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| WEATHER CLIMATE WATER | **World Meteorological Organization****COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS****Second Session**24 to 28 October 2022, Geneva | **INFCOM-2/Doc. 6.4(3)** |
| Submitted by:Chair of SC-ESMP5.X.2022**DRAFT 1** |

**AGENDA ITEM 6: TECHNICAL REGULATIONS AND OTHER TECHNICAL DECISIONS**

**AGENDA ITEM 6.4: Standing Committee on Data-processing for Applied Earth System Modelling and Prediction (SC-ESMP)**

# Renewal of the Guide on the Global Data-processing System (WMO-No. 305)

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| **Summary***[Valid for resolutions, decisions and recommendations]* |
| **Document presented by:** Chair of Standing Committee on Data-processing for Applied Earth System Modelling and Prediction (SC-ESMP)**Strategic objective 2020–2023:** 2.3 Enable 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, in consultation with SERCOM**Time frame:** 2023**Action expected:** review the proposed draft recommendations |

# DRAFT RECOMMENDATIONS

## Draft Recommendation 6.4(3)/1 (INFCOM-2)

### Establishment of the Compliance Review Process for Regional Specialized Meteorological Centres (RSMCs)

THE COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS,

**Recalling:**

1. [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), which requested to develop performance requirements for monitoring Global Data-processing and Forecasting System (GDPFS) Centres as well as to arrange for and maintain a rolling review of GDPFS centres,
2. [Resolution 58 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=193) – Future Integrated Seamless Global Data-processing and Forecasting System Collaborative Framework, which requested to ensure implementation of Seamless GDPFS with respect to the WMO Quality Management,

**Reaffirming** that the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793) (WMO‑No 485) was revised thoroughly in 2017, taking into account the quality management principle to ensure quality assurance and management measures for the GDPFS, as well as its sustainability as part of the WMO Quality Management Framework (QMF),

**Noting:**

1. [Resolution 57 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=192) - WMO Information System (WIS): Amendments to the Technical Regulations and WIS 2.0 Implementation Approach, that introduced the generic audit process as the WMO operational centre certification process,
2. The Expert Team on Audit and Certificate (ET-AC) under the Standing Committee on Information Management and Technology (SC-IMT) is responsible for the coordination and operation of the generic audit process,
3. To secure required resources to review the compliance of all RSMCs using the generic audit process is challenging since the number of RSMCs is more than 120 as of 2022,

**Noting** **further** that a task team under the Standing Committee on Data-processing for Applied Earth System Modelling and Prediction (SC-ESMP) developed, in close cooperation with ET-AC, the compliance review process for RSMCs taking two-step approach with the audit,

**Having examined** the Guide on Compliance Review Process for RSMCs in the [annex](#_Annex_to_draft_1) to the draft Resolution ##/1 (EC-76),

**Endorses** the compliance review process for RSMCs as described in the [annex](#_Annex_to_draft_1) to the draft Resolution ##/1 (EC-76);

**Recommends** to the Executive Council the adoption of *the establishment of the* *compliance review process for RSMCs* throughthe draft resolution provided in the [annex](#Annex_to_draft_Recommendation) to the present Recommendation.

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[Annex: 1](#Annex_to_draft_Recommendation)

## Annex to draft Recommendation 6.4(3)/1 (INFCOM-2)

**Draft Resolution ##/1 (EC-76)**

### Establishment of the Compliance Review Process for Regional Specialized Meteorological Centres (RSMCs)

THE EXECUTIVE COUNCIL,

**Recalling:**

1. [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),
2. [Resolution 57 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=192) - WMO Information System: Amendments to the Technical Regulations and WIS 2.0 Implementation Approach,
3. [Resolution 58 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=193) – Future Integrated Seamless Global Data-processing and Forecasting System Collaborative Framework,

**Having examined** Recommendation 6.4(3)/1 (INFCOM-2) - Establishment of the Compliance Review Process for RSMCs,

**Having agreed** the Guide on Compliance Review Process for RSMCs as provided in the [annex](#_Annex_to_draft_1) to the present Resolution,

**Urges** Members hosting RSMCs to check whether they meet all requirements as stated in the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793) (WMO-No. 485);

**Request** the Commission for Observation, Infrastructure and Information Systems, in collaboration with the Commission for Weather, Climate, Water and Related Environmental Services and Applications, to complete the first round of the compliance review of all RSMCs by Cg-20 (2027);

**Request** the Secretary-General to take the necessary steps to insert the Guide on Compliance Review Processfor RSMCs into the renewed [*Guide to the Global Data-processing System* (GDPS)](https://library.wmo.int/index.php?lvl=notice_display&id=6832) (WMO-No. 305) as provided in the [annex](#Annex_to_draft_Recommendation2) of the draft Resolution ##/2 (EC-76).

