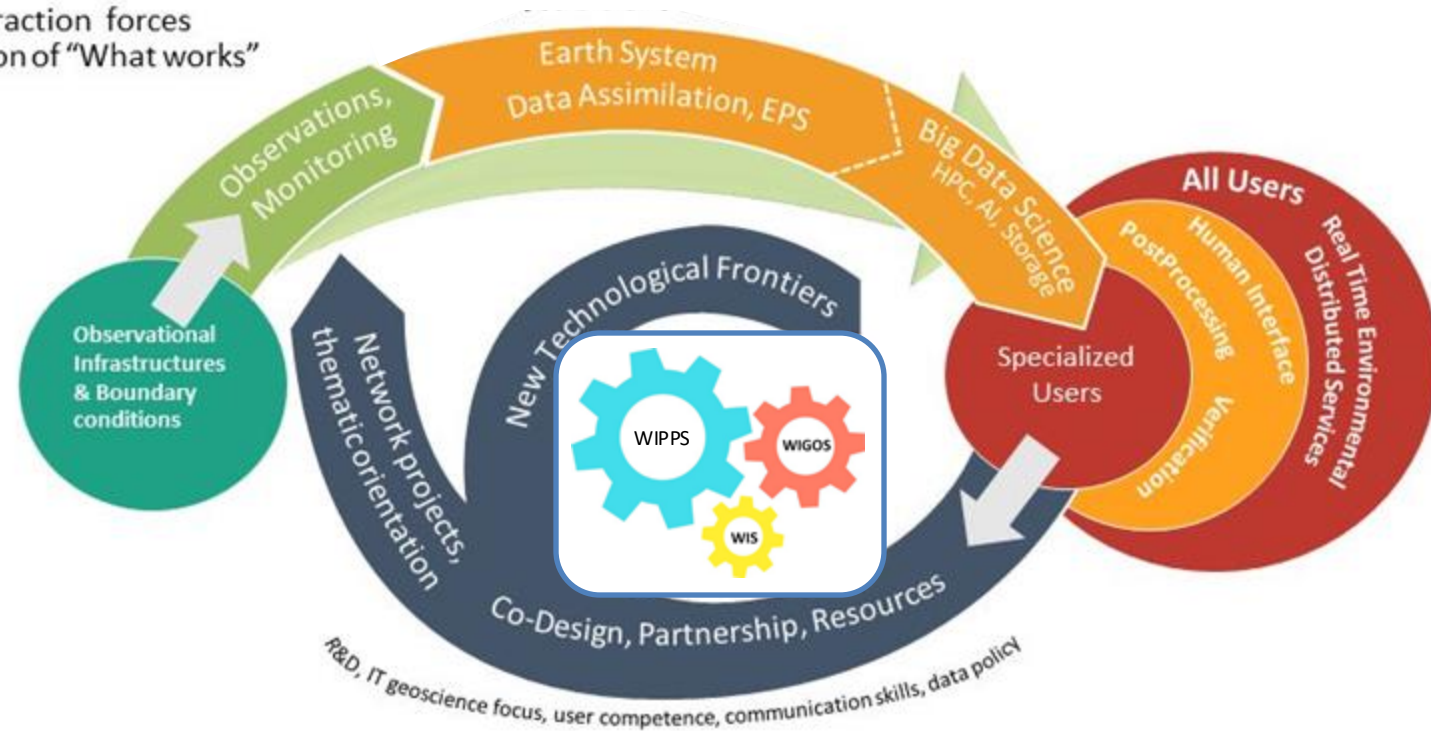
“In the context of WMO, **seamless prediction** considers not only **all compartments of the Earth system**, but also **all disciplines of the weather–climate–water–environment value chain** (monitoring and observation, models, forecasting, dissemination and communication, perception and interpretation, decision-making, end-user products) to deliver tailor-made weather, climate, water and environmental information covering minutes to centuries and local to global scales”

- WMO/WWRP, Catalysing Innovation in Weather Science: WWRP Implementation Plan 2016–2023 (2016)

SCIENCE FOR SERVICES JOURNEY

Quality, Relevance and Impact:

User Interaction forces exploration of “What works”



WIS, WIGOS and WIPPS are the heart of the value chain for science for services.

Without these core parts, the value chain doesn't work well.

