WMO Global Data Processing and Forecasting System (GDPFS) and the RCCs

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- Global Data Processing and Forecasting Systems (GDPFS): The main purpose of the GDPFS is to make the meteorological analyses and forecast products available to Member States.

- GDPFS is the counterpart of
  - WIGOS (WMO Integrated Global Observing System), and
  - WIS (WMO Information System)

- Successful availability of meteorological analyses and forecast products to Members State requires technical regulations:
  a) To facilitate cooperation in meteorology and hydrology among Members;
  b) To meet specific needs in the various fields of application of meteorology and operational hydrology in the international sphere;
  c) To ensure adequate uniformity and standardization in the practices and procedure employed in achieving (a) and (b) above.

- The purpose of the GDPFS is to achieve this goal by setting technical regulations for the exchange of data and products.

GDPFS Manual governs "Technical Regulations" to facilitate exchange of meteorological analysis and forecast products.

https://library.wmo.int/doc_num.php?explnum_id=4246

Structure of GDPFS

- GDPFS is organized as a three tier system of activities
  - General-purpose activities; e.g.,
    - Global deterministic and ensemble NWP
    - Regional deterministic and ensemble NWP
  - Specialized activities; e.g.,
    - Coordination of multi-model ensemble prediction for long-range forecasts
    - Tropical cyclone forecasting
  - Non-real-time coordination activities; e.g.,
    - Coordination of deterministic NWP verification

Structure of GDPFS

- GDPFS activities are carried out by
  - National Meteorological Centers (NMCs): Preparation of forecasts and warnings at all forecasting ranges necessary to meet the requirement of the members
  - Regional Specialized Meteorological Centers (RSMCs): Carry out at least one of the general-purpose or specialized activities
  - World Meteorological Centers (WMCs): Carry out at least:
    - Global NWP
    - Global Ensemble NWP
    - Global Numerical long-range prediction

Activities of relevance to RCCs in the GDPFS Manual

- Global numerical long-range prediction: Seasonal forecasts; Global Producing Centers for Long-range Forecasts (GPC-LRFs)
- Annual to decadal climate prediction: GPC-ADCP
- Coordination of multi-model ensemble prediction for longs-range forecasts: Lead Center for Long-Range Forecasts Multi-Model Ensemble (LC-LRFMME)
- Coordination of annual to decadal climate prediction: Lead Center for ADCP (LC-ADCP)
- Regional climate prediction and monitoring: RCC

- For each activity in the GDPFS Manual, there are
  - Mandated (required) set of activities, and
  - Recommended set of activities
- The centers that meet the requirements specified for an activity can seek the appropriate designation by WMO

Global numerical long-range prediction : GPC-LRF

- Centers conducting global numerical long-range prediction shall:
  - Generate LRF products with global coverage;
  - Make available on WIS a range of these products; mandatory and highly recommended products to be made available are listed in Appendix 2.2.9;
  - Produce verification statistics according to the standard defined in Appendix 2.2.36, and make them available to the Lead Centre(s) for the standardized verification system for long-range forecasts (Lead Centre(s) for SVSLRF) and on a website;
  - Make available on a website up-to-date information on the characteristics of their global long-range numerical prediction systems; the minimum information to be provided is given in Appendix 2.2.10

Global numerical long-range prediction : GPC-LRF

- In addition to the mandatory activities above, GPCs-LRF should:
  - Provide forecast output to the Lead Centre(s) for LRF multi-model ensembles (Lead Centre(s) for LRFMME), as detailed in Appendix 2.2.17 (section 1);
  - Make available on WIS the highly recommended products listed in Appendix 2.2.9;
  - …

Future evolution of GDPFS

- Develop designation criterion for Global Producing Centers for Sub-Seasonal Forecasts (GPC-SSF)
- Evolve GDPFS to meet operational requirements for Climate Services Information System (CSIS)
  - Centers that provide climate monitoring on global scale
  - Centers that maintain climate reanalysis
- Evolve GDPFS to meet evolving requirements for different spatial and temporal scales and for impact based forecasts – Seamless GDPFS

Thanks!