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[Annex: 1](#Annex_to_Resolution)

## Annex to draft Resolution ##/1 (EC-76)

**Guide on Compliance Review Process
for Regional Specialized Meteorological Centres (RSMCs)**

*The document,* ***new section 3.5****, including relevant appendices will be inserted into the Annex of the draft Recommendation on the Renewal of the Guide on the Global Data-processing System (WMO-No. 305) once it is adopted at INFCOM-2.*

3.5 Review ON GDPFS centres’ Compliance

3.5.1 Background

The ongoing performance of the Global Data‑processing and Forecasting System (GDPFS) relies on the continued compliance of designated GDPFS centres with the agreed standards and practices. To this end, World Meteorological Centres (WMCs) and RSMCs shall have a rolling review of their compliance with the GDPFS standards and practices.

WMO Members and related international programmes and partners are responsible for ensuring that their centres remain compliant with GDPFS standards and practices. INFCOM will oversee and support the rolling review process with the aim of confirming a centre’s compliance regularly.

3.5.2 Review Process for Regional Specialized Meteorological Centres (RSMCs)

### 3.5.2.1 Introduction

The process follows a two-step approach for compliance review and audit of designated GDPFS centres, hereafter referred to as RSMCs (Appendix 3.5.2.1). The compliance review is the first step and its outcome is to serve as a basis for a decision whether to request an audit of the RSMC by the Expert Team on Audit and Certification (ET-AC) as the second step, following the generic audit process specified in Technical Regulations (WMO-No. 49).

The process described in this document is intended to provide guidelines for compliance review of RSMCs, to ensure they are functioning according to the Manual on the GDPFS (WMO-No. 485), and thereby, help maintain the functional status of the GDPFS.

The Manual on the GDPFS includes the list of designated RSMCs. The compliance review process for WMCs shall be comprised of separate reviews on three activities: (a) global deterministic numerical weather prediction (NWP); (b) global ensemble NWP; and (c) global numerical long‑range prediction. It is noted that Volcanic Ash Advisory Centres (VAACs) are not part of the compliance review process as they are designated by International Civil Aviation Organization (ICAO).

The coordination of RSMCs’ compliance review is overseen by Standing Committee on Data-processing for Applied Earth System Modelling and Prediction (SC-ESMP). The review of each designated RSMC’s compliance within a GDPFS activity will be conducted by an expert group that is responsible for monitoring RSMC’s compliance. The expert groups responsible for monitoring various GDPFS activities are identified in the Manual on the GDPFS.

An audit programme will be established by ET-AC based on the information provided by SC-ESMP.

The overall requirements and specific functions of designated RSMCs are defined in the Manual on the GDPFS, in Sections 2.1 and 2.2 respectively, against which compliance review will be conducted. The expert group decides on which overall requirements are critical in order to maintain GDPFS functionality of the RSMCs. The compliance review will be at the product-level that a designatedRSMC has committed to deliver. The expert group also decides the grace period for recent change(s) to the specific functions upon revision to the Manual on the GDPFS. Hereafter, the critical overall requirements and the specific functions are referred to as *mandatory functions*.

The expert groups report to the SC-ESMP with the outcome of the compliance review.

The expert groups review the compliance of RSMCs following the process described in 3.5.2.2 and 3.5.2.3. If necessary, the expert groups can adapt the generic compliance review process for their purposes after providing appropriate justifications and following approval from SC-ESMP.

The expert groups can designate a smaller “review team” to conduct the compliance review. If needed, there could be multiple review teams and their number may depend on how many designated centres there are within a class of RSMC. The “review team” members will be from within the core membership of the expert group (that is responsible for monitoring the RSMC compliance), and therefore, members are expected to have the subject matter expertise required for the compliance review. If the expert group doesn’t designate any review team, the expert group itself will constitute the “review team”.

The review of RSMCs’ compliance will be conducted at least every four years. Following the risk-based approach, responsible expert groups can decide to make the compliance review on a more frequent basis.

The risk-based approach (Appendix 3.5.2.2) follows the general principle wherein the cascading influence of an RSMC not being compliant with mandatory functions has a major impact on the functionality and health of a GDPFS activity.

The review of RSMCs’ compliance is carried out off-site.

### 3.5.2.2 Developmentfor the compliance review process

The expert group shall prepare a questionnaire for self-assessment to be completed by the designated RSMCs. The questionnaire shall cover the mandatory functions of the designated RSMC. Among the various overall requirements described in Section 2.1 of the Manual on the GDPFS, the expert group shall decide which overall requirement(s) are critical for compliance, with appropriate justifications for their choice. An example of a questionnaire is attached as Appendix 3.5.2.3, which may be modified by the expert group. The self-assessment questionnaire should also request information necessary to validate that the mandatory functions are being met.

