WORLD METEOROLOGICAL ORGANIZATION

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EXECUTIVE COUNCIL WORKING GROUP
ON WIGOS AND WIS

SUBGROUP ON THE WMO INTEGRATED OBSERVING SYSTEM (SG-WIGOS)

Second session

GENEVA, 19 – 23 OCTOBER 2009

EC-WG/SG-WIGOS-2/Doc. 4.1.1

(14.IX.2009)
Revised version (13.XI.2009)

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ITEM: 4.1

Original: ENGLISH

STATUS OF THE WIGOS PILOT PROJECTS

Pilot Project I
GAW-WDC

Part: Improvement of Interoperability of GAW World Data Centres with WIS and Establishment of Prototype Services to Facilitate User Access to GAW Data

(Submitted by J. Klausen, on behalf of the GAW Expert Team on World Data Centres)

Summary and Purpose of Document

This document contains the information on the progress and main issues related to the GAW Pilot Project, WDC part.

ACTION PROPOSED

The session will be briefed on the progress of the GAW-WDC WIGOS pilot project, experiences gained, problems occurred, and project implementation constraints.

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IMPROVEMENT OF INTEROPERABILITY OF GAW WORLD DATA CENTRES WITH WIS AND ESTABLISHMENT OF PROTOTYPE SERVICES TO FACILITATE USER ACCESS TO GAW DATA

PROGRESS REPORT OCTOBER 2009

REFERENCES

EXECUTIVE COUNCIL WORKING GROUP ON WMO INTEGRATED GLOBAL OBSERVING SYSTEM AND WMO INFORMATION SYSTEM, Second Session, Geneva, Switzerland, 6-8 May 2009, FINAL REPORT:

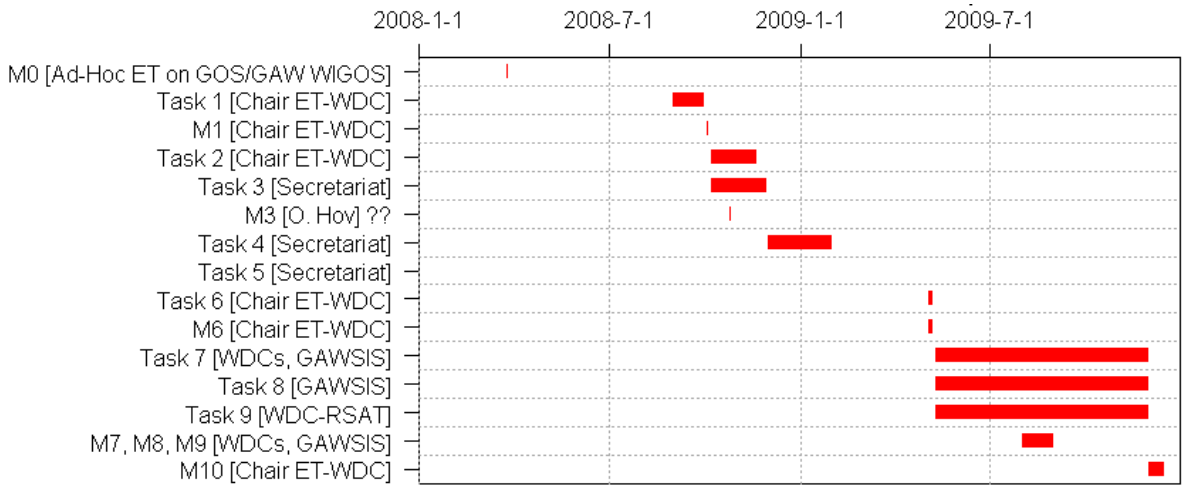
8.1.6 It was noted that the GAW Pilot Project added a component of "Improvement of Interoperability of GAW World Data Centres with WIS and Establishment of Prototype Services to Facilitate User Access to GAW Data".

8.1.8 EC-WG/WIGOS-WIS supported two new Pilot Projects, i.e. "The Global Space-based Inter-Calibration System Pilot Project for WIGOS (GSICS Pilot Project)"; and "The Project for the implementation of the GCOS Reference Upper-Air Network" (GRUAN Pilot Project). ECWG/WIGOS-WIS noted that the new projects as well as a new component of the GAW PP would not require substantial additional resources and that they would add value to the process and contribute to NWP and climate monitoring, and improve documentation.

