

OSCAR Series No. 1

OSCAR/Surface User Manual

2019 edition

WEATHER CLIMATE WATER



WORLD
METEOROLOGICAL
ORGANIZATION

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1 INTRODUCTION

The Observing Systems Capability Analysis and Review tool (OSCAR) of the WMO Integrated Global Observing System (WIGOS) Information Resource (WIR) is a key source of information for WIGOS metadata. The surface- and space-based components of OSCAR are intended to record observing platform/station metadata, according to the WIGOS Metadata Standard described in the *Manual on the WMO Integrated Global Observing System* (WMO-No. 1160) and in the *WIGOS Metadata Standard* (WMO-No. 1192), and to retain a record of the current and historical WIGOS metadata. This Manual explains how to use OSCAR/Surface, the surface-based tool.

Section 2 contains guidance on how to search OSCAR/Surface to find information on stations and observation metadata. This section is useful for both registered and anonymous users.

Section 3 contains information on how to manage stations in the system. This section is mainly relevant for registered users, such as station contacts and national focal points.

2 FINDING INFORMATION IN OSCAR/SURFACE

2.1 How to navigate the portal

The homepage of OSCAR/Surface (Figure 1) has been labelled with large red numbers, 1–6, for the purpose of describing the various functionalities of the website. Each number corresponds to a different functionality as follows:

The screenshot shows the OSCAR/Surface homepage. Red numbers 1 through 6 are overlaid on the image to highlight specific features:

- 1**: Points to the OSCAR logo and title.
- 2**: Points to the navigation menu (About, News, Glossary, FAQ, Links, Support, Feedback, Login).
- 3**: Points to the search bar.
- 4**: Points to the 'Quick access' section, which includes dropdown menus for 'Generate station report by:' (Station name, WIGOS Station Identifier) and 'Generate station lists by:' (Country, Type, Class, Observed variable), as well as a 'Find people by:' dropdown (Contact name).
- 5**: Points to the 'Filter map' section, which includes dropdowns for 'By program / network:' (Program / network) and 'By reporting status:' (Declared, Calculated), and a 'Reporting status' dropdown.
- 6**: Points to the main map area, which displays a world map with station locations. The map includes a legend for 'air', 'land or ocean surface', 'sub-surface', and 'lake or river', and a status legend for 'Operational', 'Partly operational', 'Closed', 'Silent', and 'Unknown'.

The map also shows a scale bar (2000km) and a 'Latest news' section at the bottom.

Figure 1. The OSCAR/Surface homepage

The Home, Search, and Critical review tabs (1)

The **Home** tab allows the user to navigate on the OSCAR/Surface homepage at all times. This functionality can be replicated by clicking on the OSCAR logo at the top of the page.

The screenshot shows the OSCAR/Surface Search page. At the top, there is a header with the OSCAR logo and navigation links: About, News, Glossary, FAQ, Links, Support, Feedback, and Login. Below the header is a search bar with a 'Search' button. The main content area is titled 'Search for stations' and includes a 'Browse by station name' dropdown menu. There are input fields for 'Station name' and 'WIGOS Station Identifier', both with dropdown arrows. A link to 'Search using advanced criteria' is also present. On the left side, there is a sidebar with links to 'Station', 'Instrument', 'Contact', and 'Bibliographic Reference'.

Figure 2. The search page

The **Search** tab opens the search functionality (Figure 2) which allows the user to search the information stored in OSCAR/Surface in a variety of ways:

- (a) **Search for stations** (Figure 5): search by observing-station attributes;
- (b) **Search for instruments** (Figure 14): search by instrument attributes within an observing station;
- (c) **Search for contacts** (Figure 15): search an observing system owner/points of contact;
- (d) **Search for bibliographic references** (Figure 17): search the records of peer-reviewed articles that were published and linked to a station.

The **Critical review** tab is currently not activated as the critical review functionality will be implemented at a later stage.

The top right corner of the webpage (2) in Figure 1 houses the following links :

- (a) **About** OSCAR/Surface: information about the development and history of OSCAR/Surface;
- (b) **News**: an archive of the latest updates of OSCAR/Surface. Relevant news is shown in a dedicated banner;
- (c) **Glossary**: a list of commonly used terms in WIGOS and OSCAR/Surface;
- (d) **Frequently asked questions (FAQs)**: a list of useful questions for the users of OSCAR/Surface;
- (e) **Links**: a list of useful links related to WIGOS and observing systems;

- (f) **Support:** a form requesting contact information from the user, including a box for comments to capture the user's request for technical support and to report bugs, to be submitted to the OSCAR/Surface support and operations team;
- (g) **Feedback:** a form for submitting feedback on content, functionalities, usability and general comments to the OSCAR/Surface operations and development team;
- (h) **Login:** a password-protected access to edit the data contained in OSCAR/Surface.

The Search box (3)

This box allows for a quick text search for stations or contacts. The results are returned in a drop-down menu, as shown in [Figure 3](#), arranged by categories:

- (a) **Search for station**
- (b) **Search for contacts**

The user may access all the search results by clicking on the **View all >>** link in the top right corner of each category.

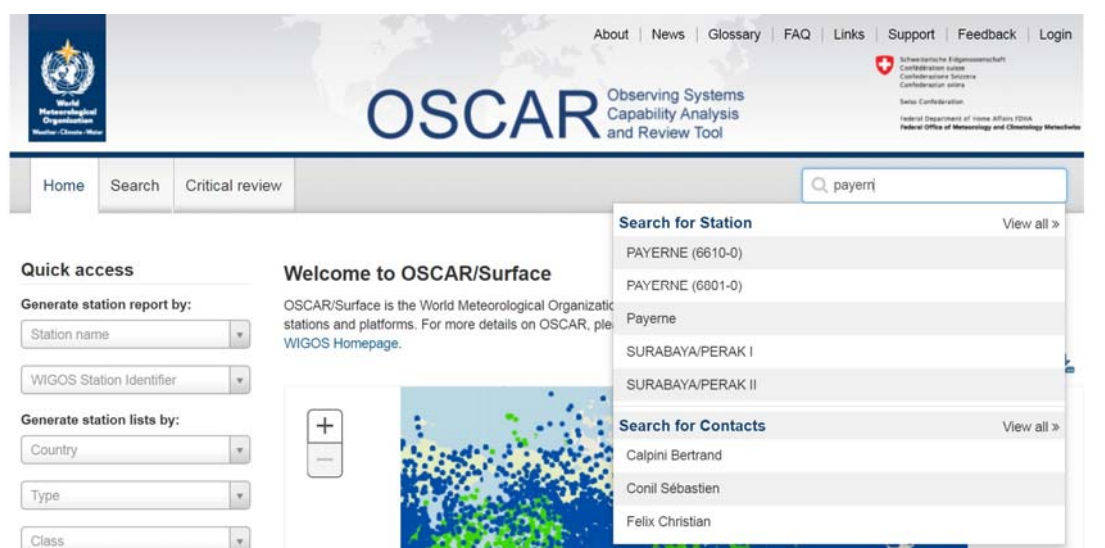


Figure 3. Quick search results

Quick access (4)

The **Quick access** section allows users to search in different categories. Under **Generate station report by**, one can key in the station name or WIGOS station identifier (WIGOS ID) to retrieve/view the station's detailed information. **Generate station lists by** allows users to generate a list of all stations (called a "report" in OSCAR/Surface) in a particular country; lists can also be generated by station type, station class or observed variable. The **Find people by** function enables a quick search for contact names that generates a report with the full contact information stored within OSCAR/Surface.

Filter map (5)

The **Filter map** functionality displays worldwide stations on the map. By default, all WIGOS component observing systems and other components/networks are selected; however, the user can remove check marks from components to view only those stations affiliated with the selected programmes. The reporting status is also displayed on this map.

The reporting status of a station can be one of the following: "operational" (full circle), "partly operational" (star), "closed" (cross), "silent" (open circle) or "unknown" (question mark). The calculated reporting status, as well as the filter by "station type", are currently disabled and will be available in a future release. The declared reporting status is estimated on the basis of the status of the programmes affiliated with the station. Operational and partly operational stations have at least one programme with the corresponding status. In the case of a closed (unknown) station, all programmes are closed (unknown). Programmes of silent stations would have "non reporting", "planned" or "standby" status. By default, only the operational, partly operational and unknown stations are shown on the map. Stations with a different operating status can be added to the map by checking the tick boxes under reporting status.

Map interface and download (6)

[Figure 4](#) shows the map of the observing stations in OSCAR/Surface, coloured according to the following categories: air, land or ocean surface, subsurface, and lake or river, with the symbol indicating the reporting status. The map interface allows individual stations to be selected by clicking on a station on the map. The user can thus zoom in/out using the +/– buttons in the top left section of the map, or by double-clicking on any open space in the map. The mouse can also be used to move the map in order to view the location of interest. Once the desired area is displayed, the user has the option of clicking on an individual station to generate a report of that station information, or of downloading the map in various formats for offline display purposes. The download functionality is accessible via the icon in the top right section above the map. It allows an image to be exported as a PNG, JPG, GIF or an EPS file. Moreover, the station location information can be downloaded in KML format for use in Google Earth.

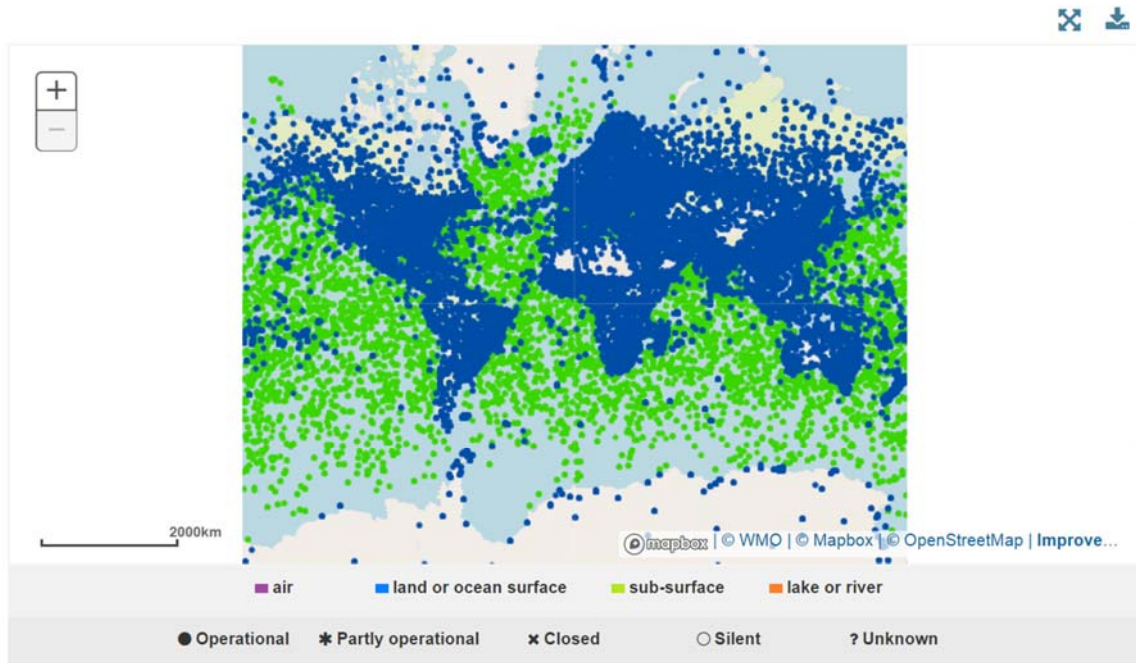


Figure 4. Map of the observing stations

Browse by station name

Station name:

