

The WMO Global Data- Processing and Forecasting System (GDPFS) *Today*

WMCs Workshop, Beijing China, 26-29 Mar 2019



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

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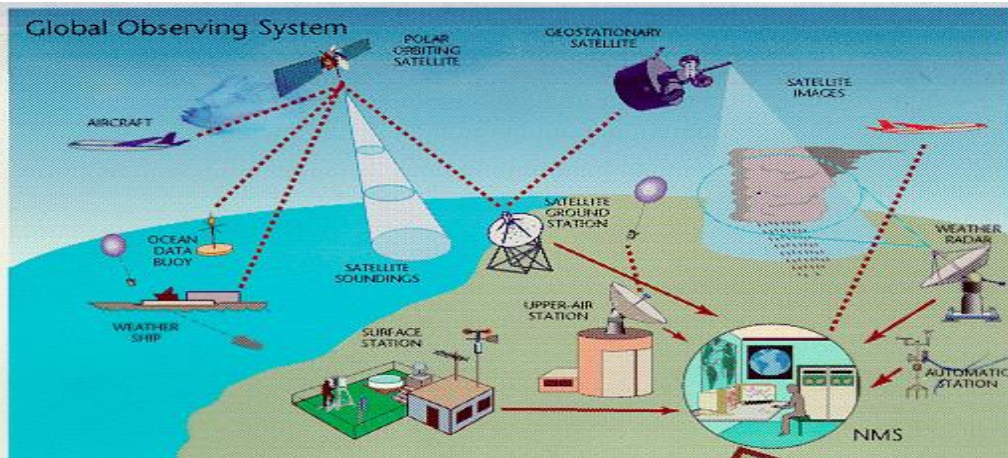
Special thanks to DPFS Secretariat

The WMO World Weather Watch (WWW)

- 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 **GDPS**, 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 **GDPS to GDPFS**