The expert group shall conduct risk analysis regarding the particular GDPFS activity. An example of risk analysis template is attached as Appendix 3.5.2.2. Based on the risk-based approach, the expert group shall decide the frequency of the compliance review and develop a schedule to periodically review RSMCs’ compliance within the 4-year cycle. The SC-ESMP shall approve the schedule.

The expert group shall determine the criteria whether the RSMC is ‘compliant’, ‘compliant, but with qualification’ or ‘not compliant’ based solely on the evidence collected during the assessment. Definitions for these categories are given in Part VII, Quality Management, of the Technical Regulations.

The expert group shall also develop criteria for when following the compliance review a request for a possible audit (by the ET-AC) is to be made.

The expert group shall develop timelines for various steps of the compliance review process (Appendix 3.5.2.4).

### 3.5.2.3 The generic compliance review process

**Step 1: Notification/request to review the compliance of a centre, accompanied by a completed self-assessment questionnaire**

1. The chair of the expert group shall inform the focal points of RSMCs about the focal point of the review team one month before the review starts. The expert group and the designated RSMCs will communicate in English via email.
2. Within 2 months, the RSMC shall complete the self-assessment questionnaire and return it to the review team. The response to the self-assessment questionnaire should also include (i) necessary URLs that could be used to validate if the mandatory functions are being met, and (ii) examples of products that are being provided.
3. The RSMC needs to provide relevant contact point information to allow the review team to liaise with the RSMC’s management and experts, if needed.
4. The RSMC shall provide the self-assessment information in English.

**Step 2: Pre-assessment, review and validation by the review team**

1. The review team examines the self-assessment report. The review team also validates if the mandatory functions are being carried out.
2. If further information is necessary or the provided information is not clear enough, the review team corresponds with the RSMC’s contact points.
3. If an RSMC is initially assessed to be non-compliant, it will be given an opportunity, within 3 months, to correct the issues (that led to non-compliance). The RSMC is requested to develop and provide to the review team a plan to improve non-compliance in the area(s) of concern. This plan should (a) include a timeline for corrective measures, (b) discuss the root-cause that led to non-compliance, and (c) describe the corrective measures that will be followed to rectify non-compliant functions. Upon the feedback from the review team, the RSMC should implement corrective measures to demonstrate the compliance.
4. Within 3 months after receiving the self-assessment report(s), the review team reports to the expert group the assessment result.

**Step 3: Review report and recommendation**

1. Within two months after the process outlined in Step 2 is completed, the expert group develops a consolidated review report for the GDPFS activity. If the expert group designates multiple review teams, the report should be based on reports from all review teams. A template of the report is in Appendix 3.5.2.5.
2. The expert group provides the review report to SC-ESMP. The report shall include a recommendation on whether an audit on certain designated RSMC(s) need(s) to be requested.
3. The review report shall be kept confidential, and distribution is limited to the review team(s), its associated expert group, SC-ESMP, ET-AC (if follow-up audit is requested), and relevant staff in the WMO Secretariat. Individual RSMCs may request access to only those part(s) that are relevant. However, conclusion of the compliance review and recommendations to SC-ESMP may be released to the public.
4. SC-ESMP consolidates and examines the submitted review reports by all expert groups. SC-ESMP also finalizes the recommendation from the compliance reviews. SC-ESMP recommendation should also specify any requests for audits of RSMCs that are to be followed up by the ET-AC. If a request for an audit is made then the following information should be provided to ET-AC: reasons for the audit request; objectives for the audit; scope of audit; documents resulting from the compliance reviews (e.g., questionnaire, review report and evidence collected during the review); audit criteria; audit time frame requirements, any information that will be considered necessary to reduce audit risks and a list of subject matter experts who could help with the audit.
5. SC-ESMP reports the summary of review of RSMCs’ compliance with a draft recommendation on follow-up audit, if any, to INFCOM/SERCOM as defined in the Manual on the GDPFS.

### 3.5.2.4 Designation of RSMCs

In the case of a new RSMC designation, a centre's capability to comply with designation criteria is assessed by the same review process as the regular compliance review.

Upon satisfactory result of the review or audit, the designation of RSMC will be recommended to the INFCOM.

APPENDIX 3.5.2.1
TWO-STEP APPROACH FOR COMPLIANCE REVIEW AND
AUDIT PROCESS

The sole purpose of the compliance review and audit process of RSMCs is to ascertain RSMCs’ conformity against requirements specified in the Manual on the GDPFS (WMO-No. 485), in order to ensure uninterrupted provision of quality-assured products and services to Members.

