|  |  |  |
| --- | --- | --- |
| WEATHER CLIMATE WATER | **World Meteorological Organization****WORLD METEOROLOGICAL CONGRESS****Nineteenth Session**22 May to 2 June 2023, Geneva | **Cg-19/Doc. 4.2(7)** |
| Submitted by:P/INFCOM22.V.2023**DRAFT 2** |

**AGENDA ITEM 4: TECHNICAL STRATEGIES SUPPORTING LONG-TERM GOALS**

**AGENDA ITEM 4.2: Earth system observations and predictions**

# Amendments to the Manual on the Global Data-processing and Forecasting System (WMO-No. 485) in alignment with WMO Unified Data Policy

|  |
| --- |
| **Summary** |
| **Document presented by:** President of the Commission for Observation, Infrastructure and Information Systems (INFCOM)**Strategic objective 2020–2023:** 2.3Enable access and use of numerical analysis and Earth system prediction products at all temporal and spatial scales from the WMO seamless Global Data-processing and Forecasting System**Financial and administrative implications**: within the parameters of the Strategic and Operational Plans 2020–2023, will be reflected in the Strategic and Operational Plans 2024–2027**Key implementers:** INFCOM and Members hosting RSMCs, in consultation with SERCOM**Time frame:** 2023–2027**Action expected:** review and approve the proposed draft resolution |

# GENERAL CONSIDERATIONS

### Introduction

1. The World Meteorological Congress adopted the WMO Unified Policy for the International Exchange of Earth System Data at its extraordinary session in 2021 ([Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9)). The resolution specifies that core data products are defined in the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YzrQrHZBw2w) (WMO-No. 485).
2. As a result, the following amendments to the Manual are proposed:
	1. To redefine the mandatory products from the following four types of RSMCs as core data, as a first step:
		1. RSMCs conducting global deterministic and ensemble Numerical Weather Prediction (NWP);
		2. RSMCs conducting global numerical sub-seasonal forecasts and long-range prediction; and
	2. To remove the password protection currently required to access the data from the Lead Centre conducting coordination of annual to decadal climate prediction.
3. Together with the amendment to the *Manual on the Global Data-processing and Forecasting System (GDPFS)* (WMO-No. 485) approved by the Executive Council at its seventy-sixth session through [Resolution 30 (EC-76)](https://meetings.wmo.int/EC-76/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-76/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/EC-76-d03-2(13)-AMENDMENTS-MANUAL-GDPFS-approved_en.docx&action=default), all amendments, except those relevant to Centre designation, will be effective from 1 March 2024 as per Regulation 100 (a) of the General Regulations, [*Basic Documents*](https://library.wmo.int/index.php?lvl=notice_display&id=14206#.ZCvQvnZBw2w) (WMO-No. 15).
4. The amendments relevant to Centre designation as approved by EC-76 will be effective from 15 September 2023. The draft resolution adopted as the annex of [Recommendation 24 (INFCOM-2)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/INFCOM-2-d06-4(2)-AMENDMENTS-TO-GDPFS-MANUAL-WMO-NO-485-approved_en.docx&action=default) has been revised accordingly.
5. Responding to requests from Members for access to higher-resolution NWP data, a new set of guidelines on high-resolution NWP was developed. Following the guidance from the Commission for Observation, Infrastructure and Information Systems (INFCOM), the INFCOM Management Group approved the final draft text of the Guidelines at its meeting (20 to 24 March 2023, Geneva, Switzerland). The Guidelines are planned to be published before Cg-19.

**Expected action**

1. Based on the above, the Congress may wish to adopt draft Resolution 4.2(7)/1 (Cg‑19) along the following lines.

# DRAFT RESOLUTION

## Draft Resolution 4.2(7)/1 (Cg-19)

## Amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485) in alignment with WMO Unified Data Policy [*Secretariat*]

THE WORLD METEOROLOGICAL CONGRESS,

**Recalling:**

(1) [Decision 57 (EC-68)](https://library.wmo.int/doc_num.php?explnum_id=3166#page=186) – Strategy to assist Members in improving their use of high-resolution numerical weather prediction (NWP) and implementing limited-area NWP systems,