Resolution 58 (Cg-18)

WIPPS Collaborative Framework

Scientific evolution of WIPPS with Earth system approach

Advance of WIPPS with Earth system modelling and prediction

- Development and Implementation of Rolling Review of Requirements
- Strengthen of the link with Research Board and Research Programmes
- Design of pilot projects to be prioritized and endorsed by EC

(Main action area)
Research and Innovation

Provide the infrastructure to support the evolution of WIPPS

Strengthen the WIPPS as System

Strengthen of the core functions of GDPFS

- Enhancement of Quality Management System
- Strengthen of coordination mechanism among WMCs and WMCs / RSMCs

(Main action area)
System and Services

Improvement of accessibility of data, products and services

- Identification of WIPPS requirements to WIS2.0
- Benchmark of LDC and SIDS's access to data and information through pilot projects

(Main action area)
Accessibility and Web platform

Consolidating Research and Innovation into Earth System Modelling and Predictions (ESMP) in WIPPS

New Observations, Big Data

Exascale / Cloud Computing

AI / ML Applications

Weather and
Climate
Predictions

Climate
Projections &
Provision for
Climate
Services

Atmospheric
Composition
Prediction

Space
Weather
Prediction

Hydrological
Predictions

Ocean
Prediction

Application to
Geohazards &
Compounding
/ Cascading
Hazards

Cryospheric
Prediction

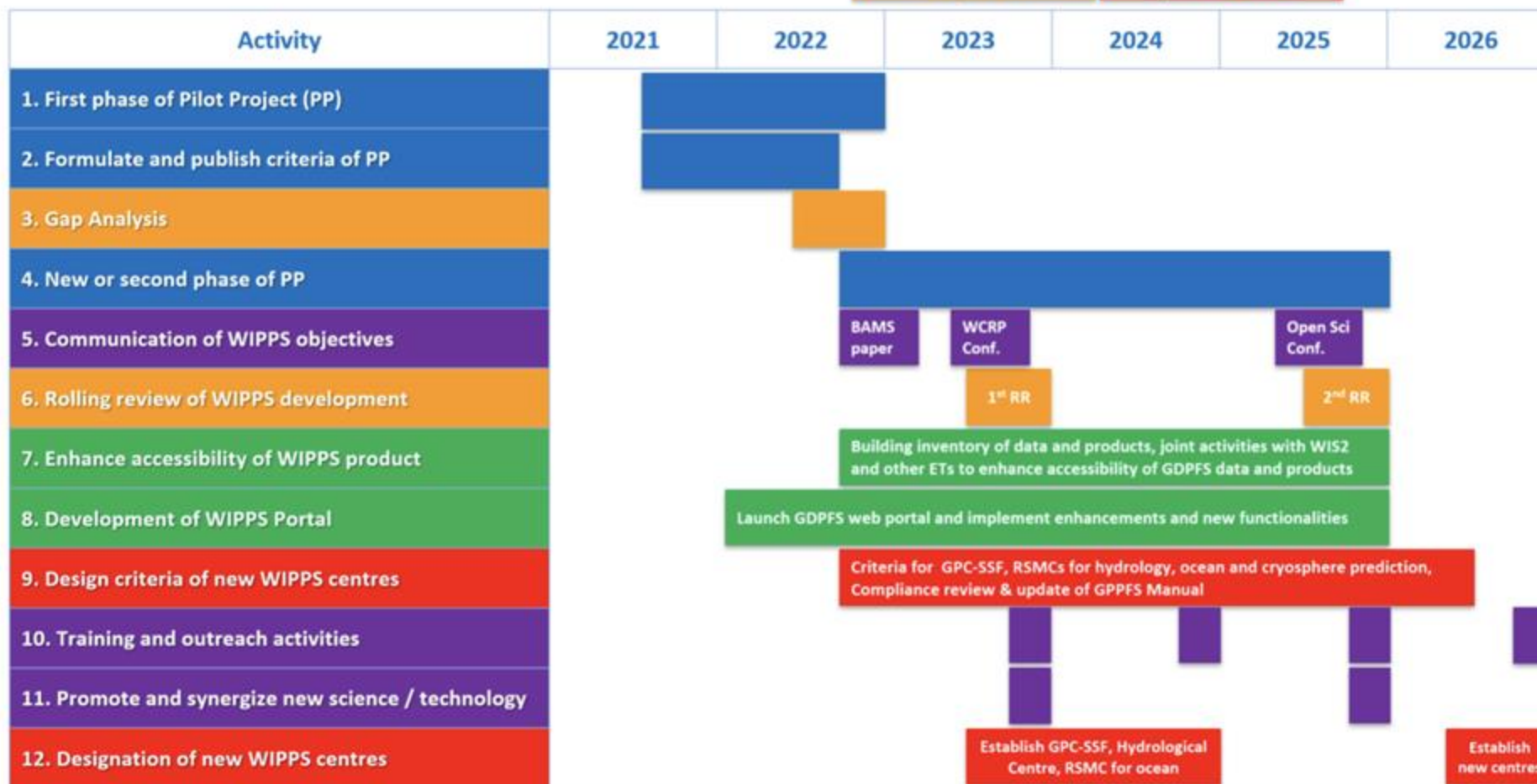


Roadmap for evolution of WIPPS

WIPPS Roadmap Development (2021-2026)

Key areas:

Science and Innovation	Accessibility
Value cycle and RRR	Visibility and capacity building
	System and Services



WIPPS Pilot Projects

On-going