A two-step approach is taken for compliance review and audit of RSMCs. The compliance review of RSMCs, overseen by SC-ESMP, will be conducted as the first-step product-level review, that determines whether the second step for an audit is warranted. If necessary, the second step for an audit will be conducted under the responsibility of ET-AC, along the lines with ISO 19011 and the WMO generic audit process which is documented in Technical Regulations (WMO-No. 49). The figure below illustrates the two-step approach.



**Comparison between compliance review and audit**

|  |  |  |
| --- | --- | --- |
|  | Compliance Review | Audit |
| Purpose | To check RSMCs’ conformity against requirements specified in Manual on the GDPFS (WMO-No. 485) and compliance requirements in accordance with Technical Regulations (WMO-No. 49), in order to ensure uninterrupted provision of the quality-assured products and services to Members. |
| Objectives | To determine conformity of provision of products and services as specified by the Manual on the GDPFS. | * To determine conformity of provision of products and services as specified by the Manual on the GDPFS
* To determine conformity of compliance requirements in accordance with Technical Regulations
* As applicable its effectiveness to implement corrective measure
* As applicable its ability to identify areas for potential improvement
 |
| Standards for review/audit team | Manual on the GDPFS and Section 3.5 of this Guide. | ISO 19011 and generic audit process in Technical Regulations |
| Lead by | SC-ESMP and relevant expert groups responsible for compliance. | ET-AC |
| Team | Subject matter expert (SME) from the expert group. | At least two persons:1 lead auditor from ET-AC1 SME from the expert group |
| Scope | Product-level requirements as specified by the Manual on the GDPFS, as well as critical overall requirements.  | Overall compliance to the requirements in the Manual on the GDPFS and Technical Regulations. Possibility to include the internal operational procedures of the centre. |
| Methods | Review of self-assessment questionnaire, documentation, and records. | To be decided by the Audit Team. |
| Outcomes | Compliance review report, including a recommendation on the necessity of follow-up audit. | Audit report.WMO certificate. |

**Criteria for triggering an audit**

A follow-up audit does not necessarily arise from non-conformity. It is to ensure overall compliance is met by rigorous examination of a RSMC, possibly including examining its internal operational procedures, in accordance with ISO 19011 standards. A follow-up audit is also expected to benefit the auditee RSMC by identifying areas for potential improvement. The audit will also benefit the compliance review process by providing feedback to the expert group and SC-ESMP.

An audit will normally be requested by SC-ESMP if a RSMC has been repeatedly assessed to be “not compliant” by two consecutive compliance reviews. Risk of the GDPFS activity should also be considered. As a general guideline, if the risk of that GDPFS activity is MODerate or HIGH, then an audit should be requested when a RSMC is identified as “not compliant” and corrective measure(s) has not been implemented to the satisfaction of the expert group within 6 months. If there are multiple RSMCs to be audited, the expert group should prioritize the RSMCs based on their level of performance and the risk analysis, in order to facilitate the audit process.

In order to promote continual improvement for the RSMCs, the expert group may decide to recommend an audit even if the risk of GDPFS activity is assessed to be LOW and all RSMCs are identified as “compliant” within a cycle of the compliance review. In such case, the expert group may recommend one RSMC for audit, with the centre’s consent. Whether such an audit will be requested will be decided by SC-ESMP, taking into consideration audit requests from other expert groups.

A RSMC may also formally request, via the centre’s Permanent Representative with WMO, an audit of that centre.

An ISO 9001 certificate is beneficial in the consideration of a follow-up audit.

**Continual improvement**

Feedback from the ET-AC audit programme to SC-ESMP regarding the status of the compliance review process will be an important mechanism in the continual improvement of the two-step approach.

**References**

[1] ISO 9000:2015, *Quality management system – Fundamentals and vocabulary*

[2] ISO 9001:2015, *Quality management system – Requirements*

[3] ISO 19011:2018, *Guidelines for auditing management systems*

APPENDIX 3.5.2.2
RISK-BASED APPROACH AND RISK ANALYSIS TEMPLATE

The compliance review process for designated GDPFS centres adopts a risk-based approach following the general principle wherein the influence of a designated centre(s) not being compliant with mandatory functions has a major impact on the functionality and health of the particular GDPFS activity. In particular, audit priority for allocating limited resources should be given to matters that have a high likelihood for failure and that can also result in a major impact on the delivery of products.

The risk analysis considers and assesses the totality of all designated centres as a single entity within a particular GDPFS activity, for the likelihood of losing the mandatory functions and the corresponding impact in the provision of products and services to Members.

Results of the risk analysis will assist the relevant expert group in determining (i) the frequency and schedules of the compliance review and (ii) whether subsequently an audit on certain designated centre(s) needs to be requested.