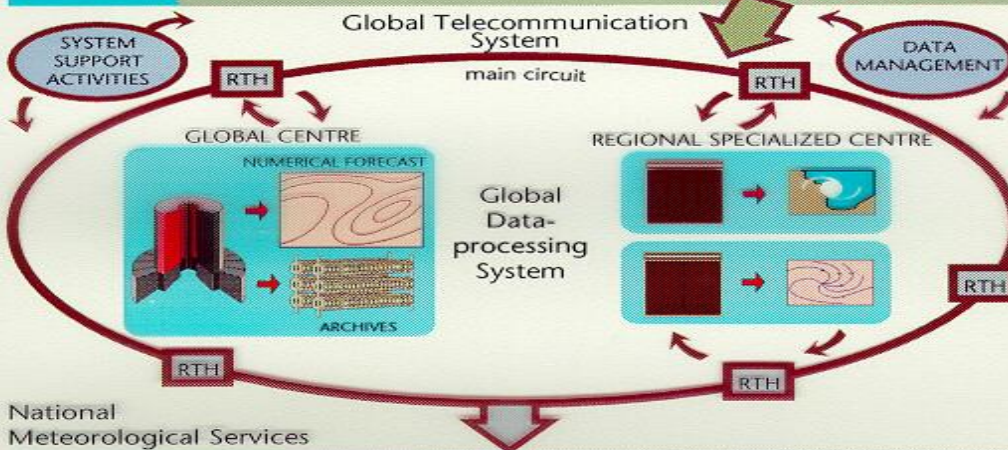
WMO operational networks

WIGOS



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

WIS



Global Telecom with Regional Hubs – becoming the WMO Information System

GDPFS

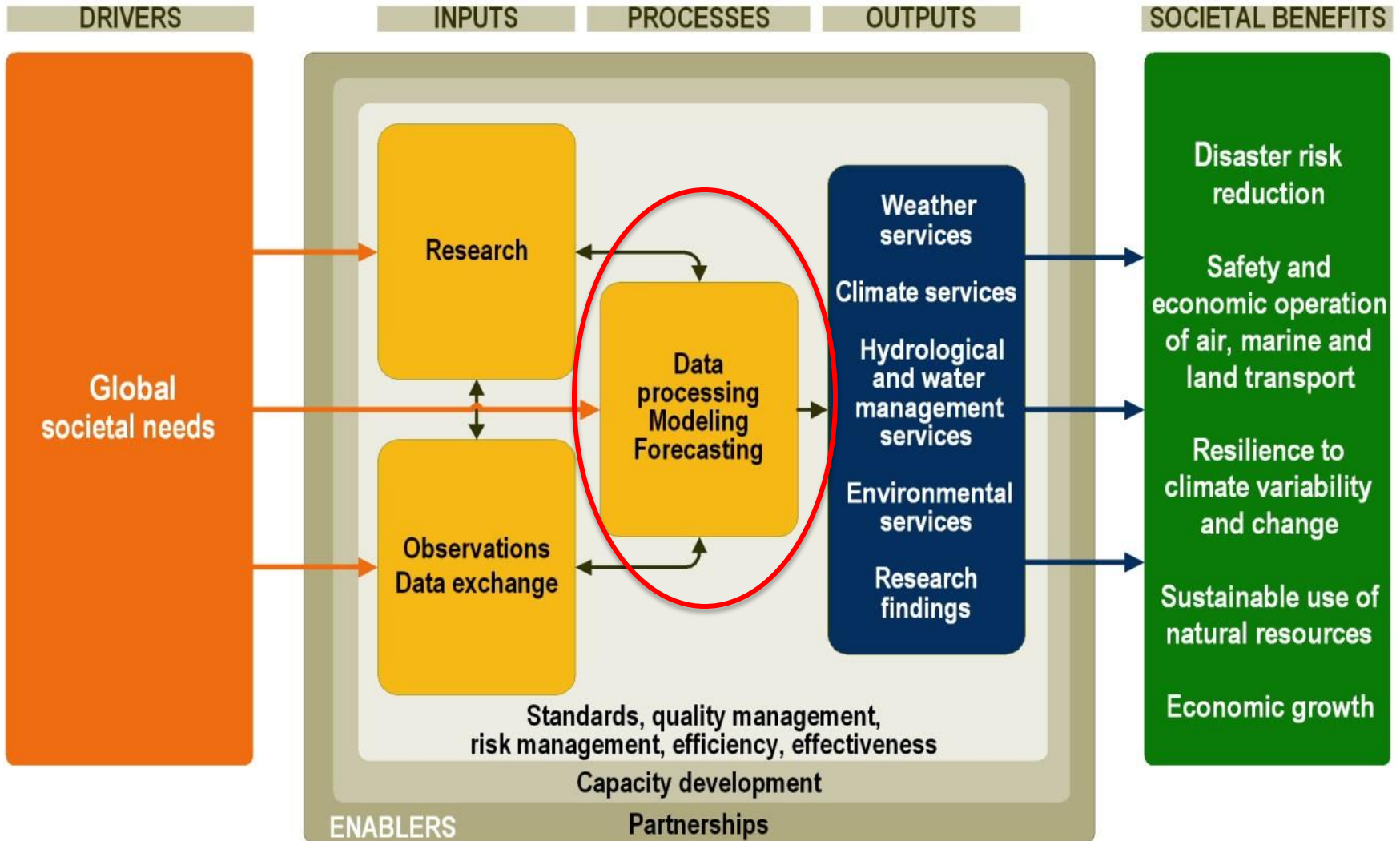
The **GDPFS**: Global, Regional Specialized Met. Centres (RSMC, RCC), and National Centres