- Tropical Cyclone-Probabilistic Forecast Products (TC-PFP) driven by WWRP
- Multi-Model Integrated Forecasting and Application (MMIFA) led by CMA and HKO
- Artificial Intelligence for Nowcasting Pilot Project (AINPP) led by Steering Group chaired by David John Gagne (NCAR, WWRP) and Kan Dai (CMA, WIPPS)

Planned (under development)

- AI-model intercomparison proposed by ECMWF
- Pilot projects proposed by AG-GCW following WIPPS Cryosphere Roadmap

WIPPS Rolling Review of Requirement

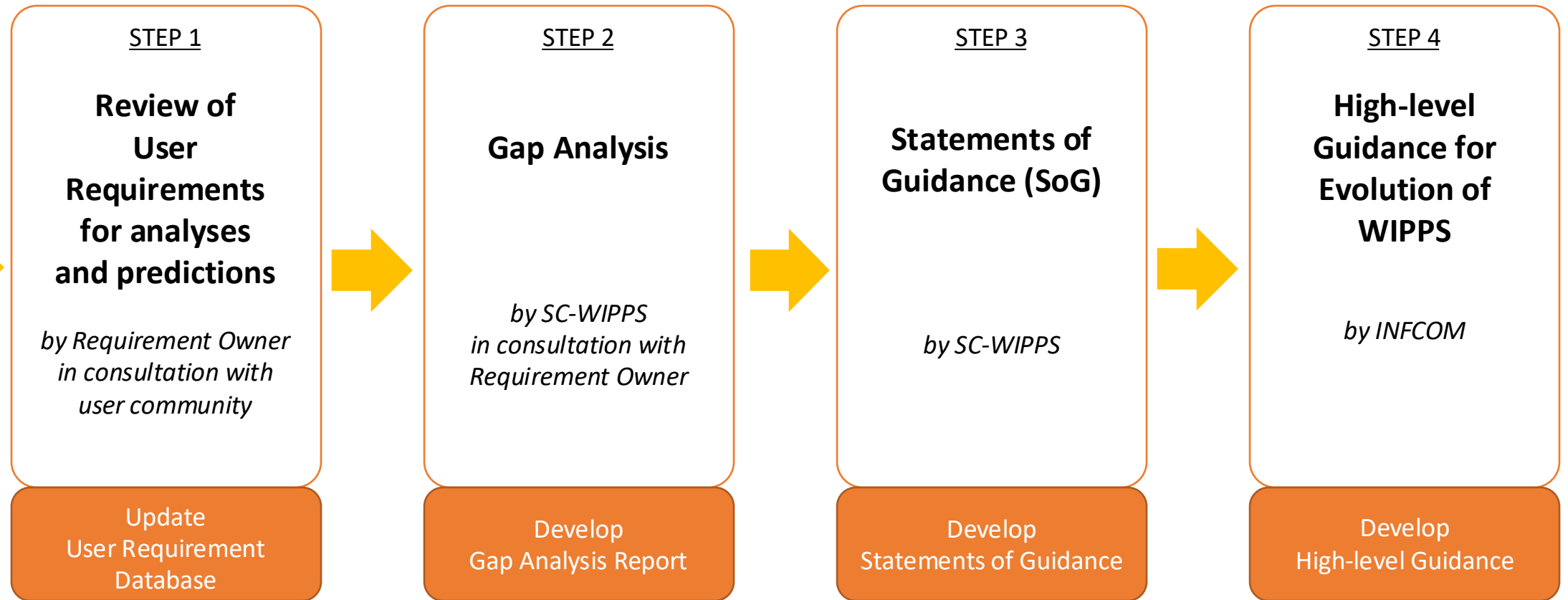
- The purpose of the Rolling Review of Requirements (RRR) is to provide a systematic and transparent process to support the high-level design and evolution of WIPPS. The RRR process compiles information on Members' evolving requirements on analyses and predictions.
- The RRR is organized along a set of User Categories. A WIPPS User Category is an activity involving the direct use of analyses and predictions that allows NMHSs or other organizations to render services related to weather, climate, water and other environmental events, contributing to public safety, socioeconomic well-being and development in their respective territories.
- The RRR also:
 - a) assesses the extent to which current and planned WIPPS activities meet Member requirements for analyses and predictions in WIPPS User Categories;
 - b) collects guidance from experts in each User Category on gaps and priorities, in order to tackle the deficiencies and opportunities in WIPPS; and
 - c) guides plans for the future evolution of WIPPS.
- SC-WIPPS is responsible for the RRR process. An expert body (a Requirement Owner) is identified to collect user requirements for each WIPPS User Category.

