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| **World Meteorological Organization****COMMISSION FOR BASIC SYSTEMS****Implementation-Coordination Team on Information Systems and Services****ICT-ISS-2019**Geneva, 15-17 Oct 2019 | **ICT-ISS-2018/Doc 3.2** |
| Submitted by:ET-WISC 15.Oct.2019 |

# Status and work plans of Expert Teams, Task Teams and next priorities before INFCOM 1st session April 2020

## Expert Team on WIS Centres

### Meetings

1. The Expert Team on WIS Centres held two meetings after CBS-16.
	1. Joint 2017 Meeting of the Expert Team on WIS Centres (ET-WISC), the Expert Team on Communication Techniques and Systems (ET-CTS), and the Task Team on GISCs (TT-GISC), 13-17 November 2017, Geneva.
	2. Joint meeting of Expert Team on WIS Centres (ET-WISC) and Task Team on WIS Data Centres (TT-DC), 05-07 March 2019, Beijing, China.

### Activities

1. Amendments to the Manual on WIS (WMO-No. 1060) and the Guide to WIS (WMO-No. 1061) approved by Cg-18.
	1. Guidance on managing ICT Operations (No.1061)
	2. Annual meetings of GISC operators (No.1060)
	3. Operational monitoring of the WMO Information System (“GISC Watch”) (No.1061)
2. Establish a subgroup to review audit criteria and to update the GISC Audit Check List. (ET-WISC-2017)
3. Review the Interim guide on WIS Monitoring and draft amendments to No. 1060 and No. 1061. (ET-WISC-2019, TT-GISC WP8)
4. Establish a subgroup to develop the Guidelines and Regulations for the Exchange of Operational Information. (ET-WISC-2019)
5. Develop Metadata synchronization procedure. (ET-WISC-2019, TT-GISC WP8)
6. Review, further develop and oversee routine WIS monitoring activities.

## tT-GISC STATUS

### Meetings

1. TT-GISC 2014 agreed to hold an annual meeting and requested all GISCs to provide its operational status and to share experience including issues and proposals to improve all GISC’s service level. The status report should include agreed information (template).
	1. TT-GISC meeting have been held annually. After the CBS-16, we had three meetings in Geneva, Casablanca and Offenbach. Following table shows the status of each GISC’s participation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| GISC | Year | 2017 (Nov) | 2918 (Sep) | 2019 (Aug) |
| Venue | Geneva | Casablanca | Offenbach |
| Beijing | attended | attended | attended |
| Brasilia | attended | Remote |   |
| Casablanca | attended | host | Remote |
| Exeter | attended | attended | attended |
| Jeddah | attended | attended |   |
| Melbourne | attended | attended |  document |
| Moscow | Remote | attended | Attended |
| New Delhi | attended | attended | Attended |
| Offenbach | attended | attended | Host |
| Pretoria | attended | attended |   |
| Seoul | attended | attended | attended |
| Teheran | attended |  document | remote |
| Tokyo | attended | attended | attended |
| Toulouse | attended | attended | attended |
| Washington | Remote | attended | attended |