WIGOS Station Identifier:

Search using advanced criteria

Criteria matching: ☒ All ☐ Any Select a declared reporting status:

Search term:

Near Real Time only: ☐

Station type:

<input type="checkbox"/> Air (fixed)	<input type="checkbox"/> Land (on ice)
<input type="checkbox"/> Air (mobile)	<input type="checkbox"/> Sea (fixed)
<input type="checkbox"/> Lake/River (fixed)	<input type="checkbox"/> Sea (mobile)
<input type="checkbox"/> Lake/River (mobile)	<input type="checkbox"/> Sea (on ice)
<input type="checkbox"/> Land (fixed)	<input type="checkbox"/> Underwater (fixed)
<input type="checkbox"/> Land (mobile)	<input type="checkbox"/> Underwater (mobile)

Station class:

<input type="checkbox"/> Agricultural meteorological station	<input type="checkbox"/> Radiation station
<input type="checkbox"/> Aircraft meteorological station	<input type="checkbox"/> Sea profiling station
<input type="checkbox"/> Automatic weather station (AWS)	<input type="checkbox"/> Surface land meteorological station (SYNOP)
<input type="checkbox"/> Climatological station	<input type="checkbox"/> Surface marine meteorological station (SYNOP)
<input type="checkbox"/> Cryosphere station	<input type="checkbox"/> Upper-air / PILOT station
<input type="checkbox"/> Precipitation station	<input type="checkbox"/> Upper-air / Radiosonde station
<input type="checkbox"/> Radar wind profiler station	<input type="checkbox"/> Weather radar

Program / network affiliation:

WMO Region / Country:

Organization:

Variable:

Figure 5. The search for stations page

2.2 How to search for stations

The **Search for stations** page, as shown in [Figure 5](#), is accessible via the **Search** tab (see [Figure 2](#) above) and is for users with prior knowledge of the station. The station name can be found by clicking on the drop-down menu next to **Station name** (under the option **Browse by station name**). Alternatively, other search criteria may be used to narrow down the results to stations likely to have the required attributes. These criteria are available under the option **Search using advanced criteria**:

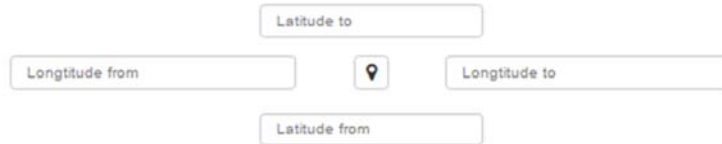
- (a) **Criteria matching:** possibility of choosing between all or any. If all is chosen, the results will show only stations that fulfil all the criteria selected. If any is chosen, the results will show all stations that meet at least one of the criteria. For some of the criteria, several options can be chosen, for example for the variable. In this case, a station fulfils the criterion when one of the options is true for the station (independent of the choice for **criteria matching**);

- (b) **Select a declared reporting status:** provides a list of reporting statuses;
- (c) **Search term:** useful when the user recalls only part of the station's name;
- (d) Checking the box for **near-real time only** allows only stations with data available in near-real time to be listed;
- (e) **Station type:** shows the type of station at which an observation is made, considering location and mobility;
- (f) **Station class:** corresponds to the most frequently used attributes for different sorts or purposes of stations. A definition of the station class will appear when the cursor is moved over it;
- (g) **Programme/network affiliation:** by clicking on the list icon, the user can see a menu of WMO Programmes. The **X** button removes the selections from the search criteria;
- (h) **WMO Region/Country:** provides a list of WMO regional associations and of Members within each association;
- (i) **Organization:** provides a comprehensive list of supervising organizations for all stations in OSCAR/Surface;
- (j) **Variable:** by clicking on the list icon, the user can select one or more variables from the following domains:

- (i) Atmosphere
- (ii) Earth
- (iii) Ocean
- (iv) Outer space
- (v) Terrestrial

Each variable has its own subcategories to further refine the search to the level of detail of the actual physical variable being measured;

- (k) **Climate zone:** a climate zone can be selected from a drop-down menu with a list of the Köppen classification types;
- (l) **Geographic coordinates:** there are text boxes that allow the user to select a geographic range including "Longitude from" and "Longitude to", as well as "Latitude from" and "Latitude to". It is possible to insert only a single value here. For example, inserting 66 into "Latitude from" will show stations roughly above the polar circle. Only numerical entries are valid for these boxes. Attempts to enter text and submit the search will result in the following error message: "The submitted data was invalid. Please look for red widgets in each section for more details". Also noteworthy is the pin icon in the middle of the text boxes ([Figure 6](#)), which allows the user to manually draw a box around the region of interest ([Figure 7](#));



A search form for geographic coordinates. It consists of four text input fields arranged in a square pattern around a central location pin icon. The top field is labeled 'Latitude to', the bottom 'Latitude from', the left 'Longitude from', and the right 'Longitude to'.

Figure 6. Geographic coordinates search

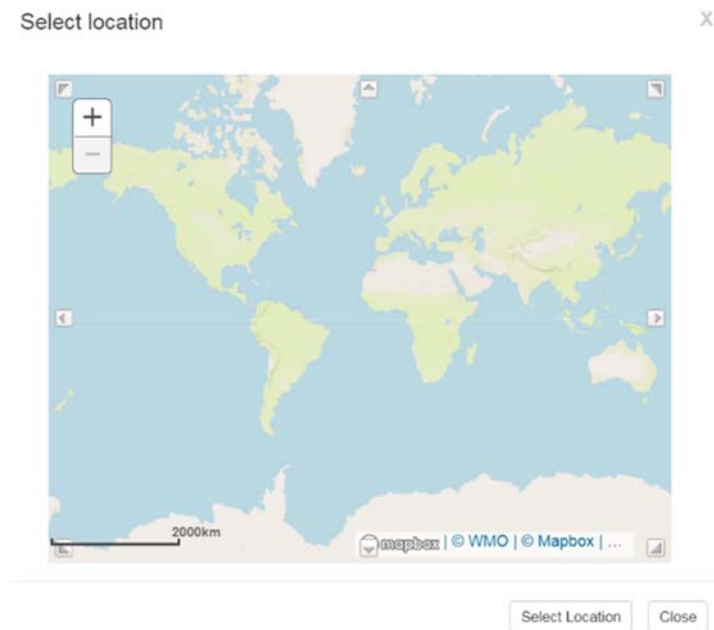


Figure 7. Drag and draw selection

(m) **Elevation**: the elevation range of the stations can be entered in metres in the text boxes.

At the bottom of the page, on the right-hand side, there are two buttons: **Search**, to submit the search criteria, and **Reset**, to clear all prior entries.

Note that the search has no time dimension, so the search results will not be time-specific. Searching for a specific area, for example, will return all stations that once were located in this area. Or searching for stations measuring a specific variable will also return all stations that once measured that variable. The search is no reflection of the current status of stations.

The result of the search is given as a list of stations (if more than one station is found for the search criteria), which contains the minimum metadata for station identification. Each station can be easily found on the map by using the binocular icon. The list of results can be downloaded using the dedicated icon. Available formats are .csv and .xml. The exported files contain all metadata included in the station characteristics, allowing for additional sorting and filtering of the search results.

2.2.1 *How to find specific observing systems, such as radars, radiosondes and precipitation stations*

One way to find stations using specific observation technology is to search by network affiliation. Another way is to use the station class. Note that in this case the search criterion becomes apparent when hovering over the station class. Alternatively, the user can also create specific criteria using the options of the advanced search, such as variables, etc. As with all information in OSCAR/Surface, the accuracy of the search results depends heavily on the quality of the metadata inserted into the system. Table 1 lists different options for finding commonly searched observing technologies:

Table 1. Examples of searches for specific observing technologies

<i>Technology</i>	<i>Search by</i>
Weather radar	<ul style="list-style-type: none">- Network affiliation: WRO (under WIGOS/GOS/GOS Other elements)- Station class: Weather radar (note that this station class is defined by network affiliation, so the search result will be identical to the first option)
Radiosondes	<ul style="list-style-type: none">- Network affiliation: RBSN(T) or RBSN(ST) (under WIGOS/GOS/GOS Surface networks/RBSN)- Station class: Upper-air/Radiosonde station- Variables: vertical profile of pressure, temperature, humidity or upper wind
Precipitation station	<ul style="list-style-type: none">- Variables: amount or intensity of precipitation- Station class: Precipitation station

2.2.2 *Station report*

A station report is the result of a station search which displays all station details ([Figure 8](#)), including the history of changes as documented in OSCAR/Surface. The station report is organized in the following five sections: Station characteristics, Observations/ measurements, Station contacts, Bibliographic references and Documents, all of which can be expanded by clicking on the respective buttons. The station report can be downloaded as a pdf file. A representation of the station can also be downloaded as a WMDR XML file. Note that the latter can be used to apply changes and re-upload the information instead of applying changes to a station directly via the graphical user interface. However, many XML files will not validate against the XML Schema, because of missing metadata elements. These are indicated at the beginning of the file and will have to be provided for the XML file to validate.

SILUTE (Lithuania)

in WMO Region VI - Europe

Last updated: 2016-04-28

> Station characteristics
> Observations / measurements
> Station contacts
> Bibliographic references
> Documents

Figure 8. The main sections of the station report

2.2.2.1 Station characteristics

The **Station characteristics** section (Figure 10) gives an overview of the situation of the station: country, coordinates, WIGOS ID and terrain properties. All changes that are inserted in OSCAR/Surface are recorded and can be shown here, together with the date of the changes, when expanding the field in question, as shown in Figure 9.

Note: A standard text was added to the station description when the station was initially created. This text explains that the station was created on the basis of the information in *Weather Reporting* (WMO-No. 9), Volume A. This text should be removed once the station has been reviewed by the responsible station contact.