The following risk matrix serves as a general guideline for all expert groups, with three different levels of risk indexed by LOW (Green), MODerate (Yellow), and HIGH (Red), respectively. The expert group may decide to modify the risk matrix, with justifications, based on its needs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Likelihood** | High | LOW | MOD | HIGH |
| Medium | LOW | LOW | MOD |
| Low | LOW | LOW | LOW |
|  | Minor | Moderate | Major |
|  | **Impact** |

In this schematic, the y-axis is the likelihood of a GDPFS activity failing, and the x-axis is the impact of the GDPFS activity on the sustainability of products and services to Members. The same assessment matrix can be applied to individual mandatory functions within the GDPFS activity, and the result of such assessment helps inform the risk analysis for the GDPFS activity as a whole.

It is noted that a specific level of risk for the GDPFS activity is not a reflection on the performance of individual designated centres within the GDPFS activity, but is assessment of the activity as a whole.

While risk analysis will normally be conducted for the GDPFS activity, the expert group could also conduct risk analysis for each of the individual centres, with consideration of the expert group’s resources and knowledge about the individual designated centres. In particular, the ISO 9001 certificate will be a part of the risk-based approach, to help decide the review frequency and whether a follow-up audit will be requested. Specifically, if a designated centre holds a valid ISO 9001 certificate covering all functions of the RSMC, a follow-up audit will normally not be required.

Risk Analysis Template

# GDPFS Activity

# List of designated centres

* RSMC XYZ
* RSMC XYZ

# Risk analysis for specific GDPFS activities

(Note: non-real-time activities generally have less impact on the operation of the GDPFS or downstream users if they fail.)

|  |  |  |  |
| --- | --- | --- | --- |
| Specification of specific activities | Consequence or impact if the activity fails | Likelihood that the activity would fail | Risk of losing the activity |
| [Specifications as defined in the Manual on the GDPFS (WMO-No. 485)] |  |  |  |
|  |  |  |  |
|  |  |  |  |

Note: the overall risk will be highest risk identified above.

# Conclusion

Evaluated by (expert group name) on (date).

APPENDIX 3.5.2.3
TEMPLATE OF A SELF-ASSESSMENT QUESTIONNAIRE

# Questionnaire on Compliance of Regional Specialized Meteorological Centre (RSMC)

Self-assessment made by: on (Date)

Compliance reviewed by: on (Date)

This is a questionnaire for the self-assessment of GDPFS Centre’s compliance. A review team will review and assess the Centre’s compliance based on the self-assessment report. This report will be included as part of a consolidated review report by the expert group.

The expert group will prepare the questionnaire, in particular the first and second columns of Table 1 and Table 2, and additional table(s) or checklist(s) to cover all the mandatory functions (i.e., those overall requirements considered to be critical by the expert group and the specific functions, as described in the Sections 2.1 and 2.2 of the Manual on the GDPFS (WMO-No. 485) respectively) in full detail. For Table 1, the expert group will make decisions on which overall requirement(s) are critical for the GDPFS activity, with justification. The expert group will specify the expected evidence or supporting information in the second columns of Table 1 and Table 2, thus providing centres with clear guidance on the answers. Examples of the expected evidence or supporting information are given in the Table 1.

In the third column of Table 1 and Table 2, the Centre will provide information necessary to validate that mandatory functions are being met. The response should include (i) necessary URLs (or documentation) that could be used to validate that the mandatory functions are being met, and (ii) examples of products that are being provided.

The fourth column is to be filled by the review team, to indicate whether the centre is compliant for each of the requirements. If non-conformities are identified, the review team shall determine whether each of the non-conformities is Major or Minor, with justification.

# 0. Point of Contact

The Centre provides all relevant contact point information to allow the review team to liaise with the Centre management and experts as necessary.

# 1. Overall requirements

Overall requirements and standards for RSMC are specified in the Manual Section 2.1 OVERALL REQUIREMENTS AND STANDARDS. Only those overall requirement(s) considered to be critical for compliance are listed below.