Service delivery



NMHSs deliver analyses, forecast and early warning services

At the heart (engine room) of the WMO operational system

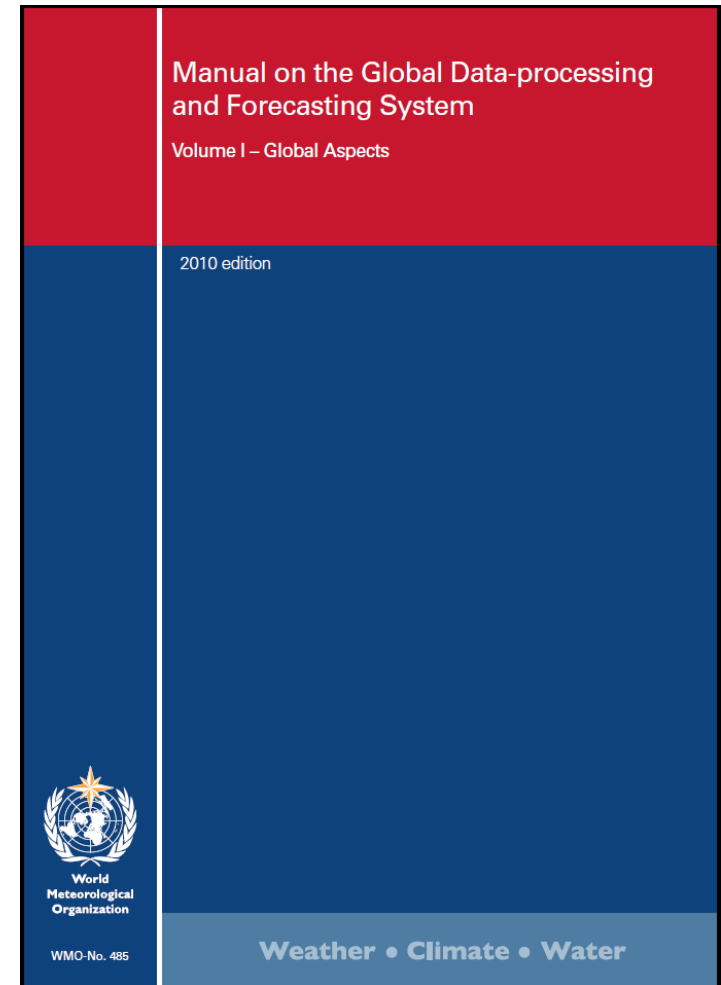


The Global Data-processing and Forecasting System ...

- Is organized as a **three-level system** to carry out functions at global, regional and national levels
 - World Meteorological Centre (WMC)
 - Regional Specialized Meteorological Centre (RSMC) (incl. Regional Climate Centre (RCC))
 - National Meteorological Centre (NMC)
- The first two centres are designated through demonstration of their capabilities in line with WMO standards approved by WMO Congress

The Manual of the GDPFS (WMO-No. 485)

- A single source of technical regulations for all operational data-processing and forecasting systems operated by WMO Members (Cg-16)
- Revised version published in Feb 2018, and includes new types of centres and their characteristics for designation;
- It includes the designation of meteorological centres, including those coordinated by CBS, jointly with other technical commission(s) and/or WMO Programme(s), as well as with other international organizations



What is new in the New GDPFS Manual?