Coordinates: ▼ 50.025911°N, 8.521294°E, 99.7m, Survey

Latitude	Longitude	Station elevation	Geopositioning method	From
50.025911°N	8.521294°E	99.7	Survey	2014-10-22
50.04489°N	8.597888°E	112	Survey	1984-07-01

Figure 9: Record of the station coordinates in the station characteristics section

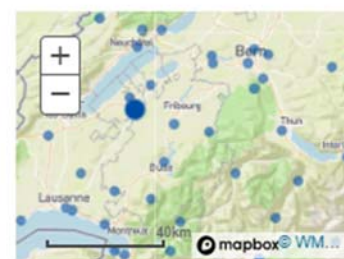
Payerne (Switzerland) Part of Payerne (PAYERNE (6610-0)) in WMO Region VI - Europe

Last updated: 2013-04-03

Station characteristics

Name: Payerne
Station alias:
Date established: 1968-09-20
Date closed:
Declared reporting status: Operational
Calculated reporting status: Operational
Station type: Land (fixed)
Station class(es):
WIGOS Station Identifier(s):

WIGOS Station Identifier Primary
0-20008-0-PAY ☒



WMO region: VI - Europe
Country / Territory: > Switzerland
Coordinates: > 46.8129081728°N, 6.943500042°E, 490m
Time zone: > UTC+1
Supervising organization:
Station URL: www.meteoswiss.admin.ch/web/en/weather/ozone_layer.html
Other link (URL):

Site description:
> The site is located on the premises of the national weather service, MeteoSwiss, about 1 km south-east of the small rural town of Payerne. The main road circumventing Payerne passes several hundred meters away south-east of the site. NDACC station: mwave, o3sonde
Climate zone:
> Warm Temperate - Fully humid - Warm summer

Predominant surface cover:
Surface roughness:
Topography or bathymetry:
Population in 10km / 50km (in thousands):
Station / platform event logbook:

Photo gallery



Programs / network affiliations:

Program / network affiliation	Program specific ID	Status	Calculated status	Declared status	From	To
GAW Regional	PAY	Approved	Operational	Operational	1968-09-20	
EMEP	CH0002R	Approved	Operational	Operational	1968-09-20	
BSRN	PAY	Approved	Operational	Operational	1968-09-20	
NDACC	PAYERNE	Approved	Operational	Operational	1968-09-20	
EARLINET	Payerne	Approved	Operational	Operational	1968-09-20	

Figure 10. Station characteristics

2.2.2.2 WIGOS station identifier

In OSCAR/Surface, stations are identified by the WIGOS station identifier (WIGOS ID). WIGOS IDs are the official identifiers and have to be used for all WMO stations from July 2016 onwards. An example of WIGOS ID is shown in [Figure 11](#). The first “0” indicates that the identifier represents a station, “376” is the ISO country code for Israel and the second “0” is the issue number. Please see the *Guide to the WMO Integrated Global Observing System* (WMO-No. 1165) for more details.

WIGOS Station Identifier(s):	WIGOS Station Identifier	Primary
	0-376-0-613	<input checked="" type="checkbox"/>

WMO region:	VI - Europe
Country / Territory:	> Israel

Figure 11. Example of WIGOS station identifier

An initial WIGOS identifier was created for each station and imported into OSCAR/Surface. For stations in *Weather Reporting* (WMO-No. 9), Volume A, the WIGOS ID is based on the station identifier allocated to the station by the country, as given in Volume A. In the case of radar stations and those belonging to the Global Atmosphere Watch or to the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) in Situ Observations Programme Support Centre (JCOMMOPS), the WIGOS ID is based on the identifier used in these systems. Such identifiers should not be changed as they provide a historic reference. The administrator should, however, be contacted if the identifier needs to be changed.

Multiple identifiers can be attached to a station to reflect affiliation with different networks or programmes or when a station had more than one identifier in the past. There are two ways to assign additional identifiers to a station: (a) they can be added under “WIGOS Station Identifier(s)”; (b) the section **Programmes/network affiliation** can be edited ([Figure 12](#)). Here, the programme or network to which the identifier is affiliated must also be specified.

Program / network affiliation	Program specific ID	Status	Calculated status	Declared status	From	To
GAW Global	MHD	Approved	Operational	Operational	1958-01-01	
EMEP	IE0031R	Approved	Operational	Operational	1958-01-01	
AGAGE	Mace Head	Approved	Operational	Operational	1958-01-01	
ESRLCCG	MHD	Approved	Operational	Operational	1958-01-01	
AERONET	Mace_Head	Approved	Operational	Operational	1958-01-01	

Figure 12. Programmes/network affiliation section

2.2.2.3 Observations/measurements

This section shows all observations, past and present, that are or were taken at the station, together with details of the instrument used, data processing applied and the observation schedule. If the observations are or were made under a programme/network, this affiliation and the identifier are also displayed here.

Observations are structured as data series and deployments, where a data series consists of one or more deployments. Measurements at the station are grouped by data series. A data series is defined by the observed variable, the geometry of the observation (point, profile, etc.) and the programme to which the measurement contributes.

The deployments describe the equipment used, its configuration and the period of time in which it is used. Deployments also describe segments of time series that can be considered homogeneous with respect to methodology and instrumentation.

An example of data series and deployment can be seen in [Figure 13](#).

▼ Atmosphere > Humidity

▼ Humidity (at specified distance from reference surface) - [Geometry: Point]

Variable:

Humidity (at specified distance from reference surface)

Geometry:

Point

Programs / network affiliations:

GOS

CLIMAT(C)

RBSN(ST)

Last updated:

On 2019-07-02 by Thompson Stuart

▼ Deployments

> From 2009-08-19 to 2015-09-29

▼ From 2015-09-29

Source of observation:

Instrumental automatic reading

Distance from reference surface (m):

1.5m from local ground

Exposure of instrument:

Class 1

Representativeness of observation:

microscale (< 100 m)

Organization:

UK Meteorological Office

Near Real Time:

Yes

Data communication method:

Data/landline

Certified observation:

Yes

▼ Instrument characteristics

Manufacturer:

Vaisala

Model:

HMP110

Observing method:

Thin film capacitance

Coordinates:

Latitude	Longitude	Elevation	Geopositioning method	From
60.7483333333°N	0.8555555556°W	15m	GPS	1983-01-01

Data Generation

> Period covered: 2015-09-29

Figure 13. Observations/measurements section with deployments expanded

The substitution of an instrument or major changes to the properties of a deployment due to the instrument relocation should always result in the closure of the current deployment and opening of a new one.

2.2.2.4 Station contacts, bibliographic references and documents

These three sections contain further information on the station. Station contacts include various roles such as operators, national focal points or maintenance technicians.

2.3 How to search for instruments

OSCAR/Surface stores the instrument metadata according to the WIGOS Metadata Standard. A user can thus search the data for manufacturer, model, serial number and period of observation. [Figure 14](#) shows the further search options available by clicking on the **More search options** button, which reveals criteria for the variable, method used, programme/network affiliation, organization, WMO Region or country of the instrument location, climate zone, geographic coordinates and elevation.

Figure 14. Search for instruments – expanded

2.4 How to search for contacts

The **Search for contacts** function is a searchable directory of station owners or points of contact. [Figure 15](#) shows the search options: by name, either by entering the name manually or by using the drop-down menu to browse the entries; the more advanced search uses the contact's country, his or her role within various programmes or regarding the use of the data, and the variables being measured at the station. Contacts can also be found by their role, such as national focal point. A download functionality is also available (CSV, XML).

Figure 15. Search for contacts

2.4.1 How to identify a national focal point for OSCAR/Surface

To find an OSCAR/Surface national focal point, in the **Search for contacts** page open the drop-down menu next to **User role/programme function** and select **National Focal Point**. This opens various new fields where the user can specify the national focal point's **Country of responsibility** or **Programme/network affiliation** (see [Figure 16](#)). Additionally, the roles are revealed when clicking on a person's name. The OSCAR/Surface national focal point is also shown in the station contacts.

Figure 16. Search for a national focal point

2.4.2 How to search for a Program Focal Point for OSCAR/Surface

The contact search can also be used to see a list of all Program Focal Points for OSCAR/Surface. In this case, the advanced search must be used (unfold the search tab) and the **User role/programme function**, **Program Focal Point** must be selected. The search results in a list of all programme focal points with the corresponding programme.

2.5 How to search for bibliographic references

The **Search** tab in OSCAR/Surface allows users to locate any bibliographic references associated with stations (see [Figure 17](#)). Bibliographic references can provide important additional sources of information, in particular regarding technical reports or other literature. If the user knows the author's name or the year of publication, the search can return the stored references (as a BibTex file) corresponding to the matches. A keyword search allows for a wider search of the text of the references.

The screenshot displays the OSCAR (Observing Systems Capability Analysis and Review Tool) web interface. At the top, there is a navigation bar with links: About, News, Glossary, FAQ, Links, Support, Feedback, and Login. The OSCAR logo is prominently displayed in the center. Below the logo, a secondary navigation bar includes Home, Search, and Critical review. A search bar is located on the right side of this bar. On the left side of the page, there is a sidebar with a list of options: Station, Instrument, Contact, and Bibliographic Reference (which is currently selected). The main content area is titled 'Homepage » Search » Reference search'. It features a section for 'Search for bibliographic references' with a 'Criteria matching' dropdown set to 'All'. Below this are input fields for 'Keyword', 'Author', and 'Year' (with 'From' and 'To' sub-fields). 'Search' and 'Reset' buttons are at the bottom right of the search area.

Figure 17. Search for bibliographic references

3 CHANGING INFORMATION IN OSCAR/SURFACE

The following section is intended for national focal points and station contacts. It explains how to access and edit observing station metadata in OSCAR/Surface.

3.1 How to safely test the editing of information

A testing platform of OSCAR/Surface enables users to experiment with all aspects of the system, such as the application programming interface (API), at <https://oscardepl.wmo.int/surface//index.html#/>. The metadata in this test system are overwritten every week, usually on Monday morning at 2 UTC. Users can re-register with the same e-mail address as the one used for the OSCAR/Surface productive system. The testing environment is open to everyone to test edit the OSCAR/Surface platform.

3.2 The authorization and access control module in OSCAR/Surface

Only authorized users can change information in OSCAR/Surface. The administrator, working at the WMO Secretariat, creates the login for the national focal point upon receipt of a nomination from the Permanent Representative. The national focal points can in turn create and delete additional users and associate them with stations within their country. When the national focal point deletes a user, his/her access will be deactivated and his/her name will subsequently not be shown in the user search. However, the user will remain as a station contact in the database for the historical record. The national focal points have the right to edit all stations in their country, whereas other users can edit only stations they are directly associated with. However, the national focal points can both create new stations in their country and add contacts to a particular station, granting them editing rights for that station. National focal points can delegate the role of metadata editor to another contact who will then be able to perform the same functions as the national focal point, without the formal title.

A focal point for a network, such as the Antarctic Observing Network, has the authority to make changes to all stations affiliated with the respective WMO observing system or network. These network focal points are designated by the WMO governing body of the programme or network in question. The role of the network focal point is to ensure that the process of affiliating the station has been followed correctly before approving it in OSCAR/Surface. Note that not all programme/network affiliations are subject to such

approval. For details on how to affiliate a station with a programme/network, see section 3.6. Additionally, network focal points can affiliate existing stations in OSCAR/Surface, which are not yet documented, as part of their network of responsibility. A dedicated functionality (**add programme/network affiliation**) is available under the management tab.

For the maintenance of the Instrument Catalogue in OSCAR/Surface there is also an Instrument Expert role which can be assigned to a contact. Users who have this role are allowed to edit the list of instruments in OSCAR/Surface.

Table 2 details the access rights of the different types of user. [Figure 18](#) shows the hierarchy of roles in OSCAR/Surface.

