

MEETING OF THE

Expert Team on WORLD DATA CENTRES

(EC, Toronto, Canada, 13-14 May 2010)

Terminology, Registration and Classification of Stations in GAW*submitted by Jörg Klausen***Background**

The implementation of IGACO [IGACO Theme Team, 2004] calls for the integration of the various spatial and temporal domains of observations, and the WMO Information System (WIS) is concerned with the data management aspects of this. The GAW Station Information System (GAWSIS, <http://gaw.empa.ch/gawsis>) serves among other purposes as a bridge between WDCs and other data centres and maintains master lists of stations known in GAW WDCs and other associated data centres (e.g., NDACC, EMEP, AERONET, etc.). CAS-XV recently recommended establishing GAWSIS as a World Metadata Centre for GAW and DCPC within WIS (ftp://ftp.wmo.int/Documents/SESSIONS/CAS-XV/English/Approved_tracked_changes/app_wp05-3_TRK_en.doc).

Within GAW, the Expert Team on World Data Centres (ET-WDC) is the logical body to consider the existing terminology and work with the WMO Secretariat on developing procedures for classifying existing stations/platforms/sites and acceptance of new ones within the framework of GAW.

In this document, some of the terminology is briefly re-visited, and current practice as well as a suggested procedure for acceptance of new stations in GAW is presented.

Terminology

The terms observatory, station, and site are used more or less interchangeably to describe the entity from which observations are made.

GAW recognizes three station types, namely Global, Regional and Contributing stations. These are defined in the GAW Strategic Plan in Chapter 3 OBSERVING SYSTEMS under 3.1 Surface-based observations [WMO, 2007]. Other measuring platforms explicitly recognized in the GAW Strategic Plan comprise of airborne and satellite-based platforms, while ships are only mentioned in passing. In addition to data from observations from fixed locations, a number of GAW WDCs and associated data centres archive data of mobile platforms, in particular balloon-borne sondes, aircraft, ship, and satellites.

The term platform is used both in the context of mobile observations to describe the vehicle carrying an instrument as well as for fixed, ground-based stations to describe more precisely the location of an instrument. In particular, the term platform height is used to describe the elevation of an instrument relative to the station elevation.

The term fixed refers to stations that do not normally change position with time, while the term mobile refers to platforms that move around.

The above suggests that the terms Global, Regional and Contributing always refer to fixed stations, and that, by consequence, mobile stations/platforms cannot be classified as either

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global, regional or contributing.

Classification of (New) GAW Stations

To the author's knowledge, stations are either not typified by the WDCs or associated data centres, or the station type is provided by the data submitter, or the station type is taken from GAWSIS. Here, the current practice of GAWSIS is described. At present, there are two ways for new stations to become GAW stations and known to GAWSIS:

- 1) If stations listed in the metadata received from the WDCs are not recognized by GAWSIS, the station was usually added manually as a 'Regional' GAW station, and an attempt was made to contact the station for more comprehensive documentation in GAWSIS. This is a rare case, because usually, stations are registered with GAWSIS before data are submitted.
- 2) Individuals including managers of data centres can request registration of stations with GAWSIS using forms provided at <http://gaw.empa.ch/codes.asp>. The form to be filled in is shown in Figure 1. The possible selections under 'Station Type' are
 - Regional GAW Station (cf. Notes below)
 - Contributing GAW Station (cf. Notes below)
 - Non-GAW Station International Programme (cf. Notes below)
 - Non-GAW Station National Programme (cf. Notes below)
 - GAW WDC (this option reserved for use by WDC)

The notes state that for regional and contributing stations, the registration will depend on approval by the Secretariat, and that for non-GAW stations, the registration is effectively a reservation of the 3-letter ID. Upon submission of this form, an e-mail is sent to the e-mail address provided, as well as the GAWSIS manager and the WMO Secretariat. It is important to realize that this request does not automatically register new stations with GAWSIS, and hence with GAW. Thus, these new stations will not show up in GAWSIS like normal stations (searchable, individual station report, etc.). Rather, the immediate consequence is that the station is listed in the table of used station identifiers (<http://gaw.empa.ch/gawsis/codes.tables.asp>) and the chosen 3-letter ID is removed from the list of available IDs.

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Register a New Station and Request Identifier
Please provide basic site information, select the desired code from the drop-down list below and fill in your contact information.