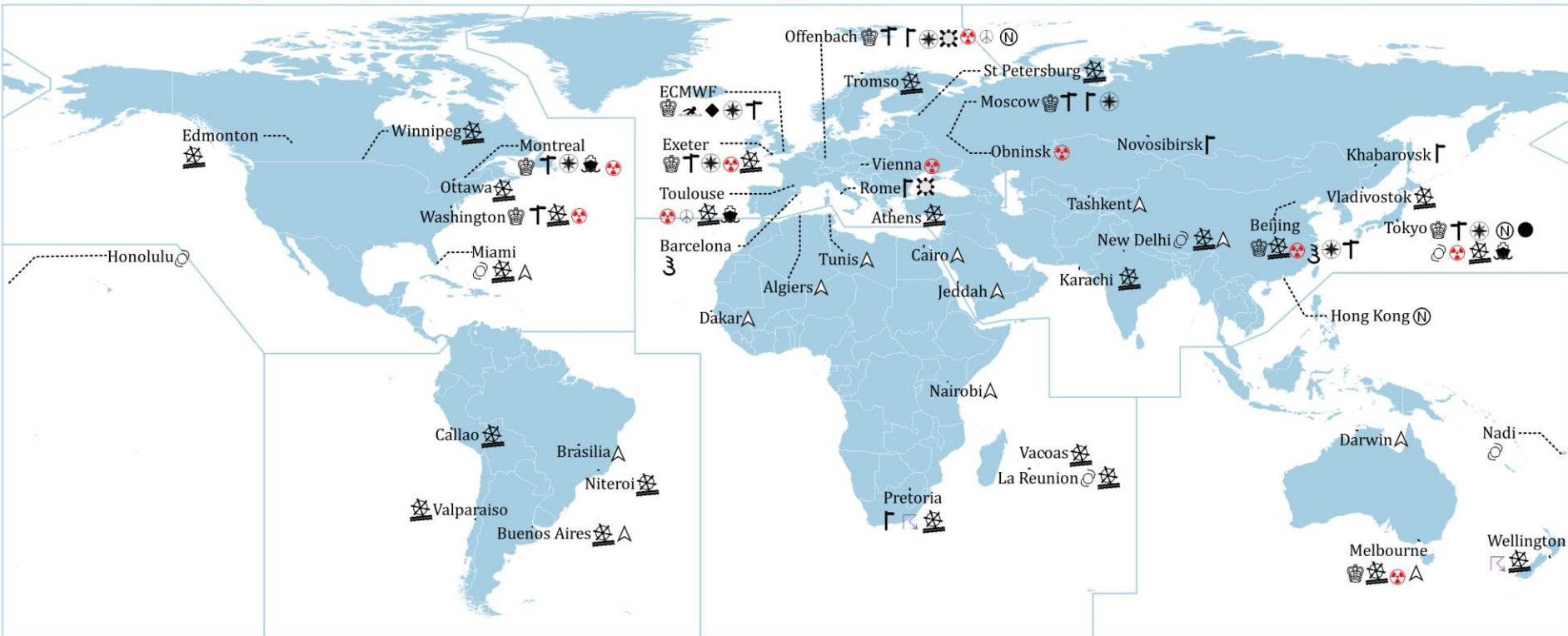
- Clear Definition of Designation Criteria for Centres (WMC, RSMCs, GPCs) – Contribution of TCs (ie RSMC for Marine is required)
- Provision of detailed information regarding Center's implementation
 - Systems description and characteristics
 - Product metadata
- Verification of products
- **Rolling Review of Centre Compliance (Regular Audit)**
- Clear Establishment of Procedures for designation
- Additional WMCs possible when following criteria are met:
 - Global deterministic numerical weather prediction, and
 - Global ensemble numerical weather prediction, and
 - Seasonal and climate numerical prediction

Distribution of GDPFS designated Centres

WMO Designated Global Data-processing and Forecasting System Centres

- Nowcasting and Weather Forecasting (upto 30 days)

Updated on 12 March 2019



Legend

- | | | |
|--|---|--|
| 👑 World Meteorological Centres (WMCs)* (9) | 🌐 RSMCs TC (6) | Ⓝ RSMCs Nowcasting (3) |
| ⚠️ RSMCs Geographic (13) | 🏠 RSMCs Severe Weather Forecasting (2) | 🌀 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** (2) | 🏠 RSMCs Global Deterministic NWP (8) |
| 🌊 RSMCs Numerical Ocean Wave Prediction (3) | ☄️ RSMCs Sand Dust (2) | |