Table 2. User roles and access rights

Role	Create station	Delete station	Edit station	Create user	Delete/deactivate user	Other functions
Administrator	Everywhere	Everywhere	Everywhere	Everywhere	Everywhere	Make a programme subject to approval
National focal point	For their country	For their country	All stations in their country	For their country	For their country	Delegate their rights to metadata editors
Metadata editors	For their country	For their country	All stations in their country	For their country	-	
Station contact	For their country	-	Only own stations	For their country	-	
Network focal point	Everywhere, - only if affiliated with own network	-	All stations affiliated with their network	For their country	-	Affiliate existing station to their network

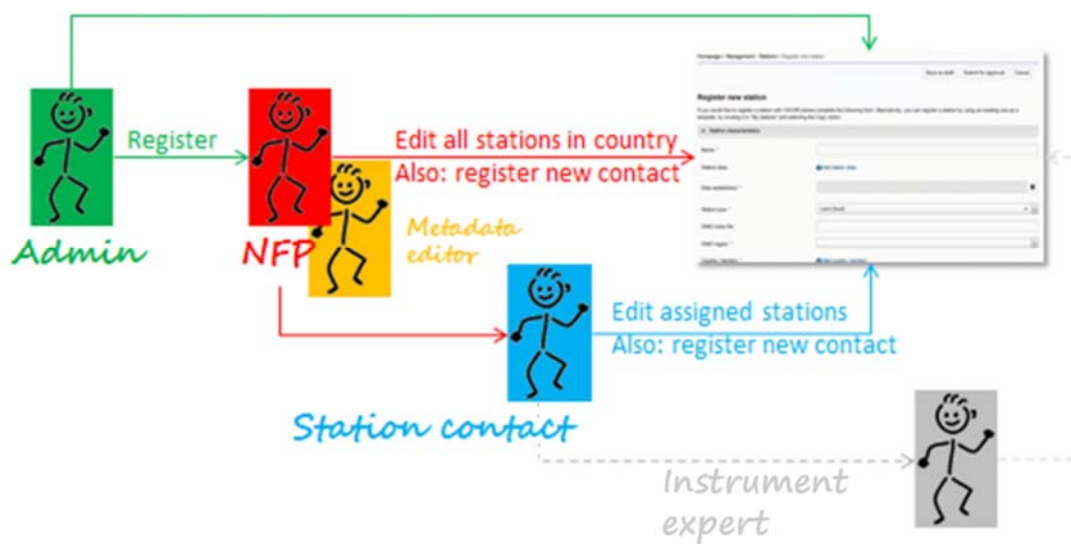


Figure 18. Access and roles in OSCAR/Surface

3.3 How to log on to OSCAR/Surface and register a new user

Users need to be registered to be able to update information in OSCAR/Surface. The registration only has to be done once. In this process, the authorized e-mail address of a national focal point, network focal point or station contact is synchronized with the electronic identity and access management system used by OSCAR/Surface. To complete this initial procedure, click on the **Login** button in the top right corner of the page (Figure 19) and then on **New registration** (Figure 20).



Figure 19. Login for registration of a new user

Figure 20. User registration

The registration consists of the following three steps as triggered by the system:

1. Click on **New registration** (Figure 20);
2. Fill out the form (Figure 21); always use the same email address as displayed in OSCAR/Surface and verify your e-mail account (Figure 22);
3. Request access with your new account (Figure 23);

The registration is now complete (Figure 24).

Figure 21. User registration form

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

eGovernment Identity and Access Management (eIAM)

DE FR IT EN

New registration

i A code has been sent to your e-mail address.

We have sent you an e-mail with a registration code.
Please enter this code below and click "Continue".
luciacap3@gmail.com

Registration code

Resend registration code Cancel Continue

Support
Service-Desk FOITT
Phone: +41 58 465 88 88

Figure 22. Verification of email account

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Office of Meteorology and Climatology MeteoSwiss

DE FR IT EN

Access not possible

i You do not have the access rights for this application. This can be due to the following reasons:

1. This is the first time you want to access this application. Please click the "Request access" button and follow the directions.
2. If you already requested access to this application, the following steps might help:
 - wait until you receive the e-mail that confirms you have access.
 - click the "New login" button and select a different login method because the previously selected login method was not accepted by the application.

Request access

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Confédération suisse
Confederazione Svizzera
Confederaziun svizra

eGovernment Identity and Access Management (eIAM)

DE FR IT EN

Request access

Please fill in all necessary fields. For additional information, please use the comment field. Read and accept the terms of use.
Then click on "Continue".

Surname Test Surname

First name Test Name

Organisation bitte leer lassen

Comment

The number of your identity card or passport n/a

Show Terms of Use
☒ I accept the terms of use.

Cancel Continue

Figure 23. Form to request access with the new user account

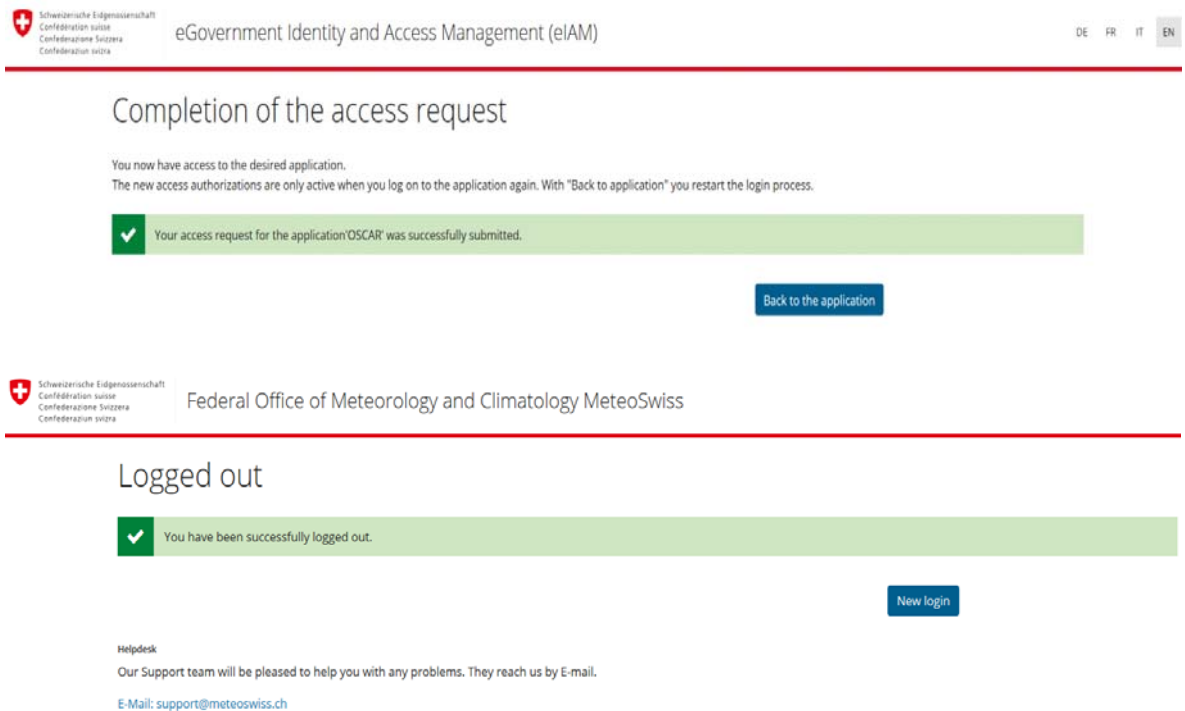


Figure 24. Completion of the registration process

Enter your username and password to log on to OSCAR/Surface (Figure 20).

3.4 How to create a new station

Once logged on to OSCAR/Surface, the **Management** console appears in the main menu. The **Register new station** page can be reached from there (Figure 25).

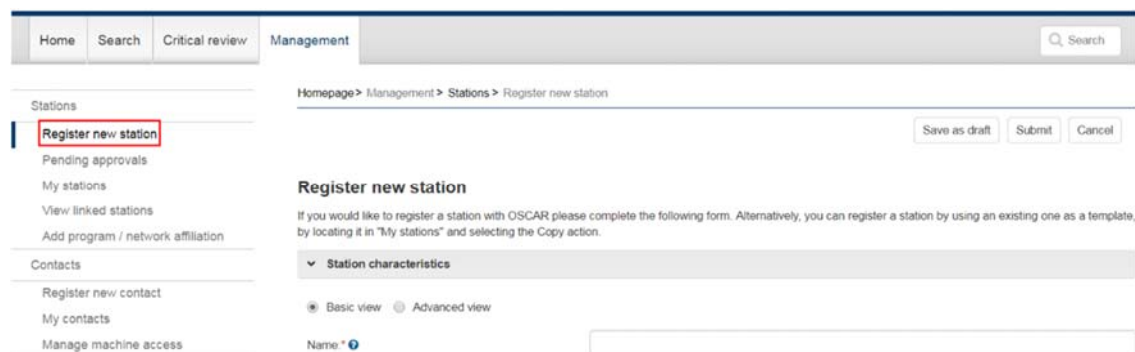


Figure 25. New station registration page

The page is divided into the same five sections as the station report page: station characteristics, observations/measurements, station contacts, bibliographic references and documents. The user is allowed to edit the information contained in each of those sections. Some elements, such as the name of the station, are mandatory (marked with a single red asterisk), and the station cannot be registered unless all mandatory elements have been provided. Should the information be incomplete, an error message appears upon submission, indicating that some elements are missing (Figure 26): the missing fields and section headers are coloured in red. However, it is possible to save the station information already provided as a draft for later editing (only WIGOS-ID and station name are mandatory to save your draft). Other elements are mandatory according to the WIGOS Metadata Standard, but saving station information is possible without providing a value for these elements (marked with double blue asterisks).

The screenshot shows the OSCAR (Observing Systems Capability Analysis and Review Tool) web interface. At the top, there is a navigation bar with links for 'About', 'News', 'Glossary', and 'FAQ'. A yellow error message box in the top right corner states: 'The submitted data was invalid. Please look for red widgets in each section for more details.' Below the navigation bar, the OSCAR logo is displayed. A search bar is located on the right side of the page. The main content area shows a breadcrumb trail: 'Homepage > Management > Stations > Register new station'. Below this, there are three buttons: 'Save as draft', 'Submit', and 'Cancel'. The 'Register new station' section is highlighted, and it contains a sub-section titled 'Station characteristics'. Under this, there are two radio buttons: 'Basic view' (selected) and 'Advanced view'. Below the radio buttons, there is a text input field for 'Name' with a red asterisk indicating it is mandatory. A red warning icon is visible in the bottom right corner of the input field.

Figure 26: Error message indicating missing fields

Ideally the metadata of a station should include all mandatory fields (red and blue asterisks). Note that, if for some reason the metadata information for one of these fields is not known, you can choose the option "unknown" in most cases to circumvent this problem.

