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| WEATHER CLIMATE WATER | **World Meteorological Organization**  **COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS**  **First Session (Third Part)** 12 to 16 April 2021, Virtual Session | **INFCOM-1(III)/Doc. 5.2.1(1)** |
| Submitted by: Secretary-General  26.III.2021  **DRAFT 1** |

**AGENDA ITEM 5: TECHNICAL REGULATIONS AND OTHER TECHNICAL DECISIONS**

**AGENDA ITEM 5.2: Recommendations from other bodies**

***AGENDA ITEM 5.2.1: Services Commission (SERCOM)***

# concept of the Global Data-Processing and Forecasting System Centres for hydrological services

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| **Summary** | |
| Reference: | [Resolution 18 (EC-69)](https://library.wmo.int/doc_num.php?explnum_id=3645#page=154), [Resolution 58 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=193) and [Draft Resolution 5.1.5(3)/1 (SERCOM-1(II))](https://meetings.wmo.int/SERCOM-1-II/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/SERCOM-1(II)-d05-1-5(3)-REGIONAL-HYDROLOGICAL-CENTERS-approved_en.docx?Web=1) |
| Strategic Objective: | 1.3 and 2.3 |
| Recommended by: | INFCOM |
| Recommended for: | Adoption without debate  Adoption with debate |
| Financial implications: | Operating Plan 2021, Output 1.3.7 and 2.3.9 |
| Content: | 1 Resolution |
| Related INF(s): | N/A |
| Main changes to previous version: | [For DRAFT 2, 3, etc. and APPROVED versions only] |

# DRAFT RESOLUTION

## Draft Resolution 5.2.1(1)/1 (INFCOM-1(III))

### Concept of the Global Data-processing and Forecasting System (GDPFS) centres for hydrological services

The Commission for Observation, Infrastructure and Information Systems,

**Recalling** [Resolution 18 (EC-69)](https://library.wmo.int/index.php?lvl=notice_display&id=19919) – Revised [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YF2pV0BFyUl) (WMO-No. 485), and [Resolution 58 (Cg-18)](https://library.wmo.int/index.php?lvl=notice_display&id=21440#.YEXz22hKiUm) – Future integrated seamless Global Data-processing and Forecasting system collaborative framework,

**Recalling further** [draft Resolution 5.1.5(3)/1 (SERCOM-1(II))](https://meetings.wmo.int/SERCOM-1-II/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/SERCOM-1(II)-d05-1-5(3)-REGIONAL-HYDROLOGICAL-CENTERS-approved_en.docx?Web=1) - Establishment of WMO Hydrological Centres in Global Data-processing and Forecasting System (GDPFS),

**Reaffirming** the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YF2pV0BFyUl) (WMO‑No. 485) is the single source of technical regulations for all operational data-processing and forecasting systems operated by WMO Members, including its designated centres and allows the inclusion of new types of centres,

**Emphasizing** the seamless GDPFS covers timescales from minutes to months, considering all compartments of the Earth system including hydrology,

**Having examined** the draft concept for the GDPFS centres for hydrological services as provided in the annex to the present resolution;

**Endorses** the concept of the GDPFS centres for hydrological services as provided in the annex to the present resolution;

**Requests** the Standing Committee on Data Processing for Applied Earth System Modelling and Prediction (SC-ESMP) to coordinate the various INFCOM subsidiary bodies mentioned in draft Resolution 5.1.5(3)/1 (SERCOM-1(II)) and SG-CRYO, to:

1. Support the Commission for Weather, Climate, Water and related Environmental Services and Application (SERCOM), Standing Committee on Hydrological Services (SC-HYD) in the development of the criteria and functions for hydrological centres for inclusion into the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YF2pV0BFyUl) (WMO-No. 485);
2. Collaborate with SERCOM, SC-HYD in the development and implementation of the coordination and interaction mechanism between the existing designated GDPFS centres and proposed hydrological centres at all required levels. [Hong Kong, China]

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[Annex: 1](#_Annex_to_draft_3)

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## Annex to draft Resolution 5.2.1(1)/1 (INFCOM-1(III))

### Concept of the Global Data-processing and Forecasting System (GDPFS) centres for hydrological services

### 1. Purpose

1.1 The purpose of this document is to set the basis for the establishment of WMO Hydrological Centres within the GDPFS, with the view of evolving to a Seamless GDPFS (S/GDPFS), that includes areas beyond the original paradigm of weather delivery system.

### 2. Background

2.1 The GDPFS is an international mechanism that coordinates Member capacities to prepare and make meteorological analyses and forecast products available to all Members. It enables delivery of harmonized services and is currently organized as a network of Global, Regional and National Centres. Furthermore, the GDPFS is the single source of technical regulations for all operational data-processing and forecasting systems operated by WMO Members, including its designated centres.

2.2 A clear vision and plan to underpin the future development of the S/GDPFS was requested by the Seventeenth World Meteorological Congress (Cg-17) in 2015. The Executive Council at its sixty-ninth session approved the inclusion of new types of GDPFS centres into the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YF2pV0BFyUl) (WMO-No. 485). This evolution will allow the generation of products and delivery of services in environmental areas beyond the original paradigm of weather delivery system, including climate, hydrological and water management, environmental services, in addition to weather services[[1]](#footnote-2).

A key objective is to facilitate cooperation and the exchange of information, thereby also contributing to capacity development in LDCs and SIDS.

2.3 The future S/GDPFS will also bring benefits to broader user-communities, including stakeholders responsible for preparedness for a wider variety of high-impact events; sectors impacted by weather and climate (e.g. energy, agriculture, health, integrated water resource management); and urban stakeholders, city planners, United Nations and other humanitarian agencies, including non-governmental organizations.