Table 1. Overall requirements and standards

| Specifications(filled by the expert group) | Expected evidence or supporting information(filled by the expert group) | Self-assessment(please include supporting information)(filled by the centre) | ComplianceConformity / Major nonconformity / Minor nonconformity(with justification)(filled by the review team) |
| --- | --- | --- | --- |
| 2.1.1 Quality control of incoming observations |
| 2.1.1.1 WMCs and RSMCs shall identify the observational requirements to conduct all functions of their own activities and express them through the corresponding application areas of the Rolling Review of Requirements. |  |  |  |
| 2.1.1.2 WMCs and RSMCs shall apply quality control to the incoming observations they use for GDPFS purposes. |  |  |  |
| 2.1.2 Data collection and product dissemination |
| 2.1.2.1 GDPFS centres shall be connected to the WIS to ensure suitable exchange of information with other centres. | (e.g. the associated Data Collection or Production Centre (DCPC) and/or Global Information System Centre (GISC)). |  |  |
| 2.1.2.2 WMCs and RSMCs shall describe their required products and services according to WMO metadata standards and make them available to other GDPFS centres through WIS in a timely manner for operational use. | (e.g. if an RSMC shall make certain mandatory products available on WIS, details of the availability of all the products and their associated metadata will be given in a table below.) |  |  |
| 2.1.3 Long-term storage of data and products |
| 2.1.3.1 WMCs and RSMCs shall operate an archiving and retrieval system to serve the needs of their continual improvement process; this process shall include the non-real-time assessment of their products and the ability to perform re-runs of their operational production. |  |  |  |
| 2.1.4 Product verification and the performance of Global Data-processing and Forecasting centres |
| 2.1.4.1 The accuracy of forecast products provided by WMCs and RSMCs shall be monitored by objective verification procedures. | (e.g. include some discussion about what verification procedures are in place). |  |  |
| 2.1.4.2 The Lead Centre(s) for verification shall play an essential role in the coordination of verification and have responsibility for maintaining websites containing verification results and relevant guidance (see 2.2.3 in the Manual on GDPFS), ensuring that … |  |  |  |
| 2.1.5 Documentation on system and products |
| 2.1.5.1 WMCs and RSMCs shall make available, on a publicly accessible website, documentation on the technical characteristics of their operational systems and on the products they deliver. RSMCs shall ensure that the information provided is kept current by updating it as required after every significant change to their operational systems. … | (e.g. give link(s) as supporting information). |  |  |
| 2.1.5.2 Documentation shall use the International System of Units (SI units). If other units are used, conversion equations shall be included. |  |  |  |
| 2.1.6 Training |
| 2.1.6.1 WMCs and RSMCs shall provide guidance, including training materials, on the interpretation, performance characteristics, strengths and limitations of their products. They shall ensure that this information is kept current by updating it after every significant change to their operational system. | (e.g. give link(s) as supporting information). |  |  |
| 2.1.7 Reporting on compliance |
| 2.1.7.1 WMCs and RSMCs shall provide information about the current implementation of their system. | (e.g. give link(s) as supporting information). |  |  |
| 2.1.8 Graphical representation of observations, analyses and forecasts |
| 2.1.8.1 WMCs and RSMCs that have a mandate of chart-based analysis shall maintain standardized weather forecasting processes, including graphical representation of observations, analyses and forecasts. |  |  |  |
| 2.1.8.3 Analysis and forecasting practices. |  |  |  |

# 2 Specific requirements

Specification of activities required for RSMC conducting <GDPFS activity name> is given in the [Manual on the GDPFS](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YeBLnK7MLX0) (WMO-No. 485) Part II Section 2.2.x.x.

Table 2. Requirements for <GDPFS activity name>

|  |  |  |  |
| --- | --- | --- | --- |
| Requirement(filled by the expert group) | Expected evidence or supporting information(filled by the expert group) | Self-assessment(please include supporting information)(filled by the centre) | ComplianceConformity / Major nonconformity / Minor nonconformity(with justification)(filled by the review team) |
|  |  |  |  |
|  |  |  |  |

# 3 Addition activities

A Centre is encouraged to provide the information on additional functions conducting as part of RSMC activities, such as supplementary documents to use RSMC products or provision of the additional products.

The centre [holds] / [does not hold] a valid ISO 9001 certificate covering all functions of the RSMC. The certificate is valid until dd/mmm/yyyy.

# 4 References

(Other supporting documents or publications from the RSMCs)

APPENDIX 3.5.2.4
SCHEMATIC FOR THE COMPLIANCE REVIEW TIMELINE

|  |  |  |
| --- | --- | --- |
| Time | Task | Responsible Party |
| Preparatory work (usually done at the beginning of a 4-year compliance review cycle) |
|  | Prepare a questionnaire for self-assessment | Expert Group |
|  | Conduct risk analysis | Expert Group |
|  | Decide the frequency of the compliance review, develop a schedule on the compliance review, and seek SC-ESMP’s approval | Expert Group |
|  | Establish the criteria on ‘compliant’, ‘compliant, but with qualification’ or ‘not compliant’ | Expert Group |
|  | Establish criteria for follow-up audit | Expert Group |
|  | Develop timelines for the compliance review process (table below) | Expert Group |
|  |
| The compliance review process |
| (One month before the review). | Inform the focal point(s) of centre(s) about the focal point of the review team. | Chair of the Expert Group. |
| Review starts | Distribute the self-assessment questionnaire | Review Team |
| (Within 2 months). | Return the duly completed self-assessment questionnaire (report) to the review team. | Centre. |
|  | Examine the self-assessment report, and if necessary, correspond with the centre’s contact points. | Review Team. |
|  | If non-conformities were identified, develop and implement a plan for corrective measures and root-cause analyses | Centre |
| (Within 3 months after receiving the self-assessment report or audit report) | As necessary, examine the plan for corrective measures, and effectiveness of the corrective measures (if implemented) | Review Team |
| (Within 3 months after receiving the self-assessment report) | Report to the Expert Group the assessment result | Review Team |
| (Within 2 months after all review teams reported to the Expert Group) | * Develop a consolidated review report
* Submit the review report to SC-ESMP
 | Expert Group |
|  | * Report the summary of compliance review with a draft recommendation to INFCOM/SERCOM
* Inform ET-AC about the requirements for an audit, if needed
 | SC-ESMP |