### Activities

1. TT-GISC established Work-Packages (WP) to address issues, which were linked to the OPAG-ISS Work Plan approved by CBS-MG-17 ([https://wis.wmo.int/file=3545](https://wis.wmo.int/file%3D3545)). All leads of WP were very active.
	1. List of Work Packages:
		* WP1: WIS Part C (pending)
		* WP2: User interface
		* WP3: User federation
		* WP4: GISC committee
		* WP5: Metadata consistency
		* WP6: Next step WIS Monitoring
		* WP7: Capacity development
		* WP8: Tech Reg updating
		* WP9: Cache completeness
2. Achievements (2017-2019)
	1. Regulatory Materials update (approved by Resolution 57 (Cg-18))
		* Operationalized GISC Watch officially (No.1060)
		* Establish GISC coordination of activities (No.1060)
		* GISC Watch procedure (No.1061)
		* Procedure for setting the WMO DistributionScopeCode and Escalation procedure if the information provider is confident the Code(No.1061)
	2. Non-Regulatory guidance
		* Establish a webpage in 2018 to make visible the operational guidance/procedures and etc. agreed by GISCs (<https://wiswiki.wmo.int/tiki-index.php?page=TT-GISC-ops>)
		* Updated the guidance by TT-GISC2018 and TT-GISC2019.
	3. Other activities
		* Started GISC issue tracking (ticketing) system (1st May 2018)
		* Started the Monitoring Dashboards (1st May 2018)
		* Agreed GISC Watch handover procedure (TT-GISC2018)
		* Established a webpage to share training materials. Some GISCs provided their training materials and available at <https://wiswiki.wmo.int/tiki-index.php?page=TrainingAids>.
		* Started supporting Upper-Air BUFR issue (Feb 2019)
		* Started a Pilot test for evaluating a new Sync procedure if it can make metadata consistency between all GISCs (Oct 2019). Two metadata GISCs (Seoul and Offenbach) collect metadata from all GISCs, and then other 13 GISCs harvest all metadata from Seoul (http) or Offenbach (https).
		* TT-GISC developed steps to synchronize GISC cache between all GISCs. The first step is migration to WMO Core Metadata Profile 1.3. GISCs agreed to the first step together with their centres in AoR.

## GISC implementation status

1. Implementation status
	1. GISC performance monitoring
		* Ten GISCs are generating/providing their monitoring information in JSON format. Remaining five GISCs are invited to provide their monitoring information in JSON format.
		* All GISC participate GISC Watch practice according to agreed roster (two-week). Acceding to the hand-over procedure and report format, GISCs reporting agreed information including critical issues. The critical issue will be escalated to appropriate body, e.g. P-CBS.
		* As of 1st October 2019, there is one “critical” issue. GISC Jeddah’s WIS service has been off-line. The ticket was issued in December 2018.
	2. GISC-GISC Connectivity and Backup
		1. Each GISC shall connect to other GISCs and flow data and products form centres in its area of Responsibility (AoR) to other GISCs. All GISCs have to complete dataset, called GISC cache, through the GISC-GISC connections. TT-GISC2019 updated the connectivity matrix based on the report from all GISCs.
			* One GISC connected to all other 14 GISCs (completed 100%)
			* Six GISCs connected to 8-12 GISCs (more than 50%)
			* Eight GISCs connected to 2-7 GISCs (less than 50%)
		2. Each GISC shall maintain arrangements with one or more back-up GISCs. Current status of the GISC-GISC backup arrangements are as follows;
			* Six GISCs are operational
			* Nine GISCs are under developing/considering
	3. Training
		1. According to annual report (2017-2019) from GISCs, Six GISCs have provided regular training opportunities for their AoR through workshop/onsite/webinar. Some of other GISCs have a plan to hold a workshop.

## tT-dc STATUS

### Meetings

1. Joint meeting of Expert Team on WIS Centres (ET-WISC) and Task Team on WIS Data Centres (TT-DC), 05-07 March 2019, Beijing, China.
2. Mr Mark Francis revised the work plan the TOR and action items with reference to (ET-WISC-TT-DC-2019 Doc 23).