Station Name

Station Identifier

Country

Latitude (Enter as decimal degrees, +nnn.nnnn for North, -nnn.nnnn for South [leave blank for mobile platforms])

Longitude (Enter as decimal degrees, +nnn.nnnn for East, -nnn.nnnn for West [leave blank for mobile platforms])

Ground Elevation meters a.s.l. [enter 0 for ships, leave blank for other mobile platforms]

Time Zone (Enter UTC offset in hours [LST = UTC +/- offset])

Date established (Enter as yyyy-mm-dd)

Current Status

Station Type

Regional and Contributing GAW stations: registration will become effective only after approval of the application by WMO.
Non-GAW Station (Inter)national Programme: reservation of 3-letter ID only; use 'Message' box to explain affiliation.

Station URL (optional)

Site Description

Family Name

First Name

Organization

Country

E-mail

Message (optional)

Figure 1. Current form to request registration of a new station with GAW SIS.

Two open issues exist. First, the procedure for how and when to change the 3-letter ID status from requested to assigned is not defined. Second, the procedure for how and when to change the station type from regional (requested) and contributing (requested) to regional and contributing, respectively, is not defined. In the past, stations were considered regional or contributing by GAW SIS

- as soon as data were submitted to a WDC (see case above)
- if other evidence suggested this change (communication with SAGs, the Secretariat, etc.)

Recently, a more formal procedure was suggested, following discussions between the author and the WMO GAW Secretariat.

Suggested Procedure for Registering New GAW Stations

As a result of discussions between the GAW SIS manager and the GAW Secretariat, the following procedure is suggested for acceptance of new GAW stations:

- 1) Register the new station with GAW SIS using the mechanisms outlined above, and in the case of applying for acceptance by GAW as a Regional or Contributing (or even Global) station, send an application to the WMO Secretariat (Note: the form shown in Figure 1 will be extended to include a link to a document template or to a web application form). The application to WMO (Chief of ARE) will have to address the following aspects:

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- a. General station information:
 - i. station name, coordinates, altitude
 - ii. climate zone, emission/pollution sources in vicinity
 - iii. since what time has the station been operational
 - iv. institution responsible for operation of the station
 - v. other institutions involved in collaboratively operating the station or conducting routine measurements (it is desirable to have collaborative support of the national meteorological service at least for standard meteorological observations)
 - vi. scientific team in charge of atmospheric chemistry observations
 - vii. Other networks to which this station belongs.
 - b. Infrastructure
 - i. Please provide information about station infrastructure (station accessibility by roads, electricity supply). Describe facilities available at the station (e.g. housing, internet access, conditions for operators).
 - c. Observations made at the station (Table)
 - i. Variable, Method, Instrument, Period of measurements, Notes (e.g. if air sample are sent to another lab for analysis)
 - ii. Description of quality assurance and calibration system
 - iii. For meteorological observations, a statement whether these are included in the Standard National Meteorological Observations.
 - d. Long-term commitment and perspective
 - i. Information on financial support of the station (by whom the station is supported now, for how long is funding committed).
 - e. Importance of the station for the GAW programme
 - i. A brief description of the importance of this station in filling gaps in national or regional air chemistry monitoring.
 - f. Contact details of applicant
- 2) The application will be reviewed by relevant experts (e.g., SAG members, ET members) and a confirmation regarding acceptance will be sent to the applicant and GAWSIS no later than 1 month after the application was received.
 - 3) Accepted new stations will be made visible in GAWSIS and will be accessible for completion of the documentation.

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- 4) If no data become available at a WDC or other associated data centre within 14 months after a new station was accepted, its activity status in GAWSIS will be set to 'inactive'.

Alternatively, if data are accepted by a WDC or associated data centre and metadata are received by GAWSIS, a GAWSIS station report will be generated and contact will be made with the station to complete the documentation. In such cases, a station will default to 'Contributing' unless otherwise requested.

Maintaining the Activity Status of GAW Stations in GAWSIS

GAWSIS can easily monitor the submissions of data to WDCs or other associated data centres based on the metadata received. It would be possible to change the activity status of a station in GAWSIS to 'inactive' based on the date of data submitted (e.g., if the most recent data available are more than 2 years old).

IGACO Theme Team (2004), *The Changing Atmosphere, An Integrated Global Atmospheric Chemistry Observation Theme for the IGOS Partnership, ESA SP-1282, GAW Report No. 159 (WMO TD No. 1235)*, European Space Agency, ESA, Noordwijk, The Netherlands.

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.