3.4.1 How to input a WIGOS station identifier

The WIGOS ID consists of four blocks:

- (a) The WIGOS identifier series (number): for observing facilities it is "0". This is entered automatically by the system;
- (b) The issuer of identifier (number): the ISO 3166-1 numeric country code is used (e.g. Republic of Korea: 410). This is entered automatically by the system depending on the country/territory that was chosen. Note that numeric country codes smaller than 100 will be stripped of the leading zero;

- (c) The issue number: define your own procedure or use "0";
- (d) The local identifier (a set of characters, maximum 16): define your own procedure.

Observing stations that had been allocated WMO station identifiers before the introduction of WIGOS IDs (that is, before 1 July 2016) may continue to use those identifiers. With the launch of OSCAR/Surface, those stations were uploaded in the system incorporating the new WIGOS ID structure using "20000" as the value for the issuer of identifier and the old WMO ID as the local identifier. For example, station Incheon is recorded as "0-20000-0-47112".

Please see the *Guide to the WMO Integrated Global Observing System* (WMO-No. 1165), Chapter 2, for more details.

3.4.2 How to use the quick form for registration of a measurement programme

The registration of a measurement programme using the quick form consist of two steps: (a) the selection of the variables to be added; (b) the input of basic information for each of the variables ([Figure 27](#)). The quick form allows users to search for variables, such as air temperature, within the variable tree (see [Figure 28](#)). It is possible to choose several variables in the first step. For each of the chosen variables, the basic information has to be added, as shown in [Figure 29](#) and [Figure 30](#).

Add measurement program X

1) Select one or more observed variables

Air temperature

- Atmosphere
 - Aerological soundings
 - Aerosol
 - Atmospheric density
 - Clouds
 - Dynamics
 - Gas
 - Humidity
 - Integrated air samples

2) Insert basic information for measurement program

Insert Close

Figure 27. Quick form for the registration of a measurement programme

Add measurement program
X

1) Select one or more observed variables

- Special phenomena
- State of ground
- Temperature
 - Air temperature (at specified distance from reference surface)**
 - Dew-point temperature (at specified distance from reference surface)
 - Extreme temperature (min, max) (at specified distance from reference surface)
 - Temperature profile
- Total Atmospheric Deposition
- Visibility
- Wind
- Earth
- Ocean

2) Insert basic information for measurement program

Insert

Close

Figure 28. Searching for a variable to be added to a measurement programme using the quick form

Add measurement program
X

1) Select one or more observed variables

- Humidity
- Integrated air samples
- Lightning
- POPs
- Past weather
- Precipitation
- Present weather
- Pressure
 - Atmospheric pressure
 - Atmospheric pressure profile**
 - Characteristic of pressure tendency

2) Insert basic information for measurement program

Observed variable *	Geometry *	Program / network affiliation *	Observed since	Observing method	Actions
Temperature profile	Vertical profile x v	+ x			⌵ x
Atmospheric pressure					⌵

Insert

Close

Figure 29. Adding the basic information for a variable in the quick form for the registration of a measurement programme

3.5 Multi-purpose station concept/duplicate stations

OSCAR/Surface is observation-centric, meaning that it focuses on documenting the observations made at the station. The concept of station in OSCAR/Surface is mainly used to describe the physical environment in which the observations take place. Therefore, it is possible that several traditional stations that report with different identifiers to various observing programmes are grouped together in OSCAR/Surface as a single station. Each observation is then affiliated to one or several observing programmes/networks. At the same time, physically identical (co-located) stations may have initially been imported as separate stations into OSCAR/Surface. It is the responsibility of the station operator to decide whether stations should be represented as separate entities in the system. The OSCAR/Surface help desk provides assistance in case of doubt or difficulty with this.

3.6 Programme/network affiliation and approval

In order to indicate that a station is related to a specific observing programme or network, the corresponding data series must be affiliated with that programme or network. This must be done in two steps: first, the programme or network in question needs to be selected under the **Programmes/network affiliation** heading in the **Station characteristics** section; second, the programme or network must be linked to at least one observed variable. This can be done in the corresponding data series in the **Observations/measurements** section. If the second step is omitted, the original affiliation in **Station characteristics** will not be recorded when the station information is submitted (see [Figure 32](#)).

Programs / network affiliations ?

+ Add program / network affiliation *



Program / network affiliation	Program specific ID	Status	Declared status	From	To	Actions
GOS			Stand-by	2016-04-28		 

Figure 32. Affiliation of a data series with a programme or network

Joining the programme or network may be subject to approval. In such cases, the programme focal point will receive an automatic e-mail asking for approval of the request. Until the approval process is completed, the affiliation will be shown as “pending”.

3.7 How to edit the existing information of a station

To edit the station information, click on the **Edit** button, which shows on the station report when the user has editing rights for that station ([Figure 33](#)). To get to the station report, any of the quick access, search or map filter methods can be used.



Figure 33. The edit button

The information can then be edited using the same form as the one used for registering a new station, where most of the fields have already been populated. It is important to remember that the date of such a change must be documented in OSCAR/Surface too. Almost all changes of the information stored in OSCAR/Surface are recorded to keep track of the station history and the development of its capabilities over time. Therefore, most fields in the form have a date input field. When completing such fields, the date at which the change actually occurred should be indicated. For example, a change of instrument in a station may only be documented in OSCAR/Surface after the technician has completed the work. In this case, the actual date when the instrument was changed should be indicated here, not the date when the information is input into the system.

Note that the information related to a station can also be deleted. Both deleting and editing of a specific field should only be used when the information has to be corrected. In all other cases, the add function should be used to add new metadata and keep track of the station metadata over time. When adding new information, it has to be specified from when the change applies. For example, if a station is moved, the existing coordinates of the station should neither be edited, nor deleted nor replaced by the new ones. Instead, the new coordinates should be added with an indication of the date when the new location will be current.

3.7.1 *Change of elevation of station or instruments*

When the elevation of a station is changed, the new elevation of the installed instruments must be entered also. This means that the instrument coordinates for each deployment must be changed. If the coordinates of the station and instruments are the same, the **Fill in from station coordinates** button can be used to copy the values from the station level to the deployment. Note that all current deployments in all data series must be updated accordingly.

3.7.2 *What to do when the edits cannot be saved*

In case of missing information, the system refuses to save changes. This is especially likely with stations that are being edited for the first time, as the station may have been created with incomplete information when the system was first populated.

Another reason why the edits cannot be saved is an internal error in the system, most likely due to some connectivity/network issues. When this happens, a red notification appears and the station remains in editing mode. In such cases, it is worth checking whether the changes have been applied to the database or not. This can be done by opening the station report in another window while keeping the current one open. If the latest changes can be seen in the new window, it means that they have been saved by the system, and the current windows can be closed. Otherwise, the changes need to be saved again to make sure that they are permanently stored in OSCAR/Surface.

3.7.3 *Session timeout*

The session is closed after one hour of inactivity. A warning is displayed three minutes before the end asking the user whether the session should be prolonged. If no action is taken, the system tries to save any unsaved changes and ends the session. If the station information was never submitted, it is automatically saved in draft form. Note that the system can only perform an automatic save if no mandatory fields are missing. If the changes cannot be validated by the system, they are lost.

It is recommended to keep a second window open to check if the session is still active before saving edits, and to save from time to time, especially when making changes with long pauses between edits.

If the session is no longer active, log on again in the second window before saving the change.

3.7.4 *Editing information related to radars or JCOMMOPS stations/platforms*

OSCAR/Surface contains also information that is regularly imported from external sources. This is the case for stations/platforms managed by JCOMMOPS and the WMO Radar Database operated by the Turkish State Meteorological Service. Therefore, changes to these stations cannot be applied in OSCAR/Surface but have to be made in the respective portals. If needed, users should refer to the original sources/portals to apply such changes.

3.8 How to delete a station

Most users cannot delete stations in OSCAR/Surface. This is because the purpose of OSCAR/Surface is to document current and past stations in order to see historic trends. Deleting a station, removes all its records from the system, even for the period during which the station was active. Therefore, rather than deleting the station, it is in most cases more appropriate to close it (see section 3.8.1). Stations created for testing purposes can be removed by the administrator. The **Support** form can be used to request the removal of a station.

3.8.1 *How to close a station*

To close a station, the following procedure should be followed:

- (a) Set a date in the **Date closed** field (see [Figure 34](#));
- (b) Set the **To** date for all networks/programmes the station is affiliated with to the date one day before the station closure ([Figure 35](#));
- (c) Add a new status for all the networks/programmes the station is affiliated with and set the status to **Closed**. Enter the date of the station closure in the **From** field and leave the **To** field blank (see [Figure 35](#));
- (d) Set an end date for all deployments that are affected, that is, edit the **Deployment** section and enter a date into the **To** field. Also enter an end date into all **Data generation** subsections where applicable.

This procedure is necessary to keep a record of the station, the variables observed by the station and the networks/programmes it was affiliated with, otherwise, this information would be lost.

If a station is closed by editing (and re-uploading) the XML file, the same changes have to be applied to the XML file.

After closing a station as described above, the declared current status of the station changes to "Closed" (see [Figure 35](#)). Accordingly, the station will be shown with this declared status on the map (labelled with x).

CLIPPERTON (France)

in WMO Region IV - North America, Central America and the Caribbean

Last updated: 2017-06-08 by Gallage Champika

▼ Station characteristics

Name:

CLIPPERTON

Station alias:

Date established:

1966-07-01

Date closed:

2016-04-28

Declared status:

Closed



Figure 34. The Date closed field to be filled in when closing a station






Program / network affiliation	Program specific ID	Status	Declared status	From	To	Actions
▼ GOS		Approved	Closed	2000-01-01		 
			Operational	1861-01-01	1999-12-31	
▼ CLIMAT(C)		Approved	Closed	2000-01-01		 
			Operational	1861-01-01	1999-12-31	

Figure 35. Closing of network affiliations


3.9 How to copy a station

Instead of creating a station from scratch, it is often easier to create a station by using an existing one as a template. To do this, locate the existing station in the **My stations** screen (see [Figure 36](#)). From there, it is possible to copy the station using the copy icon on the right. The new station will be opened in editing mode. Only relevant attributes are copied.



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OSCAR Observing Systems Capability Analysis and Review Tool



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Home | Search | Critical review | Management

Search

Stations

Register new station

Pending approvals

My stations

View linked stations

Add program / network affiliation

Contacts

Register new contact

My contacts

Homepage > Management > Stations > My stations

My stations

WMO Region

Country

Station

Program

Program specific ID



Actions

Africa

Algeria

ABDENNIZI

GOS

Africa

Chad

ABECHE

RBSN(S)



 

Figure 36. The copy function on the My stations screen

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3.10 How to register or change a station via XML upload

The graphical user interface (GUI) or a WMDR XML representation of the station can be used to register a station. More information about how to create an XML file can be found in the next section. The XML file for a station can be uploaded by national focal points using the XML submission of the **Management** tab (Figure 37). The station can be updated in the same manner if it already exists in OSCAR/Surface: the XML file can be edited and then uploaded through the XML file submission. The new information in the XML file will be added to the existing station report in OSCAR/Surface or the existing information will be updated.