### Actions to be completed

1. Survey, National Centre‘s looking at capacity and capability ability.(ET-WISC A19/1, link to TT-DC task)

## NEXT PRIORITIES BEFORE 1ST INFCOM

### ET-WISC

1. GISC audit criteria (ET-WISC A19/7)
	1. A draft of Pre-audit questionnaire and GISC Audit Check List has been developed. The changes with the focus being on the change in state from auditing a new GISC to auditing an operational GISC. With various sections edited to reflect this. The draft will be presented to ET-CAC meeting in Octorber, 2019 in Seattle.
2. Guide to WIS Monitoring (ET-WISC A19/2, A19/3)
	1. A draft amendment of No. 1061 (ET-WISC-DC2019-AI(6)-WIS Guide - PART VIII) has been developed and reviewed by ET-WISC-2019 and TT-GISC-2019. The draft is under further improvement based on the discussion of ET-WISC-2019. ET-WISC and TT-GISC agreed to process the proposed guide to WIS Monitoring via ICT-ISS and president of CBS for consideration of EC-72.
3. Guidelines and Regulations for the Exchange of Operational Information (ET-WISC A19/11)
	1. ET-WISC 2019 discussed the need for regulations regarding Operational Information Exchange. TT-GISC-2019 noted, that there is the requirement to develop guidelines on what information to share and what exchange channels to use. TT-GISC developed these rules for GISC to GISC communication as a base to be extended to other centers and for inclusion in the Manual on WIS. (See Annex1)
	2. TT-GISC asks TT-eWIS and ET-CTS to include Operational Information Exchange guidelines into the planned Pub/Sub mechanism for WIS 2.0
4. Metadata synchronization procedure (ET-WISC A19/4)
	1. Updating the WIS Guide WMO 1061 by adding new sub-sections in “APPENDIX D. ANNEXES TO PRARAGRAPHS 7.5.1: GUIDELINES FOR MIGRATING METADATA RECORDS FROM ONE GISC TO ANOTHER”. (see Annex 2)
5. Procedure for Changing Principal GISC
	1. Updating the WIS Guide WMO 1061 by adding the following note to Appendix D, ANNEX TO PARAGRAPH 7.4.1: PROCEDURE FOR CHANGING PRINCIPAL GISC.

*Note. Selection of a back-up GISC is a multilateral agreement between the principle GISC, the centre and the back-up GISC. Changing of principal GISC should include coordination with new and old principal GISC as well as with new and old backup GISC.*

1. New service monitoring (including NC/DCPC Monitoring).
	1. Survey, National Centre‘s looking at capacity and capability ability.(ET-WISC A19/1, link to TT-DC task)
	2. Next step WIS Monitoring (TT-GISC WP6)

### TT-GISC & GISC operation

1. TT-GISC
	1. Metadata consistency
		* GISCs change metadata harvester (harvest from all GISCs to Seoul/Offenbach)
		* WP5 monitors the status of metadata synchronization and evaluates effectiveness of a new harvesting procedure.
	2. Cache completeness
		* WP9 Promotes step-1 (migration to WMO Core Metadata Profile 1.3) and move to next steps.
		* GISCs migrate to WMO Core Metadata Profile 1.3
		* TT-GISC suggested to seek permission to deprecate WMD profile 1.2, and have TT-GISC migrate existing 1.2 metadata to version 1.3
	3. Review Training Aids page and training materials
		* GISCs provide training materials
		* WP7 reviews training materials and improve Training Aids page
	4. TT-GISC ToRs
		* Report to ICT-ISS on the position of GISCs relating to constituent body reform structure and proposed TOR. (see Annex 3)
2. GISC operation
	1. There are some room to improve service level of GISC operation. GISC operators, who have not started following key actions, are requested to take actions as soon as possible.
		* to provide monitoring information in JSON format
		* to provide training opportunities to centres in its AoR
		* to provide annual status report

## References

[1] FINAL REPORT THE JOINT MEETING OF CBS EXPERT TEAM ON WIS CENTRES (ET-WISC) AND TASK TEAM ON WIS DATA CENTRES (TT-DC) , 05-07 March 2019, [http://wis.wmo.int/file=5463](http://wis.wmo.int/file%3D5463)

[2] FINAL REPORT OF THE MEETING OF TT-GISC 26-29 AUGUST 2019, [http://wis.wmo.int/file=5644](http://wis.wmo.int/file%3D5644)

