

WGNE in the context of GDPFS

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WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

Global Data Processing and Forecasting System (GDPFS)

- Definition

- A worldwide network of operational centres operated by WMO Members

- Purpose

- Make **operationally available** defined **products and services** for applications related to weather, climate water and environment **among WMO** and **relevant operational organizations**

- Structure

- Composed of the following centres:
 - World Meteorological Centres (WMCs)
 - Regional Specialized Meteorological Centres (RSMCs) incl Regional Climate Centres (RCCs)
 - National Meteorological Centres (NMCs)

The WMO World Weather Watch (WWW) and GDPFS

- UN Gen Assembly XVI (Dec 1961) adopted Resolution 1721 “International Cooperation in the Peaceful Uses of Outer Space”.
- WMO was requested to study measures to advance the state of atmospheric science and technology and to develop weather forecasting capabilities
- The 4th World Meteorological Congress (1963), created the **WWW** composed of **GDPFS**, GOS (→ WIGOS) and GTS (→ WIS) operated by WMO Members for the collection, analysis and dissemination of meteorological data and processed products
- GDPFS is also evolving to seamless GDPFS to facilitate integrated “seamless” Earth-system approach to weather, climate and water domains
- The 14th World Meteorological Congress (2003) changed GDPFS to **GDPFS** (40 years after the creation of WWW)