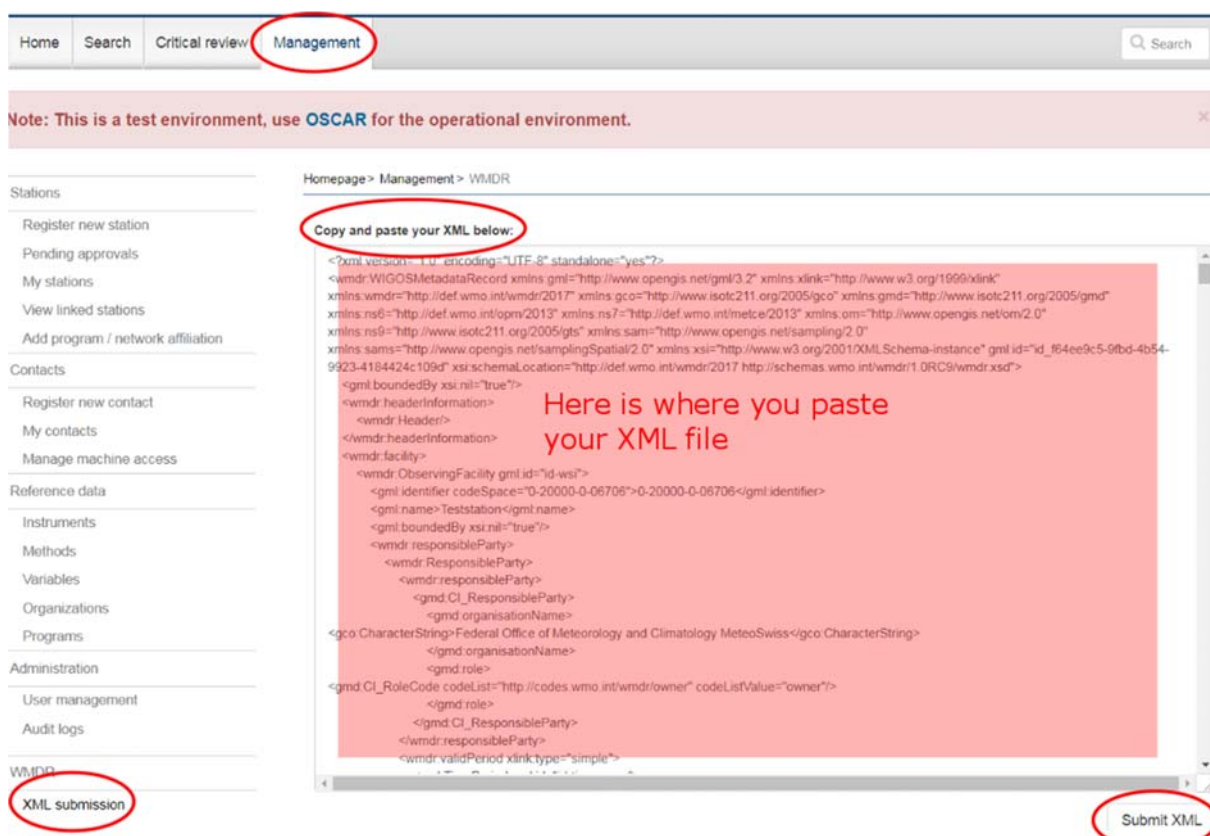


Figure 37. The XML submission

3.11 How to create an XML representation of a station

The XML representation of a station is mostly used to import/export metadata to/from OSCAR/Surface using the machine-to-machine interface. XML is a language readable by both humans and the machine. To provide information to the machine (for example, the API endpoint of OSCAR/Surface), the information has to be structured in a fixed framework defined by the XML schema. The XML schema (WIGOS Metadata Representation (WMDR)) describes how the WIGOS Metadata Standard (WMDS) needs to be represented in the XML file. The WMDR specifications are available online at <https://schemas.wmo.int/wmdr>. The OSCAR/Surface application (v. 1.5.2) implements version 1RC9 of the WMDR schema. When mapping an external database model to the WMDR schema, it is recommended to start from WMDS or its mandatory elements. After ensuring that all the mandatory metadata have been entered, one can check whether there is additional information and how this can be mapped into the WMDR.

The XML file consists of a basic structure with a lot of extensions, which make it very complex. Many elements of the WMDS are defined by corresponding codelists (<http://codes.wmo.int/>), which are linked to the XML elements. The linkage between the WMDS, the XML field and the codelists has to be known to be able to create a new correct XML file of a station. In Table 3, we link the OSCAR/Surface field (visible in GUI) with the WMDS element and corresponding codelist, the XML element and the path or structure in the XML file. The table is divided into sub-tables for each section of the station registration dialogue in GUI. This table can be used to better understand and create station XML files. Note that for the XML path, the namespaces are removed for visibility and parts of the paths are replaced by links (see colour coding).

The XML schema makes it possible to validate XML files before uploading them to OSCAR/Surface, in order to check that the files provide all the information in the right structure for OSCAR/Surface. This can be done using advanced editors with XML extensions, such as XMLspy or Notepad++ or with an online validator.

A simple XML file of a station is shown in Annex 2. A more detailed description of how to create and edit an XML file to represent a station for OSCAR/Surface can be found at <https://github.com/wmo-im/docs/blob/master/XML%20station%20representation%20in%20OSCAR.ipynb>.

Table 3. Linkage between the OSCAR/Surface field, the WMDS element and codelist, and the XML element and path

Path abbreviations (see colour coding in the following tables):

#ObservingFacility# = /wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility

#responsibleParty# = /wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:responsibleParty

#observation# = /wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:observation

#OM_Observation# = /wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:observation/
wmdr:ObservingCapability/wmdr:observation/om:OM_Observation

Station information and variables

<i>OSCAR/Surface field</i>	<i>WMDS element name</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Name	Station/ platform name	3-03	name	#ObservingFacility# /gml:name
Station alias	-	3-03	name	#ObservingFacility# /gml:name
Date established	-	-	dateEstablished	#ObservingFacility# /wmdr:dateEstablished
Date closed	-	-	dateClosed	#ObservingFacility# /wmdr:dateClosed
Station type	Station/ platform type	3-04 (x)	facilityType	#ObservingFacility# /wmdr:facilityType
WIGOS Station Identifier	Station/ platform unique identifier	3-06	Identifier	#ObservingFacility# /gml:identifier
WMO Region	Region of origin of data	3-01 (x)	wmoRegion	#ObservingFacility# /wmdr:wmoRegion
Country/ territory	Territory of origin of data	3-02 (x)	territoryName	#ObservingFacility# /wmdr:territory/wmdr:Territory/wmdr:territoryName

<i>OSCAR/Surface field</i>	<i>WMDS element name</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Coordinates: -Latitude -Longitude -Station elevation -Geopositioning method	-Geospatial location - Geopositioning method	3-07	pos (consists of lat., long., elevation) geopositioningMethod	#ObservingFacility# /wmdr:geospatialLocation/wmdr:GeospatialLocation/wmdr:geoLocation/gml:Point/gml:pos #ObservingFacility# /wmdr:geospatialLocation/wmdr:GeospatialLocation/wmdr:geopositioningMethod
Time zone	-	-	-	-
Supervising organization	Supervising organization	9-01	organisationName	#responsibleParty# /wmdr:ResponsibleParty/wmdr:responsibleParty/gmd:CI_ResponsibleParty/gmd:organisationName
Station URL	Site information	4-05	onlineResource	#ObservingFacility# /gmd:onlineResource
Other link (URL)	Site information	4-05	onlineResource	#ObservingFacility# /gmd:onlineResource
Site description	Site information	4-05	description	#ObservingFacility# /wmdr:description/wmdr:Description/wmdr:description
Climate zone	Climate zone	4-07 (x)	climateZone	#ObservingFacility# /wmdr:climateZone/wmdr:ClimateZone/wmdr:climateZone
Predominant surface cover: -Surface cover classification scheme -Surface cover	-Surface cover classification scheme -Surface cover	4-02 (x) 4-01 (x)	surfaceCoverClassification surfaceCover	#ObservingFacility# /wmdr:surfaceCover/wmdr:SurfaceCover/wmdr:surfaceCoverClassification #ObservingFacility# /wmdr:surfaceCover/wmdr:SurfaceCover/wmdr:surfaceCover
Surface roughness	Surface roughness	4-06 (x)	surfaceRoughness	#ObservingFacility# /wmdr:surfaceRoughness/wmdr:SurfaceRoughness/wmdr:surfaceRoughness

<i>OSCAR/Surface field</i>	<i>WMDS element name</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Topography or bathymetry: -Local topography -Relative elevation -Topographic context -Altitude/ depth	Topography or bathymetry	4-03 (x)	localTopography relativeElevation topographicContext altitudeOrDepth	#ObservingFacility# /wmdr:topographyBathymetry/wmdr:TopographyBathymetry/wmdr:localTopography #ObservingFacility# /wmdr:topographyBathymetry/wmdr:TopographyBathymetry/wmdr:relativeElevation #ObservingFacility# /wmdr:topographyBathymetry/wmdr:TopographyBathymetry/wmdr:topographicContext #ObservingFacility# /wmdr:topographyBathymetry/wmdr:TopographyBathymetry/wmdr:altitudeOrDepth
Population in 10 km/50 km (in thousands)	Site information	4-05	-	-
Station/platform event logbook: -Event -Description -Author -Online reference	Events at observing facility	4-04 (x)	typeOfEvent description author documentationURL	#ObservingFacility# /wmdr:facilityLog/wmdr:FacilityLog/wmdr:logEntry/wmdr:EventReport/wmdr:typeOfEvent #ObservingFacility# /wmdr:facilityLog/wmdr:FacilityLog/wmdr:logEntry/wmdr:EventReport/wmdr:description #ObservingFacility# /wmdr:facilityLog/wmdr:FacilityLog/wmdr:logEntry/wmdr:EventReport/wmdr:author #ObservingFacility# /wmdr:facilityLog/wmdr:FacilityLog/wmdr:logEntry/wmdr:EventReport/wmdr:documentationURL
Photo gallery	Site information	4-05 (x Direction of station pictures)	-	-
Program/network affiliation: -Program /network affiliation -Program specific ID -Declared status	Program/network affiliation	2-02 (x)	programAffiliation programSpecificFacilityId reportingStatus	#ObservingFacility# /wmdr:programAffiliation/wmdr:ProgramAffiliation/wmdr:programAffiliation #ObservingFacility# /wmdr:programAffiliation/wmdr:programSpecificFacilityId #ObservingFacility# /wmdr:programAffiliation/wmdr:ProgramAffiliation/wmdr:reportingStatus/wmdr:ReportingStatus/wmdr:reportingStatus