(2) [Resolution 18 (EC-69)](https://library.wmo.int/doc_num.php?explnum_id=3645#page=154) – Revised Manual on the Global Data-processing and Forecasting System (WMO-No. 485),

(3) [Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) – WMO Unified Policy for the International Exchange of Earth System Data,

(4) [Resolution 26 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%289%29-DESIGNATION-GPC-LRF-GPC-SSF-AND-LC-SSFMME-approved_en.docx?Web=1) – Designation of Global Producing Centres for Long-range Forecasts (GPC-LRF), Sub-seasonal Forecasts (GPC-SSF) and Lead Centre for the coordination of multimodel ensembles for sub-seasonal forecasts (LC-SSFMME),

(5) [Resolution 27 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%2810%29-TERMINATION-REPORT-GDPFS-NWP-approved_en.docx?Web=1) – Termination of Annual WMO Technical Progress Report on the Global Data-Processing and Forecasting System (GDPFS) and Numerical Weather Prediction (NWP) Research,

(6) [Resolution 30 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%2813%29-AMENDMENTS-MANUAL-GDPFS-approved_en.docx?Web=1) – Amendments to the Manual on Global Data-processing and Forecasting System (WMO-No.485) jointly proposed by INFCOM and SERCOM,

**Further recalling** Regulation 100 (a) of the General Regulations, [*Basic Documents*](https://library.wmo.int/index.php?lvl=notice_display&id=14206#.ZCvQvnZBw2w)
(WMO-No. 15),

**Noting** the finalization of guidelines on high-resolution NWP,

**Having examined** [Recommendation 24 (INFCOM-2)](https://meetings.wmo.int/INFCOM-2/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/INFCOM-2-d06-4%282%29-AMENDMENTS-TO-GDPFS-MANUAL-WMO-NO-485-approved_en.docx?Web=1) - Amendments to the Manual on the Global Data-processing and Forecasting System (WMO-No. 485) in alignment with WMO Unified Data Policy,

**Considering** the needs of clear definitions of terminologies used in the Manual for the help of its appropriate understanding in the context of the WMO Unified Data Policy [*Japan*]

**Having agreed** the amendment to the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YzrQrHZBw2w) (WMO-No. 485), as provided in the [Annexes](#_Annex_1_to) 1 to 5 [*Japan*] to the present resolution and as provided in [Resolution 26 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%289%29-DESIGNATION-GPC-LRF-GPC-SSF-AND-LC-SSFMME-approved_en.docx?Web=1), [Resolution 27 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%2810%29-TERMINATION-REPORT-GDPFS-NWP-approved_en.docx?Web=1) and [Resolution 30 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%2813%29-AMENDMENTS-MANUAL-GDPFS-approved_en.docx?Web=1) except those related to Centre designation, with effect from 1 March 2024,

**Having further agreed** that the amendment to the *Manual on the GDPFS* (WMO-No. 485) relevant to Centre designation as provided in [Resolution 26 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%289%29-DESIGNATION-GPC-LRF-GPC-SSF-AND-LC-SSFMME-approved_en.docx?Web=1) and [Resolution 30 (EC-76)](https://meetings.wmo.int/EC-76/English/2.%20PROVISIONAL%20REPORT%20%28Approved%20documents%29/EC-76-d03-2%2813%29-AMENDMENTS-MANUAL-GDPFS-approved_en.docx?Web=1) is effective from 15 September 2023,

**Requests** INFCOM: [*Japan*]

1. To provide clear definitions on “mandatory products” and “highly recommended products”, and other terminologies as needed, in the Manual on the GDPFS,
2. To, jointly with the Executive Council, develop a competency framework for use of high-resolution NWP and implementing limited-area NWP systems with reference to the guidelines on high-resolution NWP,

**Authorizes** the Secretary-General, in consultation with the president of INFCOM concerned to make editorial amendments to the [*Manual on Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YzrQrHZBw2w)(WMO-No. 485).

[Annexes: 5](#annex1) [*Japan*]

\_\_\_\_\_\_\_

Note: This resolution replaces [Decision 57 (EC-68)](https://library.wmo.int/doc_num.php?explnum_id=3166#page=186) – Strategy to assist Members in improving their use of high-resolution NWP and implementing limited-area NWP systems, which is no longer in force.