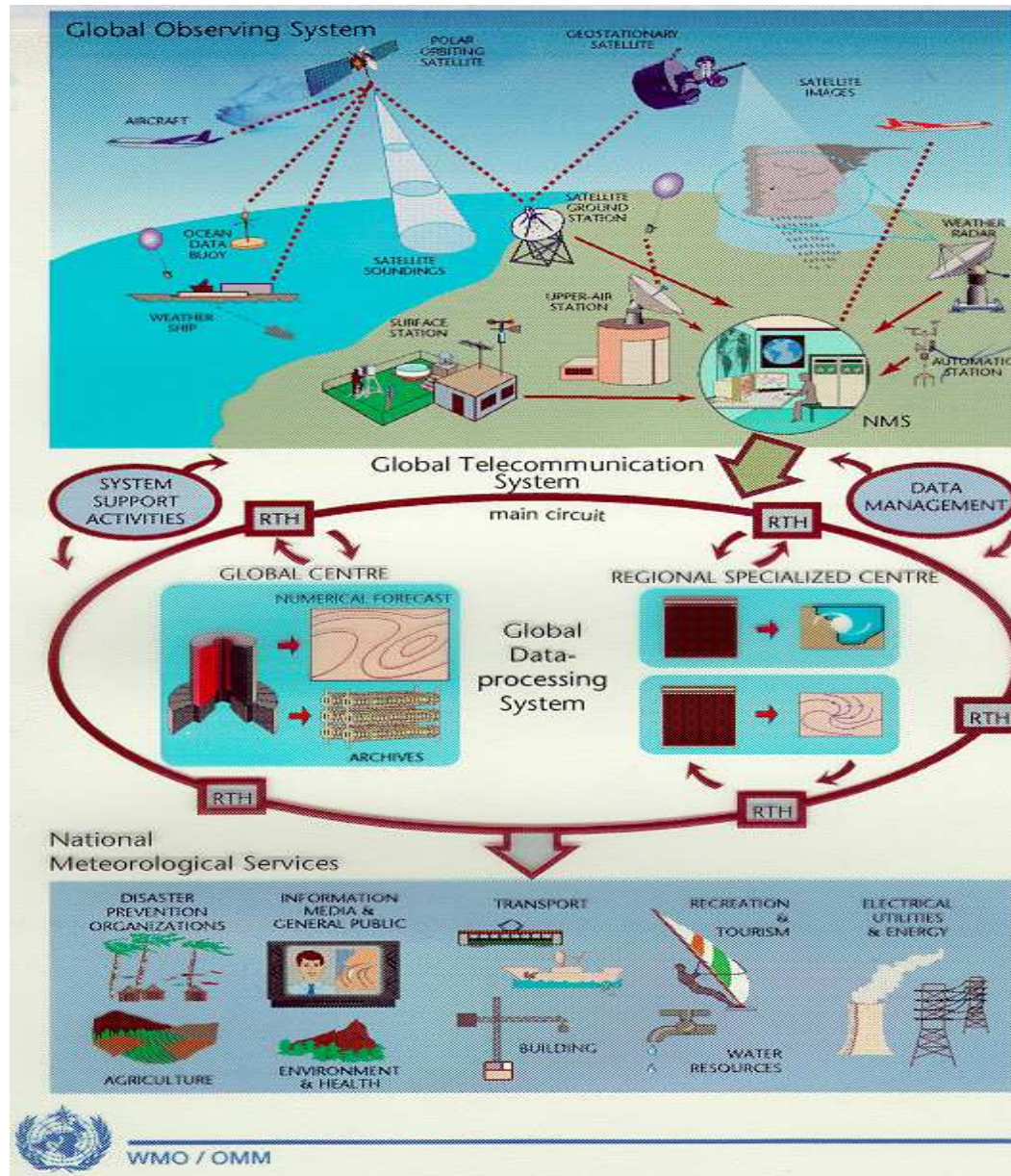
WMO Operational Network

WIGOS

WIS

GDPFS

Service
delivery



193 NMHSs: satellites, land, ships, buoys, and aircraft contribute to Global Observing every day

Global Telecom with Regional Hubs – becoming the WMO Information System

The **GDPFS**:
Global, Regional Specialized Met. Centres (RSMC, RCC), and National Centres

NMHSs deliver analyses, forecast and early warning services

Seamless GDPFS background

- Resolution 11 (Cg-17) initiated a process for seamless GDPFS (S/GDPFS)
- Decision 55 (EC-68) endorsed the vision of S/GDPFS and established EC-SG of S/GDPFS, co-chaired by the presidents of CBS and CAS, to develop Implementation Plan (IP) of S/GDPFS
- To help with the process, Decision 40 (EC-70) decided to hold a WMC workshop in Beijing to address the contribution of WMCs
- A draft implementation plan along with the recommendations of WMCs Workshop was submitted to Cg-18
- Resolution 58 (Cg-18) endorsed key priority areas of IP and the recommendations from WMCs workshop

Definition of S/GDPFS

- Building on existing GDPFS, it encompasses the following characteristics
 - Flexible and adoptable ecosystem of independent centres that will expand and strengthen prediction of the environment
 - Provision of state-of-the-art interfaces to facilitate partnerships and collaboration globally and regionally among jurisdiction, **academia** and **private sectors** to access and make available related forecast information across **all time scales and domain** of the **Earth System**
 - Free and open policy for weather, water, climate and environmental related data, product and services

WMO Strategic Plan

WMO STRATEGIC PLAN AT A GLANCE

Vision 2030

By 2030, a world where all nations, especially the most vulnerable, are more resilient to the socioeconomic impact of extreme weather, water, climate and other environmental events; and empowered to boost their sustainable development through the best possible services, whether over land, at sea or in the air

Overarching Priorities

Enhancing preparedness for, and reducing losses of life and property from hydrometeorological extremes

Supporting climate-smart decision making to build resilience and adaptation to climate risk

Enhancing socioeconomic value of weather, climate, hydrological and related environmental services

Core Values Guiding Principles

Inclusiveness • Commitment • Professionalism • Integrity • Respect for diversity

Authoritative voice • Global leadership • Regional specifics • Alliances and partnerships • Quality management and cost-effectiveness

Long-Term Goals

1 Better serve societal needs: Delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services

2 Enhance Earth system observations and predictions: Strengthening the technical foundation for the future

3 Advance targeted research: Leveraging leadership in science to improve understanding of the Earth system for enhanced services

4 Close the capacity gap on weather, climate and hydrological services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens

5 Strategic realignment of WMO structure and programmes for effective policy- and decision-making and implementation

Strategic Objectives 2020-2023

1.1 Weather, water and climate extremes: Build resilience through enhanced services in support of national MHEWS; foster regional and global weather hazards awareness through information sharing

1.2 Climate services for climate-resilient development: Expand and broaden the provision of policy- and decision-supporting climate information and services at national, regional and global level

1.3 Water management for sustainable development: Further develop and operationalize services in support of sustainable water management

1.4 Weather-integrated decision-making: Enhance and innovate the provision of value-added decision-supporting information and services for weather- and climate-sensitive economic and social activities

2.1 Data acquisition: Optimize acquisition of observations through the WMO Integrated Global Observing System to support all WMO application areas

2.2 Data exchange and data management: Improve and increase access to current and past Earth system observations and derived products for all Members through the WMO Information System

2.3 Data processing: Enable access to and use of the state-of-the-art numerical analysis and prediction products at all temporal and spatial scales through the WMO Global Data Processing and Forecast System