<i>OSCAR/Surface field</i>	<i>WMDS element name</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Observations/ measurements: Variable	Observed variable - measurand	1-01 (x)	observedProperty	#OM_Observation #/om:observedProperty
Observations/ measurements: Geometry	Spatial extent	1-04 (x)	type	#OM_Observation #/om:type
Observations/ measurements: Program/ network affiliations	Program/netw ork affiliations	2-02 (x)	programAffiliation	#observation #/wmdr:programAffiliation
Station contacts: -Contact (name, organisation, telephone number, street, city, postal code, country) -E-mail -Station roles -WMO Region (contact instructions)	Contact (nominated focal point)	10-01 (x Station roles)	individualName organisationName voice deliveryPoint city postalCode country electronicMailAddre ss CI_RoleCode@code ListValue	#responsibleParty #/gmd:CI_ResponsibleParty/gmd:individualName #responsibleParty #/gmd:CI_ResponsibleParty/gmd:organisationName #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:address/gmd:CI_Address/gmd:electronicMailAddress #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:phone/gmd:CI_Telephone/gmd:voice #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:address/gmd:CI_Address/gmd:deliveryPoint #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:address/gmd:CI_Address/gmd:city #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:address/gmd:CI_Address/gmd:postalCode #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:address/gmd:CI_Address/gmd:country #responsibleParty #/gmd:CI_ResponsibleParty/gmd:role/gmd:CI_Role Code #responsibleParty #/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd: CI_Contact/gmd:contactInstructions

<i>OSCAR/Surface field</i>	<i>WMDS element name</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Bibliographic references	-	-	-	-
Documents	-	-	-	-
Linked stations (only visible for administrators)	Station/platform cluster	3-10	facilitySet	#ObservingFacility# /wmdr:facilitySet

Path abbreviations (see colour coding in the following tables):

#Deployment# =

/wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:observation/wmdr:ObservingCapability/wmdr:observation/om:OM_Observation/om:procedure/wmdr:Process/wmdr:deployment/wmdr:Deployment

Observation deployment information: general

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Deployment made	Temporal extent	1-03	phenomenonTime	#OM_Observation# /om:phenomenonTime
Source of observation	Source of observation	5-01 (x)	sourceOfObservation	#Deployment# /wmdr:sourceOfObservation
Distance from reference surface (m)	Vertical distance of sensor	5-05	heightAboveLocalReferenceSurface	#Deployment# /wmdr:heightAboveLocalReferenceSurface
Type of reference surface	Vertical distance of sensor	5-05 (x)	localReferenceSurface	#Deployment# /wmdr:localReferenceSurface
Application area(s)	Application area	2-01 (x)	applicationArea	#Deployment# /wmdr:applicationArea
Exposure of instrument	Exposure of instruments	5-15 (x)	exposure	#Deployment# /wmdr:exposure

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Configuration of instrument	Configuration of instrumentation	5-06	configuration	#Deployment #/wmdr:configuration
Representativeness of observation	Representativeness	1-05 (x)	representativeness	#Deployment #/wmdr:representativeness
Measurement leader/ principal investigator	Contact (nominated focal point)	10-01 (x Station roles)	electronicMailAddress CI_RoleCode@codeListValue (with value principalInvestigator)	#OM_Observation #/om:metadata/gmd:MD_Metad ata/gmd:contact/gmd:CI_ResponsibleParty/gmd:c ontactInfo/gmd:CI_Contact/gmd:address/gmd:CI_ Address/gmd:electronicMailAddress #OM_Observation #/om:metadata/gmd:MD_Metad ata/gmd:contact/gmd:CI_ResponsibleParty/gmd:r ole/gmd:CI_RoleCode
Organization	-	-	organisationName (organization of measurement leader/principal investigator)	#responsibleParty #/gmd:CI_ResponsibleParty/gm d:organisationName #OM_Observation #/om:metadata/gmd:MD_Metad ata/gmd:contact/gmd:CI_ResponsibleParty/gmd:c ontactInfo/gmd:CI_Contact/gmd:address/gmd:CI_ Address/gmd:electronicMailAddress #OM_Observation #/om:metadata/gmd:MD_Metad ata/gmd:contact/gmd:CI_ResponsibleParty/gmd:r ole/gmd:CI_RoleCode
Near-real time	-	-	Description (fixed value "NRT Archive")	#observation #/om:result/wmdr:ResultSet/wmdr:d istributionInfo/gmd:MD_Distribution/gmd:transfer Options/gmd:MD_DigitalTransferOptions/gmd:onLi ne/gmd:CI_OnlineResource/gmd:description
Near-real-time URL	-	-	URL	#OM_observation om:result/wmdr:ResultSet/w mdr:distributionInfo/gmd:MD_Distribution/gmd:tr ansferOptions/gmd:MD_DigitalTransferOptions/gm d:onLine/gmd:CI_OnlineResource/gmd:linkage/gm d:URL
Data centre	-	-	organisationName	#OM_Observation #/om:result/wmdr:ResultSet/w

OSCAR/Surface field	WMDS element	WMDS element (x = Codelist exists)	XML element	XML path
				mdr:distributionInfo/gmd:MD_Distribution/gmd:distributor/gmd:MD_Distributor/gmd:distributorContact/gmd:CI_ResponsibleParty/gmd:organisationName
Data communication method	Data communication method	3-08 (x)	communicationMethod	#Deployment#/wmdr:communicationMethod
Instrument quality assurance (QA)/quality control (QC) schedule	Instrument control schedule	5-07	controlSchedule	#Deployment#/wmdr:controlSchedule
Maintenance schedule	Instrument routine maintenance	5-10	maintenanceSchedule	#Deployment#/wmdr:maintenanceSchedule
Certified observation	-	-	-	-
Comments	-	-	-	-
Photo	-	-	-	-

Path abbreviations (see colour coding in the following tables):

#Equipment# =

/wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:observation/wmdr:ObservingCapability/wmdr:observation/om:OM_Observation/om:procedure/wmdr:Process/wmdr:deployment/wmdr:Deployment/wmdr:deployedEquipment/wmdr:Equipment

#logEntry# =

/wmdr:WIGOSMetadataRecord/wmdr:facility/wmdr:ObservingFacility/wmdr:observation/wmdr:ObservingCapability/wmdr:observation/om:OM_Observation/om:procedure/wmdr:Process/wmdr:deployment/wmdr:Deployment/wmdr:deployedEquipment/wmdr:Equipment/wmdr:equipmentLog/wmdr:EquipmentLog/wmdr:logEntry/

Observation's deployment information: instrument characteristics

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Instrument (assign instrument vs. new instrument)	-	-	-	-
Observing method	Measurement/ observing method	5-02 (x)	observingMethod	#Equipment #/wmdr:observingMethod
Method details	Measurement/ observing method	5-02	observingMethodDetails	#Equipment #/wmdr:observingMethodDetails
Method comments	Measurement/ observing method	5-02	-	-
Coordinates	Geospatial location	5-12	pos (consists of lat, long, elevation) geopositioningMethod	#Equipment #/wmdr:geospatialLocation/wmdr:GeospatialLocation/wmdr:geoLocation/gml:Point/gml:pos
Instrument operating status	Instrument operating status	5-04 (x)	instrumentOperatingStatus	#Deployment #/wmdr:instrumentOperatingStatus/wmdr:InstrumentOperatingStatus/wmdr:instrumentOperatingStatus
Manufacturer	Instrument model and serial number	5-09	manufacturer	#Equipment #/wmdr:manufacturer
Model	Instrument model and serial number	5-09	model	#Equipment #/wmdr:model
Serial number	Instrument model and serial number	5-09	serialNumber	#Equipment #/wmdr:serialNumber
Firmware version	Instrument model and serial number	5-09	firmwareVersion	#Equipment #/wmdr:firmwareVersion

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Instrument specifications – observable range	Instrument specifications	5-03	observableRange	#Equipment #/wmdr:observableRange
Instrument specifications – relative uncertainty	Uncertainty of measurement	8-01	specifiedRelativeUncertainty	#Equipment #/wmdr:specifiedRelativeUncertainty
Instrument specifications – absolute uncertainty	Uncertainty of measurement	8-01	specifiedAbsoluteUncertainty	#Equipment #/wmdr:specifiedAbsoluteUncertainty
Instrument specifications – drift per unit time	Instrument specifications	5-03	driftPerUnitTime	#Equipment #/wmdr:driftPerUnitTime
Instrument specifications – specification URL	Instrument specifications	5-03	specificationLink	#Equipment #/wmdr:specificationLink
Instrument specifications – Uncertainty evaluation procedure	-	-	-	-
Frequency – Observation frequency and polarization	-	-	frequency frequencyUnit frequencyUse bandwidth bandwidthUnit purposeOfFrequencyUse transmissionMode	#Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:frequency #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:frequencyUnit #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:frequencyUse #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:bandwidth #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:bandwidthUnit #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:purposeOfFrequencyUse #Equipment #/wmdr:frequency/wmdr:Frequencies/wmdr:transmissionMode

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Frequency – Telecommunication frequency	-	-	frequency frequencyUnit frequencyUse bandwidth bandwidthUnit purposeOfFrequencyUse	#Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:frequency #Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:frequencyUnit #Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:frequencyUse #Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:bandwidth #Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:bandwidthUnit #Equipment# /wmdr:frequency/wmdr:Frequencies/wmdr:purposeOfFrequencyUse
Comments	-	-	-	-
Maintenance logbook: -Maintenance date -Maintenance party -Individual -Description -Author -Documentation URL	-Maintenance party -Maintenance activity	5-11 5-13	datetime organisationName individualName description author documentationURL	#logEntry# /wmdr:MaintenanceReport/wmdr:datetime #logEntry# /wmdr:MaintenanceReport/wmdr:maintenanceParty/gmd:CI_ResponsibleParty/gmd:organisationName #logEntry# /wmdr:MaintenanceReport/wmdr:maintenanceParty/gmd:CI_ResponsibleParty/gmd:individualName #logEntry# /wmdr:MaintenanceReport/wmdr:description #logEntry# /wmdr:MaintenanceReport/wmdr:author #logEntry# /wmdr:MaintenanceReport/wmdr:documentationURL
Quality assurance logbook: -Location -Activity date -Standard type -Standard name -Standard serial number -Activity result -Documentation URL -Author	Instrument control results	5-08 (x Standard type)	checkLocation datetime standardType standardName standardSerialNumber controlCheckResult documentationURL author	#logEntry# /wmdr:ControlCheckReport/wmdr:checkLocation #logEntry# /wmdr:ControlCheck/wmdr:datetime #logEntry# /wmdr:ControlCheckReport/wmdr:standardType #logEntry# /wmdr:ControlCheckReport/wmdr:standardName #logEntry# /wmdr:ControlCheckReport/wmdr:standardSerialNumber #logEntry# /wmdr:ControlCheck/wmdr:controlCheckResult #logEntry# /wmdr:ControlCheckReport/wmdr:documentationURL #logEntry# /wmdr:ControlCheck/wmdr:author

Path abbreviations (see colour coding in the following tables):

=

/wmdr: WIGOSMetadataRecord/wmdr: facility/wmdr: ObservingFacility/wmdr: observation/wmdr: ObservingCapability/wmdr: observation/om: OM_Observation/om: procedure/wmdr: Process/wmdr: deployment/wmdr: Deployment/wmdr: dataGeneration/wmdr: DataGeneration/wmdr: sampling/wmdr: Sampling