APPENDIX 3.5.2.5
TEMPLATE OF THE COMPLIANCE REVIEW REPORT BY THE EXPERT GROUP

Prepared by (Expert group name) on (Date)

This report is confidential, and distribution is limited to the review team(s), its associated expert group, SC-ESMP, ET-AC (if follow-up audit is requested), and relevant staff in the WMO Secretariat. Individual centre may request access to only those part(s) that are relevant.

The conclusion (*i.e.* whether a centre is compliant or not) and Recommendation to SC-ESMP may be released to the public.

GDPFS activity reviewed

List of designated centres reviewed

* RSMC XYZ
* RSMC XYZ

This compliance review [covered all] / [did not cover all] designated centres under this GDPFS activity.

Relevant dates for the compliance review

Members of the review team(s)

# Choice of critical Overall Requirements for compliance

Expert group’s decision on which overall requirement(s) are critical for the GDPFS activity, with justification. Examples are given in the second and the third column below.

| Specifications. | Critical? | Detailed justifications if the requirement is considered to be non-critical by the expert group. |
| --- | --- | --- |
| 2.1.1 Quality control of incoming observations. |
| 2.1.1.1 WMCs and RSMCs shall identify the observational requirements to conduct all functions of their own activities and express them through the corresponding application areas of the Rolling Review of Requirements. | *(YES)* |  |
| 2.1.1.2 WMCs and RSMCs shall apply quality control to the incoming observations they use for GDPFS purposes. … | *(YES)* |  |
| 2.1.2 Data collection and product dissemination. |
| 2.1.2.1 GDPFS centres shall be connected to the WIS to ensure suitable exchange of information with other centres. | *(YES)* |  |
| 2.1.2.2 WMCs and RSMCs shall describe their required products and services according to WMO metadata standards and make them available to other GDPFS centres through WIS in a timely manner for operational use. | *(YES)* |  |
| 2.1.3 Long-term storage of data and products. |
| 2.1.3.1 WMCs and RSMCs shall operate an archiving and retrieval system to serve the needs of their continual improvement process; this process shall include the non-real-time assessment of their products and the ability to perform re-runs of their operational production. | *(YES)* |  |
| 2.1.4 Product verification and the performance of Global Data-processing and Forecasting centres. |
| 2.1.4.1 The accuracy of forecast products provided by WMCs and RSMCs shall be monitored by objective verification procedures. | *(YES)* |  |
| 2.1.4.2 The Lead Centre(s) for verification shall play an essential role in the coordination of verification and have responsibility for maintaining websites containing verification results and relevant guidance (see 2.2.3 in the Manual on GDPFS), ensuring that … | *(NO)* | *e.g. The lead centre for deterministic numerical weather prediction verification**i.e. Lead Centre(s) for DNV) plays the necessary role. Therefore, this is not applicable to the activity on global deterministic numerical weather prediction.* |
| 2.1.5 Documentation on system and products. |
| 2.1.5.1 WMCs and RSMCs shall make available, on a publicly accessible website, documentation on the technical characteristics of their operational systems and on the products they deliver. RSMCs shall ensure that the information provided is kept current by updating it as required after every significant change to their operational systems.  | *(YES)* |  |
| 2.1.5.2 Documentation shall use the International System of Units (SI units). If other units are used, conversion equations shall be included. | *(YES)* |  |
| 2.1.6 Training. |
| 2.1.6.1 WMCs and RSMCs shall provide guidance, including training materials, on the interpretation, performance characteristics, strengths and limitations of their products. They shall ensure that this information is kept current by updating it after every significant change to their operational system. | *(YES)* |  |
| 2.1.7 Reporting on compliance. |
| 2.1.7.1 WMCs and RSMCs shall provide information about the current implementation of their system. | *(YES)* |  |
| 2.1.7.2 WMCs and RSMCs shall report non-compliance between the mandatory minimum specifications and their actual implementation to the WMO Secretariat and make corresponding information available on a website. When this non-compliance is reported to Congress or the Executive Council, it shall reconsider the designation. | *(NO)* |  |
| 2.1.8 Graphical representation of observations, analyses and forecasts. |
| 2.1.8.1 WMCs and RSMCs that have a mandate of chart-based analysis shall maintain standardized weather forecasting processes, including graphical representation of observations, analyses and forecasts. | *(NO)* |  |
| 2.1.8.3 Analysis and forecasting practices. | *(NO)* |  |

