

Minutes of the  
WMO GAW Expert Team on World Data Centres (ET-WDC) Meeting  
World Meteorological Organization, Geneva, Switzerland  
22 – 24 May 2012

## Welcome

Liisa Jalkanen, Chief, RES/ARE/AER, welcomed the ET-WDCs by emphasizing the importance of the WDCs in archiving data that can be used to fulfill the mission of the GAW to better understand the increasing influence of human activity on the global atmosphere. She stressed the need to make data and associated metadata accessible to scientists and to pursue ways to promote the use of GAW data in addressing environmental issues. She reported that the WMO Integrated Global Observing System is looking to the GAW example for adopting and implementing metadata standards.

## 1. Approval of Agenda and List of Participants

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_1.1\\_Provisional\\_Agenda\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_1.1_Provisional_Agenda_ET-WDC_2012.pdf) and  
[http://gaw.empa.ch/et-wdc/docs/2012/doc\\_1.2\\_Participants\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_1.2_Participants_ET-WDC_2012.pdf))

Jörg Klausen welcomed members of the team and reviewed his activities as chair of ET-WDC since the Toronto meeting. He then presented the agenda and emphasized the main objectives of the meeting, namely in relation of the WDCs contribution to WIS and in progressing with common vocabularies. The agenda was adopted with slight re-arrangements.

Van Bowersox was nominated rapporteur.

## 2. Status Report from WDCs

### 2.1. WDCPC

- The PC/SAG is finalizing a precipitation chemistry assessment for publication as a journal article. Completion of this effort is expected in 2012. Plans are for the QA/SAC and WDCPC web sites to link to the extensive supplementary text, tables, figures, and maps generated during preparation of this article.
- Access to precipitation chemistry data and related data quality indicators was demonstrated for the newly designed WDCPC Web site. Three categories of data accessible via the WDCPC Web site were described: (1) The WDCPC links to Web sites where data from extensive networks of stations served by a single laboratory and data management system are stored (e.g. Canadian Air and Precipitation Monitoring Network-CAPMoN). (2) The WDCPC links to the EMEP Web site, which manages data from national labs that serve precipitation chemistry networks in individual European countries; EMEP data are accessed from a map that displays lab and station locations. (3) The WDCPC database stores data from GAW stations that are unaffiliated with a network, such as the CAPMoN or EMEP networks.

- In order to facilitate evaluations of laboratory performance, WDCPC data users have ready access to the results of the biannual laboratory performance studies administered by the QASAC-Americas. This information can be used to select data of acceptable quality.
- Metadata for laboratory and station measurements are captured via tabular drop-down boxes, which are under design and development.

## 2.2. WDCA

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.2\\_Status\\_Report\\_WDCA\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.2_Status_Report_WDCA_ET-WDC_2012.pdf))

- Reviewed status of data collection (2007-2011) and spatial coverage by parameter.
- Highlighted improvements in the performance and search capabilities of the Web page; progress is underway on reworking the WDCA database.
- Reported on the status of the WDCA relocation and related issues of data conversion, quality assurance, and legacy data and on the status of comparing GAWSYS and WDCA records.
- Described improved guidelines for data submission and steps taken to adopt the naming conventions for aerosols implemented by the CF Convention.
- Provided outlook on WIS compliance and collaboration with EU project, ACTRIS.

## 2.3. WRDC

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.3\\_Status\\_Report\\_WRDC\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.3_Status_Report_WRDC_ET-WDC_2012.pdf))

- Presented maps of (1964-2011) radiometry stations and GAW stations with data in the WRDC archive.
- Showed the WRDC data interface page and demonstrated the growing number of users of WRDC data from ~100 in 2001 to ~600 in 2010.
- Enumerated the data checks made at the WRDC and emphasized the importance of using metadata in data interpretation.
- Listed the categories and types of metadata captured at the WRDC and cited several case studies of the use of this information in data interpretation.

## 2.4. WDCGG

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.4\\_Status\\_Report\\_WDCGG\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.4_Status_Report_WDCGG_ET-WDC_2012.pdf))

- Demonstrated the increase in GG data archived at WDCGG and growth in data usage (number of downloads and Web page 'hits').
- Described the substantial progress in ISO-compliant WIS services offered by WDCGG.
- Displayed the updated features on the WDCGG Web site.
- Discussed arguments for and against instituting a user registration.
- Listed WDCGG future plans and prospects.

## **2.5. WOUDC**

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.5\\_Status\\_Report\\_WOUDC\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.5_Status_Report_WOUDC_ET-WDC_2012.pdf))

- Announced that Environment Canada (EC) will continue to manage WOUDC with responsibility moving from the Science & Technology Branch to the Meteorological Service of Canada (MSC).
- Identified the MSC's data management initiative and its relationship with WMO activities, including plans for a DCPC and adoption of metadata standards.
- Listed the issues that WOUDC needs to address in its new home in the EC-MSC.

## **2.6. WDC-RSAT (attendance via telecon)**

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.6\\_Status\\_Report\\_WDC-RSAT\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.6_Status_Report_WDC-RSAT_ET-WDC_2012.pdf))

- Described the data and value-added WDC-RSAT products ranging from raw (level 0) satellite data to global figures that display an analysis (level 4) of the spatial ozone distributions.
- Introduced work on the development of innovative data delivery services, such as mobile phone applications.
- Highlighted recent activities to make WDC-RSAT a one-stop shop for satellite data, including ancillary agreements to ensure accessibility and presentation of data and derived products.
- Listed plans for the next 18 months.