## Recommended Text

1. Joint meeting of Expert Team on WIS Centres (ET-WISC) and Task Team on WIS Data Centres (TT-DC) was held during 05-07 March 2019 in Beijing, China. The decisions and actions from the meeting are in the final report ([http://wis.wmo.int/file=5463](http://wis.wmo.int/file%3D5463)).
2. TT-GISC meeting have been held annually. TT-GISC-2019 was held during 26-29 August, 2019 in Offenbach, Germany. The decisions and actions from the meeting are in the final report ([http://wis.wmo.int/file=5644](http://wis.wmo.int/file%3D5644)).
3. **GISC audit criteria**. ICT-ISS noted that ET-WISC has developed a draft of Pre-audit questionnaire and GISC Audit Check List, and will present the draft to ET-CAC meeting in October, 2019 in Seattle.
4. **Guide to WIS Monitoring**. ICT-ISS noted that a draft amendment of No. 1061 (ET-WISC-DC2019-AI(6)-WIS Guide - PART VIII) has been developed, and agreed to submit it to president of CBS for consideration of EC-72 when the improvement done by ET-WISC and TT-GISC.
5. **Guidelines and Regulations for the Exchange of Operational Information**. ICT-ISS noted that TT-GISC developed the rules for GISC to GISC communication as a base to be extended to other centers and for inclusion in the Manual on WIS (See Appendix A). ICT-ISS asked TT-eWIS and ET-CTS to include Operational Information Exchange guidelines into the planned Pub/Sub mechanism for WIS 2.0
6. **Metadata synchronization procedure**. ICT-ISS noted the proposals on updating the WIS Guide WMO 1061 by adding new sub-sections in “APPENDIX D. ANNEXES TO PRARAGRAPHS 7.5.1: GUIDELINES FOR MIGRATING METADATA RECORDS FROM ONE GISC TO ANOTHER” (see Annex 2). ICT-ISS agreed to submit it to president of CBS for consideration of EC-72
7. **Procedure for Changing Principal GISC**. ICT-ISS noted the proposals on updating the WIS Guide WMO 1061 by adding the following note to Appendix D, ANNEX TO PARAGRAPH 7.4.1: PROCEDURE FOR CHANGING PRINCIPAL GISC. ICT-ISS agreed to submit it to president of CBS for consideration of EC-72

*Note. Selection of a back-up GISC is a multilateral agreement between the principle GISC, the centre and the back-up GISC. Changing of principal GISC should include coordination with new and old principal GISC as well as with new and old backup GISC.*

1. **Cache completeness**. ICT-ISS noted that TT-GISC developed steps to synchronize GISC cache between all GISCs. The first step is migration to WMO Core Metadata Profile 1.3. ICT-ISS agreed to seek permission to deprecate WMD profile 1.2, and have TT-GISC migrate existing 1.2 metadata to version 1.3
2. **TT-GISC ToRs**. ICT-ISS noted that TT-GISC agreed to recommend continuation of TT-GISC as a coordination group for GISCs with the TORs as in Annex 3 to this report. ICT-ISS agreed to submit it to president of CBS for consideration of EC-72.

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# Annex 1. Operational Information Exchange

# Operational Information Exchange

## Background

ET-WISC 2019 installed a Work Package on developing guidelines for the Exchange of Operational Information [1]. At TT-GISC 2018 the scope of the gisc\_ops mailinglist was discussed. This paper takes one step forward in defining guidelines for Operational Information Exchange and wants to open for discussion on the scope and usage of the gisc\_ops Mailinglist. As a result this document defines the guidelines for the communication between GISCs and should then be extended to include NCs and DCPCs.

## Communication Channels

### Individual Email Addresses

Each GISC shall provide two generic Email Addresses. One for contacting Administrators, Operators and the WIS Focal Points of the GISC node, the other for operational contact points (24/7). The list of generic GISC email addresses is maintained by the chair of TT-GISC.

#### TT-GISC discussion and information forumThe Email Addresses for contacting GISC Operators should be included into the primary email group for TT-GISC: cbs-wisc-tt-gisc@wmo.int.

#### GISC Ops Mailing List

The Email Addresses for contacting 24/7 operators as well as the Email Addresses for contacting GISC Operators should be included into the email group gisc\_ops@wmo.int.

### Scope of GISC\_OPS

This email group is to exchange information between GISCs relating specifically to GISC Operations, including GISC Watch. However it is unclear what the notion of specifically to GISC Operations entails. Thus we recommend extending the scope of gisc\_ops to include

* Communication on GISC Watch
* Issues with the core WIS Services (OAI, SRU, Portal, …)
* Issues in data feeds
* Issues in products and production issues like delays for products that are disseminated on the WIS

Also the recipients of gisc\_ops were defined to be GISC Operators. However this term is also different at different GISCs. Thus we recommend to define the gisc\_ops Mailinglist to include GISC Operators, GISC Administrators / Technical Staff and 24/7 operators.