##  Annex 1 to draft Resolution 4.2(7)/1 (Cg-19)

*[Proposed amendments are highlighted in addition ~~or deletion~~ to the Manual in the Global Data-processing and Forecasting System (WMO-No. 485) and the numbering of the text below refers to the Manual.]*

***2.2.1.1 Global deterministic numerical weather prediction***

Regional Specialized Meteorological Centres conducting global deterministic NWP shall:

(a) Produce global analyses of the three‑dimensional structure of the atmosphere;

(b) Produce global forecast fields of basic and derived atmospheric parameters;

(c) Make available on WIS a range of these products; the list of mandatory products as [*Japan*] ~~mandatory~~ core data and highly recommended ~~global deterministic NWP~~ [*Japan*] products to be made available is given in Appendix 2.2.1;

(d) Produce verification statistics according to the standard defined in Appendix 2.2.34, and make them available to the Lead Centre(s) for DNV;

(e) Make available on a website up‑to‑date information on the characteristics of their global NWP systems. The minimum information to be provided is given in Appendix 2.2.2.

Note: The definition of core data is described in Resolution 1 (Cg-Ext. (2021)). [Japan, *Secretariat*]

## Annex 2 to draft Resolution 4.2(7)/1 (Cg-19)

***2.2.1.3 Global ensemble numerical weather prediction***

Centres conducting global ensemble NWP shall:

(a) Produce global ensemble forecast fields of basic and derived atmospheric parameters;

(b) Make available on WIS a range of these products; the list of mandatory products as [*Japan*]  ~~mandatory~~ core data and highly recommended ~~global ensemble NWP~~ [*Japan*] products to be made available is given in [Appendix 2.2.5](#_bookmark67);

(c) Make verification statistics available to the Lead Centre(s) for EPS verification according to the standard defined in [Appendix 2.2.35](#_bookmark132);

(d) Make available on a website up‑to‑date information on the characteristics of their global EPS; the minimum information to be provided is given in [Appendix 2.2.6](#_bookmark69).

Note: The definition of core data is described in Resolution 1 (Cg-Ext. (2021)). [Japan, *Secretariat*]

## Annex 3 to draft Resolution 4.2(7)/1 (Cg-19)

***2.2.1.5 Global numerical sub‑seasonal forecasts***

2.2.1.5.1 Centres conducting global numerical SSFs (GPCs for Sub‑seasonal Forecasts (GPCs‑SSF)) shall:

Note: Functions are defined for the sub‑seasonal (10 days–4 weeks) forecasting activity.

(a) With at least weekly frequency, generate SSF products with global coverage;

(b) Make available on WIS a range of these products; the list of mandatory products as [*Japan*] ~~mandatory~~ core data and highly recommended products to be made available is given ~~are listed~~ [*Japan*] in Appendix 2.2.41;

(c) Produce verification statistics according to the standard defined in Appendix 2.2.45, and make them available on a website;

(d) Provide an agreed set of forecast and hindcast variables (as defined in Appendix 2.2.43) to the Lead Centre(s) for Sub‑seasonal Forecast Multi‑model Ensemble (SSFMME);

(e) Make available on a website up‑to‑date information on the characteristics of their global numerical SSF systems; the minimum information to be provided is given in Appendix 2.2.42.

Note: The definition of core data is described in Resolution 1 (Cg-Ext. (2021)). [*Japan, Secretariat*]

## Annex 4 to draft Resolution 4.2(7)/1 (Cg-19)

***2.2.1.6 Global numerical long‑range prediction***

Centres conducting global numerical long‑range prediction (GPCs for Long‑range Forecasts (GPCs‑LRF)) shall:

Note: Functions are defined for the seasonal (1–6 month) prediction activity.

(a) Generate LRF products with global coverage;

(b) Make available on WIS a range of these products; the list of mandatory products as [*Japan*] ~~mandatory~~ core data and highly recommended products to be made available is given ~~are listed~~ [Japan] in [Appendix 2.2.9](#_bookmark75);

(c) Produce verification statistics according to the standard defined in [Appendix 2.2.36](#_bookmark136), and make them available on a website;

(d) 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](#_bookmark77);

(e) Agree to 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](#_bookmark91) (section 1).