WIPPS User Categories and Requirement Owners

WIPPS User Category	Requirement Owner
Disaster Risk Reduction and Public Weather (DRR) Service	SERCOM / Standing Committee on Disaster Risk Reduction and Early Warning Services (SC-DRR)
Climate Service	SERCOM / Standing Committee on Climate Services (SC-CLI)
Hydrological Service	SERCOM / Standing Committee on Hydrological Services (SC-HYD)
Marine Meteorological Service	SERCOM / Standing Committee on Marine Meteorological and Oceanographic Services (SC-MMO)
Agrometeorological Service	SERCOM / Standing Committee on Services for Agriculture (SC-AGR)
Aviation Service	SERCOM / Standing Committee on Services for Aviation (SC-AVI)
Cryosphere-related Service and Research	Each Requirement Owner should document requirements on cryosphere-related products, as relevant to his/her WIPPS User Category.
WWRP Research	RB / World Weather Research Programme Scientific Steering Committee (WWRP SSC)
WCRP Research	RB / World Climate Research Programme Joint Scientific Committee (WCRP JSC)
GAW Research	RB / Global Atmosphere Watch Programme (The Environmental Pollution and Atmospheric Chemistry Scientific Steering Committee, SSC-EPAC)

Invite SERCOM SC-DRR and SC-CLI to participate in the demonstration

WIPPS RRR Process




WGNE-WIPPS Collaboration

- 10 World Meteorological Centres (WMCs) are advanced NWP centres
- Earth system modelling
- WIPPS RRR
- AI/ML
- Updating the standard verification for NWP by Task Team on NWPSV
- Will develop standard verification of tropical low/cyclone vortex variables
 - TC vortex variables as part of mandatory products of WIPPS Designated Centres for global deterministic/ensemble NWP
 - Need to develop standard verification
 - May update the functions of Lead Centre for TC forecast verification
- WIPPS pilot projects?
- What else?

Mandatory Products:

Parameter	Unit	Forecast range	Time steps	Frequency
Location (latitude and longitude) of the vortex centre	[degree]	Up to 6 days ³	Every 6 hours	Twice a day ⁴
Maximum sustained 10 m wind speed	[m/s]			
Location ¹ (latitude and longitude) of maximum sustained 10 m wind	[degree]			
Minimum mean sea level pressure (MSLP)	[hPa]			
Quadrant radii of sustained 10 m winds of 28/34/50 ² /64 kt	[km]			



Recommended Products:

Parameter	Unit	Forecast range	Time steps	Frequency
Average steering wind zonal velocity (u) and meridional velocity (v) ¹ at 850/500/200 hPa	[m/s]	Up to 6 days ²	Every 6 hours	Twice a day ²

Thank you.



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