The aim for messages to gisc\_ops is to get to the operations center (or help desk) of each GISC and to be monitored by staff on duty

### RSS-Feed

Each GISC provides an RSS Feed via which changes in Metadata are announced. These feeds can also be used for other announcements like planned downtimes. In order to test operations / usability of the RSS-Feed DWD prepared an RSS service and can make notifications added to the feed subscribable.DWD will announce the RSS service to all GISCs and all WIS centers in GISC Offenbach’s AoR. Interested centers can start subscribing, evaluate and provide feedback on the service.

### Mantis Ticketing System

Problem reports shall be recorded in the GISC Ticketing System. In urgent cases the GISC should also be notified via Email to the operational contact address.

### JSON-Files

Monitoring information is provided in JSON-Files. Responsible for guidance on this channel is the Subgroup on WIS Monitoring.

## Disaster mode

Each GISC should prepare communication channels which are available if the primary channel fails and is unavailable. Such events include Network failures or similar technical problems. The minimum requirement for these disaster communication channels is that the Backup GISC can be notified about the problem which then takes over the communication on behalf of the GISC affected.

One proposal from TT GISC 2016 [1] is to prepare a Gmail account which can be accessed via cellular networks.

## WIS 2.0 messaging

In WIS 2.0 Pub/Sub Messaging Protocols will be used. Using these protocols NCs/DCPCs and GISCs can publish Operational Information directly using Pub/Sub, whereas interested centers can subscribe to notifications they are interested in. Details on these topics should be addressed at TT-eWIS, the Pub/Sub Pilot Project and ET-CTS.

## Information to send

### Meteorological Notifications

Meteorological Notifications are messages, that are currently sent out on the GTS as NOXX// and that are received by all WMO members. These include changes in data feeds / services. As a replacement for METNO Messages we propose using the RSS-feed channel and the following procedure

* Announce changes in data feeds or offered services at least a week in advance by editing the corresponding Metadata
* Changed Metadata is synchronized among GISCs
* Each GISC receiving updated Metadata issues an entry to its GISCs RSS-feed which contains the PID of the updated Metadata
* Interested Centers subscribe to the RSS-feed and take action upon receiving new RSS entries

### System Maintenance notification

System Maintenance notification is currently also sent out as NOXX// Message and are received by system operators. These messages contain announcements on changes that are affecting one of the four GISC functions (data transfer, oai, sru or portal). We propose the following procedure as a replacement for this

* Announce changes relevant to one of the four GISC functions at least a week in advance. NCs and DCPCs shall inform their principal GISC on changes that affect data transfer or the provision of metadata.
* Add information on the update as “System Event Notification” to the RSS-feed of the GISC
* Additionally sent the information to gisc\_ops@wmo.int
* Further information channels can be used if required

### Outage Information including Data availability

Information on unplanned outages in one of the four GISC services as well as information currently sent out to the GTS as NP//// including delays or interruptions in data feeds should be replaced by the following procedure

* Send information on the problem to gisc\_ops@wmo.int
* When the problem is solved send a message, that services are recovered to gisc\_ops@wmo.int

### Problem reports

Issues noted by other parties for a center shall be reported by mail and cc’ed to the GISC on-duty. In case of NCs or DCPCs communication should be performed via the principal GISCs. This is not only limited to WIS issues, but addresses any issue in any WMO Program distributed on the WIS. The GISC on-duty should open a ticket in Mantis to follow-up the issue.

### Relay of Information (GISC -> AoR)Communication from Center to Center should be relayed through the involved GISCs. That is information should be sent by a center to its principal GISC, which either includes this information in its RSS-feed, or forwards the information to the relevant recipients principal GISC.