Note: The definition of core data is described in Resolution 1 (Cg-Ext. (2021)). [*Japan, Secretariat*]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |
|  |  |  |  |
|  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |
|  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|
|  |  |  |  |  |
|  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

##  [*Japan*] [*Japan*] [*Japan*] [*Japan*]Annex 5 to draft Resolution 4.2(7)/1 (Cg-19) *[Japan]*

2.2.2.4 Coordination of annual to decadal climate prediction

2.2.2.4.1 The centre(s) conducting coordination of ADCP (Lead Centre(s) for ADCP) shall:

(a) Select a group of modelling centres to contribute to the Lead Centre(s) for ADCP (the “contributing centres”) that meet the GPC‑ADCP designation criteria and have been approved by ET‑OCPS; and manage changes in the membership of the group, as and when they occur, to maintain sufficient contributions;

(b) Maintain a list of the active contributing centres and the specification of their prediction systems;

(c) Collect an agreed set of hindcast, forecast and verification data (Appendices 2.2.20 and 2.2.21) from the contributing centres;

(d) Make available ~~(on a password‑protected website, as needed)~~ agreed forecast products in standard format, including multi‑model ensemble products (Appendix 2.2.20);

(e) Make available on the website agreed hindcast verification products in standard format, including verification of the multi‑model ensemble products (Appendix 2.2.21);

(f) Redistribute digital hindcast and forecast data for those contributing centres that allow it;

(g) Maintain an archive of the real‑time forecasts from individual contributing centres and from the multi‑model ensemble system;

(h) Promote research and experience in ADCP techniques and provide guidance and support on ADCP to RCCs and NMHSs;

(i) Based on comparison among different models, provide feedback to the contributing centres on model performance;

(j) Coordinate, in liaison with relevant World Climate Research Programme activities, an annual consensus prediction product giving global prospects for the next 1–5 years.

2.2.2.4.2 Access to data and visualization products held by a Lead Centre for ADCP should follow the rules as detailed in Appendix 2.2.19.

Note: The bodies in charge of managing the information contained in the present Manual related to coordination of ADCP are specified in the table below.

SECTION: Chapter

Chapter title in running head: PART II. SPECIFICATIONS OF GLOBAL DATA-…

Appendix 2.2.19. Access to data and visualization products held by the Lead Centre(s) for annual to decadal climate prediction

(a) ~~As needed, access to data from the Lead Centre(s) for ADCP website(s) will be password protected.~~

(b) ~~Digital data will be redistributed only in cases where the contributing centre data policy allows it. In other cases, r~~Requests for contributing centre output should be referred to the relevant contributing centre in cases where the digital hindcast and forecast data from the relevant contributing centre is not archived at the LC.

~~(c)~~ ~~Contributing centres, RCCs, NMHSs and institutions coordinating RCOFs are eligible for password‑protected access to information held and produced by the Lead Centre(s) for ADCP.~~

~~(d)~~ ~~Institutions other than those identified in (c) above may also request access to Lead Centre(s) for ADCP products. These i~~Institutions, including research centres, except contributing centres, RCCs, NMHSs and institutions coordinating RCOFs may not use Lead Centre(s) for ADCP products to generate and display/disseminate independent products for operational forecasting. These institutions must agree with these restrictions ~~to be eligible for access. Prior to access being granted to an applicant institution, the Lead Centre(s) for ADCP will refer the application to the INFCOM/ET‑OCPS through the WMO Secretariat for final consultation and review. Decisions to allow access must be unanimous. The Lead Centre(s) will be informed by the WMO Secretariat of such new users accepted for access~~.

~~(e)~~ ~~A list of users provided with password access will be maintained by the Lead Centre for ADCP and reviewed periodically by the INFCOM/ET‑OCPS, to measure the degree of effective use and also to identify any changes in status of eligible users, and determine further necessary follow‑up.~~

\_\_\_\_\_\_\_\_\_\_