* 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

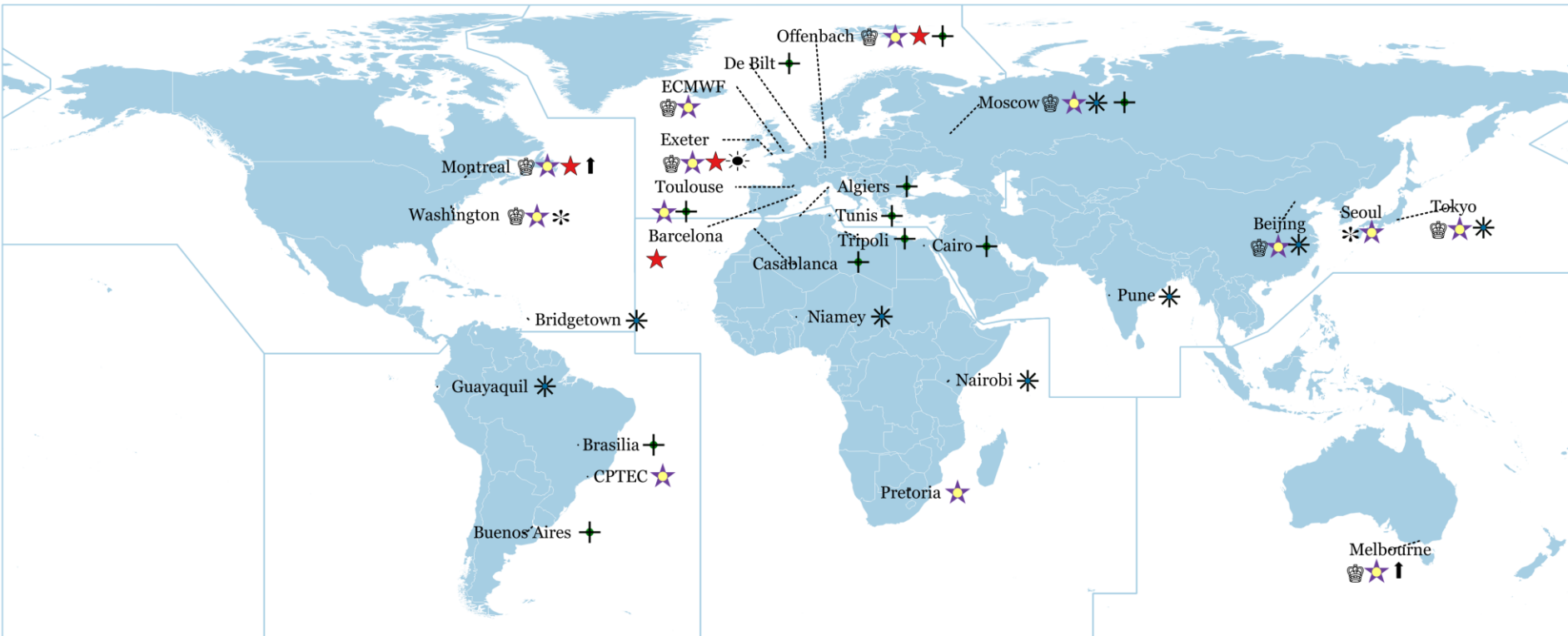
DESIGNATIONS USED

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 14 February 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 (8) |
| 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) |

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

**NRT stands for Non-Real-Time

***ADCP stands for Annual to Decadal Climate Prediction

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

DESIGNATIONS USED

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THANK YOU!

Purpose of the GDPFS

- The GDPFS provides the core operational prediction capabilities and systems of WMO (operated by Members)
 - Nowcasting (VSRF) – 0-6h
 - Numerical Weather Prediction & EPS – 6h-15d
 - Long-Range Forecasting – Sub-seasonal to Longer Time Scales – up to 2 years
 - Emergency Response Activities for Nuclear and Non-Nuclear dispersion
 - Specialized centres – eg sand and dust-storm, tropical cyclone centres



The Global Data-processing and Forecasting System Products and Services

- **WMCs offer global models output products**
- **RSMCs offer Regional models output products and regional forecast guidance**
- **NMCs offer local forecasts/warnings. Can run local numerical models**