### Conversely a GISC receiving a message or an RSS-feed update should forward this information to centers in its AoR.

## Examples

### Format of Meteorological Information in RSS-feed:



### Format of Outage Information sent to gisc\_ops

NPXX10 EDZW 010953

DWD OFFENBACH /GERMANY

ATTENTION: ALL RECIPIENTS OF EDZW NUMERICAL FORECAST

WE HAVE TROUBLE WITH THE IN-TIME PRODUCTION OF THE XX UTC MODEL RUN

AFFECTED PRODUCTS: [ICON/COSMO/EWAM/MOSMIX/...]

OUTPUT IS EXPECTED TO BE DELAYED BY 2 HOURS FROM THE USUAL TIME.

SORRY FOR ANY INCONVENIENCE

MET. SERVICEDESK EDZW

# ANNEX 2. Updating the Guide to WIS (No. 1061) – APPendix d. annexes to praragraphs 7.5.1: guidelines for migrating metadata records from one gisc to another

### Adding new sub section on WIS GUIDE

ET-WISC-2019 recommended updating the WIS Guide WMO 1061 by adding in section “2. Operational guidelines” the following recommendations in new sub-sections:

*2.4 Harvesting GISC sets*

*In order to ensure metadata catalogue consistency between GISCs, the following actions are recommended:*

1. *GISC must do an incremental harvesting of foreign GISC sets every 12 hours.*
2. *GISC shall perform a full re-harvest of all GISC sets every 6 months. All centers are asked to delete foreign Metadata sets and refetch them from the originating centers using a full harvest. Afterwards differences between the local copy and the original version have to be addressed.*
3. *Each GISC should monitor it’s local synchronization status at least on a weekly basis and address issues causing desynchronization either local or in discussion with the Originating Center as soon as appropriate*
4. *All GISCs should be notified if a general desynchronization issue is noticed*

### Deleted records

ET-WISC-2019 recommended updating the WIS Guide WMO 1061, section “2. Operational guidelines”, sub section 2.2.1 Deleting from GISC by adding the following recommendation:

*WISOAI repositories must support deleted records. TT-GISC shall check that OAI-PMH repositories keep track of ‘deleted’ records. the datestamp must be the date and time that the record was deleted, and the OAI header must contain an attribute status=”deleted” (i.e., <header status=”deleted”>). The OAI header might look like this:*

*<header status=”deleted”>*

*<identifier>urn:x-wmo:md:int.wmo.wis::FADL41EDZH </identifier>*

*<datestamp>2018-08-06T07:12:11Z</datestamp>*

*<setSpec>WIS-CATALOGUE</setSpec>*

*<setSpec>WIS-GISC-OFFENBACH</setSpec>*

*<setSpec>WIS-DE</setSpec>*

*</header>*

# Annex 3. Expected Terms of Reference for TT-GISC

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| (a) | Review and further develop the technical and operational specifications for the components and interfaces of WIS Centres and criteria for interoperability, certification and Quality Management of WIS Centres |
| (i) | Coordinate the functions and interoperability of GISCs, including security, user management and metadata, collection and distribution catalogues to support GISC operations in backup mode and continue to develop the basic services of GISCs to take advantage of new information and communication technologies and practices |
| (ii) | Coordinate change and lifecycle management of GISC technologies and services and those of WIS centres |
| (b) | Review and develop the relevant aspects of  the Manual on WIS (WMO-No 1060), the Guide to WIS and associated informal guidance to better meet the needs of Members |
| (c) | Review, further develop and oversee WIS monitoring activities, including those aspects of monitoring relating to the effectiveness of information exchange on behalf of the WWW and other Programmes, and take action to address issues that are identified by monitoring |
| (i) | Review, develop and coordinate the technical specifications for GISC monitoring |
| (d) | Review, develop and coordinate recommended practices and guidance on management of and access to operational information related to exchange of information through the WIS |
| (e) | Provide coordination and collaboration mechanisms for supporting the implementation and operation of WIS Centres |
| (f) | Advise the technical commissions and partner organizations on roles, responsibilities and implementation of WIS Centres |
| (i) | Assist WMO Members' centres in implementing and maintaining compliant WIS interfaces and functions in NCs and DCPCs |
| (g) | Identify implementation and operational issues requiring the urgent consideration of the ~~OPAG on ISS~~ Standing Committee on Information Management and Technology (SC-IMT). |