3.1 Advance scientific knowledge of the Earth system

3.2 Improve predictive capabilities: Enhance the science to service value chain ensuring scientific and technological advances improve predictive capabilities

3.3 Provide leadership in policy-relevant science

4.1 Address the needs of developing countries to enable them to provide and utilize essential weather, water and climate services, in particular warnings for impactful events

4.2 Develop and sustain core competencies and expertise

4.3 Scale up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery

5.1 Optimized WMO constituent body structure for more effective decision-making

5.2 Alignment of WMO programmes

5.3 Equal and effective participation of women and men in governance, scientific cooperation and decision-making



Earth System Modelling and Prediction linked to SO 2.3 and SO 3.1/3.2 of the SP 2020-2023

- WMO LTG 2 (Enhance Earth system observations and predictions)
 - SO 2.3 Enable access and use of numerical analysis and **Earth system prediction** products at all temporal and spatial scales from S/GDPFS
- WMO LTG 3 (Advance targeted research)
 - SO 3.1 Advance scientific knowledge of the **Earth system**
 - SO 3.2 Enhance the science-for-service value chain ensuring scientific and technological advances improve **predictive capabilities**

Recommendations from WMCs workshop

- Develop the Rolling Review of user Requirements
- **Ensure co-design of the S/GDPFS between research and operation**
 - Shaping **coordination mechanism** in consultation with Research Board (**WGNE ...**)
 - May start with two or three pilot projects related to S/GDPFS recommended at WMCs workshop
- Coordinate with WIS 2.0 to enable accessibility of products and services
- Develop regulations and guidance for the use of community data format
 - CF workshop - NetCDF CF conventions for WMO data exchange (18-19 Sep. 2019, Exeter)
- Ensure capacity development mechanisms for NMHSs in LDCs and SIDS
- Ensure there are adequate coordination mechanisms between WMCs/RSMCs to support Members
- Take advantage of low-hanging fruits
 - Prioritization of already identified pilot projects



Questions to be addressed

- What could be the role of working groups under the RB and programmes (e.g. WGNE, WWRP, GAW, WCRP) in shaping the development of a coordination mechanism?
- How to make key players (institutes, academia and private sectors) of different areas engage in the **Coordination Mechanism**?
 - What will be the role of countries advances in numerical weather/climate prediction modelling but not ready for ESM?
- What areas could be **jointly developed** in Earth System Modelling?
 - Near- and long-term plans
 - Parameterization schemes, targeted field experiments (e.g. YOPP), ...

Thank you Merci



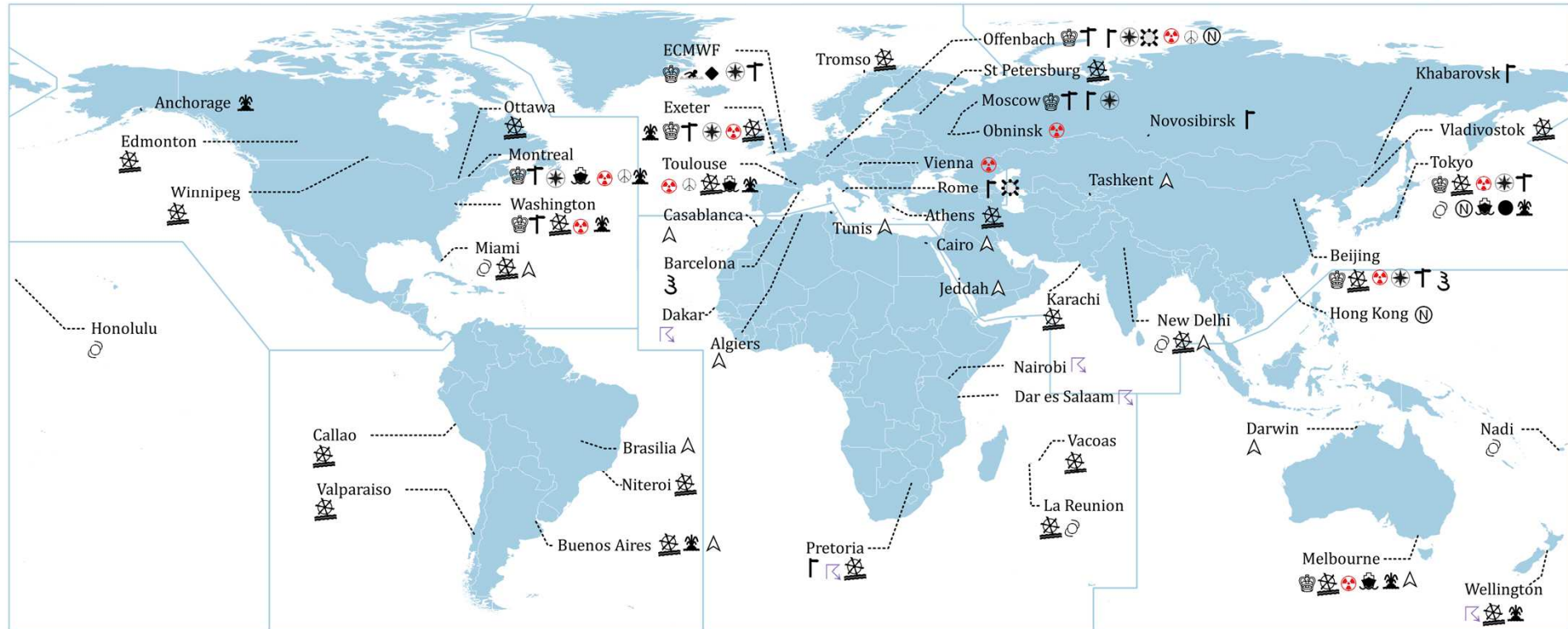
WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