MEETING OF THE Expert Team on WORLD DATA CENTRES, WMO, Geneva, Switzerland, 4 May 2009, MINUTES:

4 The ET-WDC pilot project proposal contains essentially three parts as follows:
Part 1: Implement and expose ISO/WIS-compliant representations of metadata for the data archived in the WDCs. […] The proposal leaves open the choice of who does it at the WDC and who does it through GAWSIS.
Part 2: Prototype client tool to facilitate extraction of GAW data across multiple WDCs. […] The decision is to […] develop a simple demonstrator for a restricted but useful set of complementary measurements, e.g. in-situ SO_2, O_3, aerosol chem. composition, aerosol physical properties and RH. ET-WDC and the Secretariat will be given a chance to review the resulting prototype before going public.
Part 3: Toolkit providing details of satellite overpasses, trajectories etc. to help increase use of data. […] WDC-RSAT is expecting to take 2-3 years so will have to extrapolate as it won't have finished – which is, however, also true for the others. Therefore, pilot projects are advised to report on progress and problems encountered rather than providing a show and tell on finished products.

GOS-GAW Pilot Project (PP) Proposal, Improvement of Interoperability of GAW World Data Centres with WIS and Establishment of Prototype Services to Facilitate User Access to GAW Data (WDC-PP):



M0	Request to develop a WIGOS GOS/GAW pilot proposal out of ET-WDC [Ad-Hoc ET on GOS/GAW WIGOS]
Task 1	Development of draft proposal [Chair ET-WDC]
M1	Presentation of draft proposal to ET-WDC in SPb [Chair ET-WDC]
Task 2	Iteration and finalisation of proposal, submission to Secretariat [Chair ET-WDC]
Task 3	Inquire about WMO internal funding sources [Secretariat]
M3	Mentioning of proposal at CAS Mgt. Group meeting (Geneva) [L.Jalkanen]
Task 4	Submission of proposal to EC WG WIGOS/WIS [Secretariat]
Task 5	Request WDCs to participate [Secretariat]
Task 6	Presentation of project at JSC meeting (Geneva) [Chair ET-WDC]
M6	Kick-off meeting during GAW2009 (Geneva), finalisation of Timeline/MS [Chair ETWDC]
Task 7	Implementation of ISO-compliant metadata [WDCs, GAWSIS]
Task 8	Implementation of data-extraction/repackaging prototype [GAWSIS]
Task 9	Implementation of enhanced services to global GAW stations [WDC-RSAT]
M7-9	Intermediate review of progress and further training [WDCs, GAWSIS]
M10	Prepare and submit progress report for EC WG WIGOS/WIS [Chair ET-WDC]

Current Status of Implementation of Pilot Project Component

Tasks 1 through 6 as well as Milestones 0, 3, and 6 have been completed. The current timeline for the pilot project component foresees a progress report for the end of 2009 (M10). Milestones 7 through 9 are intended to provide feed-back on progress in the implementation. In view of the need to report on progress for the second session of the Subgroup on WIGOS to be held in Geneva, 19-23 October 2009, this document is considered to constitute M7, M8, M9, and M10.

Part 1: Implementation of ISO/WIS-compliant representations of metadata for the data archived in the WDCs [Task 7]

Implementation at GAWSIS
[input from Jörg Klausen, Stephan Henne, GAWSIS]

GAWSIS (http://gaw.empa.ch/gawsis) receives subsets of the ISO19115 metadata items on a weekly basis from WOUDC (World Data Centre for Ozone and UV, Toronto), WDCGG (Word Data Centre for Greenhouse Gases, Tokyo), WRDC (World Radiation Data Centre, St. Petersburg), EBAS (EMEP data centre, Kjeller, Norway) and WDCA (World Data Centre for Aerosols, presently in transition from JRC Ispra, Italy to NILU, Kjeller, Norway). These metadata are exchanged in the form of plain ASCII flat files that are processed at Empa for ingestion into GAWSIS. Metadata are only considered for observations conducted at stations that are registered with GAWSIS, and for variables that are recommended for observation in the GAW Strategic Plan [WMO (2007), WMO Global Atmosphere Watch (GAW) Strategic Plan (2008 - 2015), GAW Report No. 172 (WMO TD NO. 1384), 104 pp., World Meteorological Organization, Geneva, Switzerland]. As a consequence, a large portion of metadata received from the EBAS system, as well as a fraction of the metadata received from WRDC is presently not processed. The metadata received from WOUDC and WDCGG are processed almost in full (exceptions are data from mobile platforms as well as some ice core data). Due to the transition of WDCA from JRC Ispra to NILU, metadata from WDCA are presently not processed as such, however, GAW-relevant variables that are part of the EBAS system are fully processed. The WDCPC (World Data Centre for Precipitation Chemistry, currently under the auspices of ISWS and NOAA) has not yet been re-established, and therefore, metadata are not automatically exchanged.

Negotiations are underway to include the NDACC metadata in an automated metadata exchange process with GAWSIS.

In addition to metadata focussing on documentation of observations that are received from the data centres, individual users of GAWSIS can change metadata through a web-interface. While users have the possibility to change metadata retrieved from the data centres, the main focus there is on providing additional information that characterizes an entire station as well as the people responsible.

GAWSIS stores metadata in an MS Access database file and provides access to these metadata through an interactive web application. Due to the growing amount of metadata as well as the growing interest in the application, certain limitations of the present architecture have become apparent. These issues are presently being investigated and plans for improvement are being developed.