Risk analysis for GDPFS activity

Result of risk analysis of the GDPFS activity. [Append the duly completed risk analysis, for which a template is given in Appendix 3.5.2.2]

Findings of this compliance review conducted by review teams

**For each of the designated centre being reviewed**, the followings will be documented.

* The self-assessment report, related documentation and records will be appended to this consolidated report
* Number of non-conformities identified: Major, Minor
* Description of the non-conformities, timeline for corrective measures, root-cause analysis, and description of the corrective measures

Followings are general guidelines for considering the criteria of conformity:

1. A centre will be considered “compliant” if no nonconformity is identified.

2. If corrective measures and root-cause analyses for all identified non-conformities have been implemented to the satisfaction of the review team within 3 months, the centre may also be considered “compliant”.

3. “Compliant, but with qualification” could be granted if only minor non-conformities were found, and for which corrective measures are being implemented or planned.

4. If major nonconformity(ies) was(were) identified and corrective measures have not been satisfactorily implemented, the centre will normally be considered as “not compliant”.

* General observations, including positive observations and opportunities for improvement
* The centre [holds a valid ISO 9001 certificate until dd/mmm/yyyy] / [have not been ISO 9001 certified]
* Recommendation for a follow-up audit, with justification, or request from the centre for a follow-up audit

Conclusion and Recommendation to SC-ESMP

* A summary of the result of the compliance review of all the centres
* Recommendation if there is a need for a follow-up audit

## Draft Recommendation 6.4(3)/2 (INFCOM-2)

### Renewal of the *Guide on the Global Data-processing System* (WMO-No. 305)

THE COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS,

**Recalling;.**

1. [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), which requested to revise the [*Guide on the Global Data-processing System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) to ensure the necessary alignment with and provide further guidance to Members for the implementation of the revised [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793)(WMO-No. 485),
2. [Resolution 26 (EC-70)](https://library.wmo.int/doc_num.php?explnum_id=4981#page=86) - Amendments to the Manual on the Global Data-processing and Forecasting System (WMO-No. 485), which endorsed the outlines of the [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk)(WMO-No. 305) provided as Annex 1 to the Resolution and requested to accelerate the development of the [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) to facilitate the use of the revised the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YzLKh3ZByUk) (WMO‑No. 485),

**Having examined**

1. The change of the title from the Guide on the Global Data-processing System to the Guide to the Global Data-processing and Forecasting System,
2. The [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) as provided in the [annex](#Annex_to_Resolution2) to draft Resolution ##/2 (EC-76),

**Recommends** to Executive Council the adoption of [*Renewal of the Guide on the Global Data-processing System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk)(WMO-No. 305)throughthe draft resolution provided in the [annex](#Annex_to_draft_Recommendation2) to the present Recommendation.

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[Annex: 1](#Annex_to_draft_Recommendation2)

## Annex to draft Recommendation 6.4(3)/2 (INFCOM-2)

**Draft Resolution** **##/2 (EC-76)**

### Renewal of the Guide on the Global Data-processing System (WMO-No. 305)

THE EXECUTIVE COUNCIL,

**Recalling:**

1. [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),
2. [Resolution 26 (EC-70)](https://library.wmo.int/doc_num.php?explnum_id=4981#page=86) - Amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485),

**Having examined** Recommendation 6.4(3)/2 (INFCOM-2),

**Having agreed**

1. The change of the title from the *Guide on the Global Data-processing System* to the *Guide to the Global Data-processing and Forecasting System*,
2. The [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) as provided in the [annex](#Annex_to_Resolution2) to the present Resolution,

**Invites** Members to refer to the revised [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) when establishing forecast products and services to be in compliance with the WMO Technical Regulations and to contribute the contents needed to be included in the future,

**Requests** the president ofINFCOMto further update the [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305) reflecting the amendments to the [*Manual on the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=12793#.YzLKh3ZByUk) (WMO-No. 485) approved at EC-76 and Cg‑19,

**Authorizes** the Secretary-General, in consultation with the president of INFCOM to make editorial amendments to the [*Guide to the Global Data-processing and Forecasting System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832#.YzLKXHZByUk) (WMO-No. 305).

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[Annex: 1](#Annex_to_Resolution2)

## Annex to draft Resolution ##/2 (EC-76)

### Guide to the Global Data-processing and Forecasting System (WMO-No. 305)

The draft of the *Guide to the* *Global Data-processing and Forecasting System* (WMO-No. 305) is available [here](https://filecloud.wmo.int/share/s/4miPI4FPQvqgJiiz6oCrkw).

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