2.4 Therefore, hydrological involvement to S/GDPFS is being considered and developed as a vision using the Manual on GDPFS logic, structure, terminology and good practice. The work is building on previous work and decisions – the former Commission for Hydrology at its fifteenth session requested “To develop documentation describing the procedures for the designation, mandatory functions and activities of new centres, taking into account the principle that world and regional centres shall respect the primary roles and responsibilities of National Meteorological and Hydrological Services in the delivery of flood forecasting and warning services” ([Resolution 7 (CHy-15](https://library.wmo.int/index.php?lvl=notice_display&id=19829#.YCD-fehKiUk)) - Contribution of the Commission for hydrology to the Future Integrated and Seamless WMO Data-processing and Forecasting System).

### 3. General considerations

3.1 The GDPFS is organized as a three-tier system of activities such as general-purpose activities, specialized activities and non-real-time coordination activities. The GDPFS centres are currently organized as World Meteorological Centres (WMCs), Regional Specialized Meteorological Centres (RSMCs) and National Meteorological Centres (NMCs), which carry out GDPFS functions at the global, regional and national levels, respectively. By analogy to the already existing GDPFS centres, these three levels have also been considered for supporting operational hydrology and water resources management.

3.2 It was agreed that the basic principle in developing a vision for hydrological centres in GDPFS is to respect the primary roles and responsibilities of National Meteorological and Hydrological Services (NMHSs) in the delivery of flood and drought forecasting and warning services, in particular with regards to the single voice principle. This takes special note of the already existing international river commissions and avoid the development of parallel structures to established processes.

3.3 The starting point was to examine the application of GDPFS mechanisms for operational hydrology at a regional level. Therefore, Regional Specialized Hydrological Centres (RSHC) with their possible functions have been considered.

3.4 Concrete fields of application of RSHC would be, among others, water resources management issues in international basins (based on existing agreements among different countries or political jurisdictions covered in the basin), provision in near real-time of hydrological products, analyses of the current state of the surface-water conditions, as well as forecasts of water conditions with lead times of hours to seasonal (together with verification statistics) within their geographical area of responsibility, if such products are not produced by National Hydrological Service (NHS) in close supranational collaboration. A list of desired products is currently under development.

3.5 A range of output products of RSHC will be available through the WIS, Global Hydrological Status and Outlook System (HydroSOS) and/or other platforms to National Hydrological Services and RSHC will benefit from WIGOS and WMO Hydrological Observing System (WHOS).

3.6 RSHC will also be helpful in transferring expertise and provide training in case a country’s NMHS is lacking the appropriate competencies, and at its request.

3.7 Possible roles, functions and necessity of National as well as Global (Hydrological) Producing Centres are to be closely examined. At a national level, it seems important to avoid creating parallel structures within national hydrological centres to those of the NHSs (or NMHSs). It should also be considered that Members have expressed, through the former Commission for Hydrology, concerns on the danger of violating the single voice principle in provision of flood forecasts and warnings by NHSs. Bringing confusion to the public has to be avoided at all cost.

3.8 Global and regional (Hydrological) Producing Centres essentially would deal with a global/regional domain and/or long temporal scales and lead times, which are not provided by NHS due to legal responsibilities or supranational collaborations. As such, they might be relevant to support HydroSOS, Flash Flood Guidance System (FFGS) and other activities. This said, it is worth noting that generally NHSs require, for their national/regional operations, subsets of global information and data that are currently made available by Global Meteorological Centres. Typically, NHSs require Numerical Weather Prediction (NWP) model outputs, nowcasting products and satellite data/products to either force or assimilate into operational hydrological models. In light of this, the real need of establishing Global (Hydrological) Producing Centres, their scope and user requirements will be closely examined and addressed before proceeding to the next step. Progress towards Earth System Modelling is leading towards coupling of hydrology more closely to the NWP and increasing availability of hydrological variables from the Earth System Modelling (ESM) predictions.

3.9 Coordination and interaction mechanisms between existing GDPFS centres and proposed hydrological centres will be examined and addressed in the vision for hydrological centres in GDPFS.

### 4. Next steps

4.1 By the time of the Extraordinary World Meteorological Congress (Cg-Ext. (21)), a plan for the establishment of hydrological centres in GDPFS will be developed and proposed for endorsement to the Hydrological Assembly of the Congress. The plan will include, among others, consideration of the following:

(1) Types of centres with hydrological capacities, which will be included in the Manual on GDPFS. So far, there is a wide consensus around RSHC. The roles and possible functions of National and Global Centres are yet to be investigated;

(2) Functions, products and services of these centres (together with a detailed list of specifications);

(3) Centres’ designation process, as well as their activities specifications and tracking of compliance are yet to be examined; responsibilities of WMO bodies in these processes to be understood and proposed.

4.2 The Standing Committee on Hydrological Services (SC-HYD) of SERCOM together with the Standing Committee on Data-Processing for Applied Earth System Modelling and Prediction & Projection (SC-ESMP) of INFCOM will lead these and other developments of the vision for hydrological centres in GDPFS and their potential establishment in consultation with other relevant bodies.

4.3 Involvement of the Hydrological Coordination Panel, WMO Regional Associations (through Hydrological Advisors Forums), as well as the WMO Secretariat will strengthen the vision to be proposed by the Cg-Ext. (21).

4.4 After discussions at the Hydrological Assembly of the Cg-Ext. (21) and having implemented all suggestions for the establishment of hydrological centres in GDPFS, their criteria and functions will be proposed to Cg-19 for adoption.

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1. <https://public.wmo.int/en/programmes/global-data-processing-and-forecasting-system> [↑](#footnote-ref-2)