## **2.7. GAWSIS**

([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_2.7\\_Status\\_Report\\_GAWSIS\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_2.7_Status_Report_GAWSIS_ET-WDC_2012.pdf))

- Reiterated the role of GAWSIS in the WMO Global Atmosphere Watch Programme.
- Listed GAWSIS achievements since the May 2010 ET-EDC meeting in Toronto, Canada.
- Reported GAWSIS Web usage statistics spatially and by category.
- Identified challenges (including important networks not formally engaged with GAWSIS and challenges of adopting standardized vocabulary and metadata standards) and opportunities for improvements.

## **3. Review of Action Items since May 2010 Toronto ET-WDC Meeting**

See [http://gaw.empa.ch/et-wdc/docs/2012/doc\\_3.1\\_Review\\_of\\_Tasks\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_3.1_Review_of_Tasks_ET-WDC_2012.pdf) for a detailed list of tasks identified in the GAW Strategic Plan and the progress on these and related tasks identified in teleconference meetings since the May 2010 Toronto ET-WDC meeting.

## **4. Information from WIS on Procedures to Become DCPC (by Timo Proescholdt)**

- Reviewed procedures for DCPC creation and designation.

- Current DCPC status of WDCs: WDC-RSAT and WDCGG have received DCPC designation.

## 5. Establish Metadata Mappings for WDCs

- Reviewed and discussed metadata mapping drafted by WDCA, WDCGG, and WOUDC and agreed on GAWSIS metadata format for WDCs.

## 6. Roadmap for WDCs as DCPCs

- See Action A2012.4

## 7. Standard Vocabulary for Variables

- Introduction to CF Naming  
([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_7.1\\_CF\\_naming\\_ET-WDC\\_2012.pdf](http://gaw.empa.ch/et-wdc/docs/2012/doc_7.1_CF_naming_ET-WDC_2012.pdf))
- See draft of CF mapping of GAW variables and Action A2012.5.

## Recommendations

- 1) Recommend that the WMO Secretariat establish agreements with programs and networks that contribute to meeting the objectives of GAW to provide ongoing access to and sharing of data and metadata from 'contributing stations' to the Global Atmosphere Watch.
- 2) Recommend that the GAW Programme utilize the vocabulary adopted and governed by the CF Convention (cf. <http://cf-pcmdi.llnl.gov/>).
- 3) Recommend that the WMO propose to have a GAW representative in the governing body of the CF Convention.

## Agreed Actions

- (A2012.1) WDC managers will review and update GAWSIS, as needed (ongoing).
- (A2012.2) Hiroshi Koide will review the WOUDC Website, based on the WDC questionnaire (cf. [http://gaw.empa.ch/et-wdc/docs/2008/doc\\_4.1\\_WDC\\_Audit\\_Form-20080903.doc](http://gaw.empa.ch/et-wdc/docs/2008/doc_4.1_WDC_Audit_Form-20080903.doc), by 31 July 2012).
- (A2012.3) Each ET-WDC member will ensure that their respective SAGs address the issue of traceability of observations in the context of data management, given the increasing importance of traceability in assessing climate-related issues (**as soon as practical but no later than the next SAG meeting.**)
- (A2012.4) WDCGG and WDC-RSAT have attained DCPC status. GAWSIS and the other WDCs will pursue DCPC status, as follows:
- a. WDCA is pursuing DCPC status for the NILU EBAS database, the archive for *in-situ* atmospheric composition observations for EMEP, TF-HTAP and EU projects (e.g., EUSAAR, GEOMON, EUCAARI and MACC, amongst others). EBAS hosts all WDCA data and metadata.

- b. GAWSIS will pursue DCPC status (ongoing) and generate WIS-compliant metadata for all observations registered (**by 30 Nov 2012**).
  - c. WRDC and WDCPC will cooperate with GAWSIS for the generation of WIS-compliant metadata.
  - d. WOUDC will pursue DCPC status for Canadian data and will cooperate with GAWSIS for the generation of WIS-compliant metadata.
  - e. Metadata mapping of WDCs to the 'GAW/WIS metadata profile' (see agenda item 5) will be completed **by the end of 2012**.
- (A2012.5) ET-WDC members will utilize CF Convention vocabulary for metadata exchange purposes and will propose additions for consideration/adoption by the CF Convention where CF naming does not exist or is inadequate. In consultation with the SAGs, ET-WDC members will review variables used in their DCs (**by 30 June 2012**) and identify those for which additions to the list of CF standard names are required ([http://gaw.empa.ch/et-wdc/docs/2012/doc\\_7.2\\_CF\\_Mapping\\_for\\_GAWSIS-20120403.xlsx](http://gaw.empa.ch/et-wdc/docs/2012/doc_7.2_CF_Mapping_for_GAWSIS-20120403.xlsx)). The SAGs are requested to endorse suggestions for additional standard names by ET-WDC (**as soon as practical but no later than the next SAG meeting.**)
- (A2012.6) WDCPC Manager, Van Bowersox, will prepare a document that describes checks that will be applied in accepting data in the WDCPC database. This document will be reviewed by the ET-WDC for broader consideration in other WDCs (**by 31 October 2012**).
- (A2012.7) The ET-WDCs will hold three teleconferences per year (tentatively, **September, January, May**) in order to review actions completed and in progress and to address pertinent issues of common interest.

### Issues for Future Consideration

- 1) Should WDCs be restricted to managing (i.e., receiving, archiving, posting, 'linking to') only official GAW data? Who decides what 'official' GAW data are? Can WDCs link to data sets/programs that are not officially GAW participants, provided these data meet QA standards set by SAGs?
- 2) What is the WDCs' responsibility to GAWSIS for reporting updates and metadata?
- 3) Hiroshi Koide (WDCGG) and Markus Fiebig (WDCA) are seeking CONTRAIL (and/or other) aircraft data. Should there be a WDC dedicated to aircraft data or should they be distributed by topic? Are the aircraft programs interested in having a dedicated WDC? Is there a possible candidate?