WMO Designated Global Data-processing and Forecasting System Centres

- Nowcasting and Weather Forecasting (upto 30 days)

Updated on 19 August 2019



Legend

- | | | |
|--|--|---|
| 👑 World Meteorological Centres (WMCs)* (9) | 🌀 RSMCs Tropical Cyclone Forecasting (6) | Ⓝ RSMCs Nowcasting (3) |
| ⚓ RSMCs Geographic Specialization (12) | 🌪 RSMCs Severe Weather Forecasting (5) | 🌪 RSMCs Limited Area Ensemble NWP (2) |
| 🌊 RSMCs(NRT***) Lead Centre for Coordination of Wave Forecast (1) | 🌊 RSMCs Marine Meteorological Services (24) | 🌪 RSMCs Global Ensemble NWP (7) |
| ● RSMCs(NRT***) Lead Centre for Coordination of EPS Verification (1) | ☢ RSMCs Nuclear Emergency Response** (10) | 📌 RSMCs Limited Area Deterministic NWP (6) |
| ◆ RSMCs(NRT***) Lead Centre for Coordination of DNV (1) | ☮ RSMCs Non-Nuclear Emergency Response** (3) | 📌 RSMCs Global Deterministic NWP (8) |
| 🌊 RSMCs Numerical Ocean Wave Prediction (4) | 🌪 RSMCs Sand and Duststorm Forecasts (2) | 🌋 ICAO designated Volcanic Ash Advisory Centres (9) |

* World Meteorological Centres are also Global Producing Centres for a) Deterministic Numerical Weather Prediction, b) Ensemble Numerical Weather Prediction, and c) Long-Range Forecasts.

** RSMC for nuclear and non-nuclear emergency response have Atmospheric Transport and Dispersion Modelling (ATDM) capabilities.

*** NRT stands for Non-Real-Time

DESIGNATIONS USED

The depiction and use of boundaries, geographic names and related data shown on maps and included in lists, tables, documents, and databases on this web site are not warranted to be error free nor do they necessarily imply official endorsement or acceptance by the WMO.

WMO Designated Global Data-processing and Forecasting System Centres

- Long-range and Climate Forecasting (over 30 days)

Updated on 04 July 2019



Legend

- | | |
|---|--|
| 👑 World Meteorological Centres (WMCs)* (9) | ✚ RCC - Networks Regional Climate Prediction and Monitoring NODEs (11) |
| ☀ RSMCs(NRT**) Lead Centre for coordination of ADCP*** (1) | ✳ RCCs Regional Climate Prediction and Monitoring (9) |
| ✳ RSMCs(NRT**) Lead Centre for coordination of LRFMME**** (2) | ★ GPC for ADCP*** (4) |
| ↑ RSMCs(NRT**) Lead Centre for coordination of LRF verification (2) | ☆ GPC for Long-Range Forecasting (13) |

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**NRT stands for Non-Real-Time

***ADCP stands for Annual to Decadal Climate Prediction

****LRFMME stands for Long-Range Forecast Multi-Model Ensemble

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