In order to establish XML representations of ISO19115/WIS-compliant metadata, the metadata of GAWSIS are consumed by scripts developed in R [R Development Core Team (2004), R: A language and environment for statistical computing, edited, R Foundation for Statistical Computing, Vienna, Austria]. A GAWSIS to ISO19115 translation table was established, which required decisions on how to handle information available in GAWSIS that is optional or otherwise difficult to associate with the existing ISO19115 elements. A discussion of and further agreement on these mappings among the data centres is needed. Formally validated XML files resulting from this

process are exposed to the internet at http://gaw.empa.ch/gawsis/xml for consumption by a local implementation of a geonetwork server.

Remaining and open issues are the choice of vocabularies, establishment of a web service, and registration of this web service with WIS. Assistance from the WMO Secretariat is needed for this.

Implementation at WDCGG
[input from Kazuto Suda, WDCGG]

The WDCGG has been identified as a potential DCPC, as done for other international functions of the Japan Meteorological Agency (JMA) [http://www.wmo.int/pages/prog/www/WIS/centres/index.html]. The station-related metadata have been exchanged among WDCs and GAWSIS in the form of plain ASCII flat files so as to facilitate the data contributors' burdens for reporting such metadata and to check consistency with corresponding metadata in GAWSIS.

The WDCGG is to develop the metadata to be made available via WIS to GAWSIS, other GAW World Data Centres and other WIS users, in line with the development of the WIS Implementation Plan and WMO Core Profile of the ISO Metadata standard as well as JMA's GISC project and the pilot project of the GAW Expert Team on World Data Centres.

Implementation at WDC-RSAT
[input from Kathrin Hoeppner, WDC-RSAT]

The World Data Centre for Remote Sensing of the Atmosphere (WDC-RSAT) is the most recent data centre in the WMO-WDC family and will eventually be designated as a Data Collection and Production Centre (DCPC) in WIS. DCPCs maintain catalogues of their holdings and services and appropriate parts of these catalogues are used to update the DAR (Discovery, Access and Retrieval) catalogue of WIS. Cooperation between WDC-RSAT and the German Weather Service (DWD), which is the Global Information System Center (GISC) for WDC-RSAT as DCPC, has started.

In this context WDC-RSAT prepares for the provision of satellite-based atmosphere-related data and information products via the WMO WIS System and promotes the integration into WIS in close cooperation with the WDCs. The focus is on harmonizing metadata and data formats for individual datasets through data access via the WMO WIS system in order to further assist users of data in easy access.

Part 2: Prototype client tool to facilitate extraction of GAW data across multiple WDCs [Task 8]
[input from Stephan Henne, Jörg Klausen, GAWSIS]

The concept has been further developed to explore how users could extract data across multiple WDCs. A first draft implementation currently being developed at Empa will be made available to ET-WDC on a restricted web server for review as soon as mechanisms are in place for extraction from multiple archives. The prototype client provides the user with a list of variables for a selected station for which data are available at WDCs and facilitates the extraction and visualization of the selected data from the archives, by aligning/combining them in one place for further processing by the user. Metadata that describe the data are also accessible to the users. At present, the prototype has not allowed for retrieval of data from multiple WDCs.

Part 3: Toolkit providing details of satellite overpasses, trajectories etc. to help increase use of data [Task 9]
[input from Kathrin Hoeppner for WDC-RSAT]

The aim of the WDC-RSAT toolkit is to connect GAW Global stations to the WDCs allowing access to information on the current condition of the atmosphere on global, continental and regional scale and will, in some cases, be available in near real time.

The functionalities offered to the users through the WDC-RSAT toolkit will be:

- Access to data:
    - Data and information products from satellite-based atmosphere-related measurements (Level 2-4+)
    - Ground-based network's measurements
- Access to selected numerical atmospheric models for the better interpretation of data
- Access to specific services (for example Google-Maps) for the assistance of research activities and to help increase the use of data.

In a first step the GAW Global station Schneefernerhaus/Zugspitze will be connected to the World Data Center for Remote Sensing of the Atmosphere (WDC-RSAT). A project to begin the implementation, funded by the Bavarian State Ministry of the Environment and Public Health, has started on 01 September, 2009.

Help/assistance needed from relevant regional association working bodies and WMO technical commissions, specifically from CIMO and CBS (together with the SAGs for the choice of vocabularies) for further implementation of this Project

- Choice of vocabularies for WIS-compliant metadata representations. Specifically, guidance is needed for
  - naming chemical compounds
  - analytical methods used in atmospheric composition monitoring
  - physical principles used in atmospheric composition monitoring

- Choice of mechanism for harvesting metadata at WDCs and GAWSIS by WIS and assistance with implementation.

- Detailed review of the current implementation of this Project would be helpful.

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