Observation deployment information: data generation – sampling

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Sampling strategy	Sampling strategy	6-03 (x)	samplingStrategy	#Sampling#/wmdr: samplingStrategy
Sampling interval	Temporal sampling interval	6-06	temporalSamplingInterval	#Sampling#/wmdr: temporalSamplingInterval
Sampling period	Sampling time period	6-04	samplingTimePeriod	#Sampling#/wmdr: samplingTimePeriod
Spatial sampling resolution	Spatial sampling resolution	6-05	spatialSamplingResolution	#Sampling#/wmdr: spatialSamplingResolution
Sampling procedure	Sampling procedure	6-01	samplingProcedure	#Sampling#/wmdr: samplingProcedure
Sampling procedure description	Sampling procedure	6-01	samplingProcedureDescription	#Sampling#/wmdr: samplingProcedureDescription
Sample treatment	Sample treatment	6-02	sampleTreatment	#Sampling#/wmdr: sampleTreatment

Path abbreviations (see colour coding in the following tables):

#Processing# =

/wmdr: WIGOSMetadataRecord/wmdr: facility/wmdr: ObservingFacility/wmdr: observation/wmdr: ObservingCapability/wmdr: observation/om: OM_Observation/om: procedure/wmdr: Process/wmdr: deployment/wmdr: Deployment/wmdr: dataGeneration/wmdr: DataGeneration/wmdr: processing/wmdr: Processing

Observation deployment information: data generation – processing

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Aggregation period	Aggregation period	7-09	aggregationPeriod	#Processing#/wmdr: aggregationPeriod
Data processing method	Data processing methods and algorithms	7-01	dataProcessing	#Processing#/wmdr: dataProcessing
Software/ processor and version	Software/processor version	7-05	softwareDetails	#Processing# /wmdr: softwareDetails
Software/ source code repository URL	Software/processor version	7-05	softwareURL	#Processing#/wmdr: softwareURL
Processing/ analysis centre	Processing/analysis centre	7-02	processingCentre	#Processing#/wmdr: processingCentre

Path abbreviations (see colour coding in the following tables):

#DataGeneration# =

/wmdr: WIGOSMetadataRecord/wmdr: facility/wmdr: ObservingFacility/wmdr: observation/wmdr: ObservingCapability/wmdr: observation/o
m: OM_Observation/om: procedure/wmdr: Process/wmdr: deployment/wmdr: Deployment/wmdr: dataGeneration/wmdr: DataGeneration

#Reporting# =

/wmdr: WIGOSMetadataRecord/wmdr: facility/wmdr: ObservingFacility/wmdr: observation/wmdr: ObservingCapability/wmdr: observation/o
m: OM_Observation/om: procedure/wmdr: Process/wmdr: deployment/wmdr: Deployment/wmdr: dataGeneration/wmdr: DataGeneration/wm
dr: reporting/wmdr: Reporting

#Schedule# =

/wmdr: WIGOSMetadataRecord/wmdr: facility/wmdr: ObservingFacility/wmdr: observation/wmdr: ObservingCapability/wmdr: observation/o
m: OM_Observation/om: procedure/wmdr: Process/wmdr: deployment/wmdr: Deployment/wmdr: dataGeneration/wmdr: DataGeneration/wm
dr: schedule/wmdr: Schedule

Observation deployment information: data generation – reporting (+schedule)

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Schedule – Month, day, hour, minute	Schedule of observation/ Schedule of international exchange	6-08/7-14	schedule	#DataGeneration# /wmdr:schedule
Schedule – Diurnal base time	Diurnal base time	6-07	diurnalBaseTime	#Schedule# /wmdr:diurnalBaseTime
Intended for international exchange	Schedule of international exchange	7-14	internationalExchange	#Reporting# /wmdr:internationalExchange
Data policy	Data policy/ use constraints	9-02 (x)	dataPolicy	#Reporting# /wmdr:dataPolicy/wmdr:DataPolicy/wmdr:dataPolicy
Attribution – Title of work	-	-	title	#Reporting# /wmdr:dataPolicy/wmdr:DataPolicy/wmdr:attribution/wmdr:Attribution/wmdr:title
Attribution – URL	-	-	URL	#Reporting# /wmdr:dataPolicy/wmdr:DataPolicy/wmdr:attribution/wmdr:Attribution/wmdr:originatorURL/gmd:CI_OnlineResource/gmd:linkage/gmd:URL
Attribution – Originator of work	-	-	organisationName	#Reporting# /wmdr:dataPolicy/wmdr:DataPolicy/wmdr:attribution/wmdr:Attribution/wmdr:originator/gmd:CI_ResponsibleParty/gmd:organisationName
Attribution – Source of work based on (URL)	-	-	URL	#Reporting# /wmdr:dataPolicy/wmdr:DataPolicy/wmdr:attribution/wmdr:Attribution/wmdr:source/gmd:CI_OnlineResource/gmd:linkage/gmd:URL

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Primary observation	Status of observation	5-14	officialStatus	#Reporting#/wmdr:officialStatus
Measurement unit	Measurement unit	1-02 (x)	uom	#DataGeneration#/wmdr:reporting/wmdr:Reporting/wmdr:uom
Reporting interval	Temporal reporting period	7-03	temporalReportingInterval	#Reporting#/wmdr:temporalReportingInterval
Reporting interval – Meaning of timestamp in data records	Temporal reporting period	7-03	timeStampMeaning	#Reporting#/wmdr:timeStampMeaning
Number of observations in reporting period	-	-	numberOfObservationsInReportingInterval	#Reporting#/wmdr:numberOfObservationsInReportingInterval
Spatial reporting interval	Spatial reporting interval	7-04	spatialReportingInterval	#Reporting#/wmdr:spatialReportingInterval
Timeliness	Timeliness (of reporting)	7-13	timeliness	#Reporting#/wmdr:timeliness
Numerical resolution	Numerical resolution	7-12	numericalResolution	#Reporting#/wmdr:numericalResolution
Level of data	Level of data	7-06 (x)	levelOfData	#Reporting#/wmdr:levelOfData
Data format	Data format	7-07 (x)	dataFormat	#Reporting#/wmdr:dataFormat
Data format version	Version of data format	7-08	dataFormatVersion	#Reporting#/wmdr:dataFormatVersion

<i>OSCAR/Surface field</i>	<i>WMDS element</i>	<i>WMDS element (x = Codelist exists)</i>	<i>XML element</i>	<i>XML path</i>
Reference datum	Reference datum	7-11	remarks	<code>#Reporting#/wmdr:referenceDatum/gml:VerticalDatum/gml:remarks</code>
Reference time source	Reference time	7-10 (x)	referenceTimeSource	<code>#Reporting#/wmdr:referenceTimeSource</code>
Is the observation traceable to a standard?	Traceability	8-05 (x)	-	-
Data quality flagging system	Quality flagging system	8-04 (x)	-	-

3.12 The OSCAR/Surface application programming interface (machine-to-machine interface)

An alternative to the graphical user interface of OSCAR/Surface, described in the previous sections, is the OSCAR/Surface application programming interface (API). Some of the actions explained above, such as the search for station information (details below), registration and editing of a station can be done through API. OSCAR/Surface has various endpoints that allow users to retrieve and send information in machine readable format. This enables other systems to interact with OSCAR/Surface and to make batch changes efficiently.

There are two types of available endpoints: **search and discovery** and **add and edit metadata**. In the latter, the registration/editing of a station is not done through the graphical user interface but through uploading based on XML files as a machine readable data format representing the metadata of a station. The different API endpoints are documented in Tables 4 and 5. The first column indicates the function of the endpoint; the second column – the URL of the endpoint; the third column defines the parameters and accepted codelist values that can be specified, or it contains instructions on use of the endpoint; the fourth column gives the file format in which the information will be retrieved.

The first two endpoints, **search stations** and **search for multiple WIGOS IDs**, can be used to create station lists with certain criteria. In the case of **search for multiple WIGOS IDs**, the criterion is solely the WIGOS ID, which has to be defined in the URL. For example, if one wants to know how many stations in Switzerland are already registered with the ISO country code in the second block, the URL would be the following: `/search/wigos?WIGOSStationIdentifier={ 756}`. The results are given as a JSON file.

The **search stations** endpoint can be used in a more complex way. Here different parameters define the search, such as programme affiliation, the location of a station, the measured variables, etc. Table 4 below shows how such defining information has to be specified. There are three options: (a) the information can be typed in directly as a number, as for the location specification (decimal number); (b) the desired codelist value for the specific criteria can be inserted (wherever it says "Notation"; the path before is the reference to the Codetable and not part of the API URL); or (c) the internal OSCAR ID can be used, once it has been retrieved (see below for an explanation). The existing codelist values to be used are given here: <http://codes.wmo.int>. Several search criteria are combined using "&". If more than one search criterion is used, these are linked using the logical expression "AND", that is, the stations have to fulfil all criteria. This is equivalent to **Criteria matching all** in the GUI (default). The following examples illustrate the use of the **Search stations** discovery endpoint:

Search all stations in Switzerland:

<https://oscar.wmo.int/surface/rest/api/search/station?territoryName=CHE>

Search all weather radars (program = WRO):

<https://oscar.wmo.int/surface/rest/api/search/station?programAffiliation=WRO>

Search all weather radars in Switzerland (program = WRO and country = Switzerland):

<https://oscar.wmo.int/surface/rest/api/search/station?territoryName=CHE&programAffiliation=WRO>

Search all precipitation stations (variables = amount and intensity of precipitation):

<https://oscar.wmo.int/surface/rest/api/search/station?variable=210,212>

Search all stations at a height above 3000 m:

<https://oscar.wmo.int/surface/rest/api/search/station?elevationMin=3000>

It is also possible to search for the station details (station report), the observations of a specific station or deployments of a specific observation at a station by using the endpoint **Search station details**, **Search observations of a station** and **Search deployments of an observation**. These are internal API endpoints, which is why they need internal IDs for the specification of the station or observation. These OSCAR internal IDs can be found by the previously described API endpoints. Note that the internal IDs are not guaranteed to be stable, so their direct use is not recommended. Always query an internal ID immediately before use.

When searching for a list of stations, further details of a specific station or observation can thus be checked. For instance, from the search results of all stations in Switzerland, one specific internal OSCAR ID can be used to investigate a station further: for example the internal ID 33377 would provide further information about the Weissfluhjoch station.

Another search and discovery endpoint is the **XML download**. An XML representation of a station can be downloaded using the WIGOS ID of the station, for example, <https://oscar.wmo.int/surface/rest/api/wmd/download/0-20000-0-10359>.

Table 4. Search and discover endpoints

Endpoint	URL	Parameters and codelists	File format
Search stations	/search/station	<ul style="list-style-type: none"> - wigosId = {wigos id} - facilityType = /FacilityType/{Notation} - stationClass = /stationClass/{Notation¹} - programAffiliation = /ProgramAffiliation/{Notation} - wmoRegion = /WMORegion/{Notation} - territoryName = /TerritoryName/{Notation} - organization = {internal OSCAR ID} - variable = /ObservedVariable/{Notation} - climateZone = /ClimateZone/{Notation} - latitudeMin = {decimal number} - latitudeMax = {decimal number} - longitudeMin = {decimal number} - longitudeMax = {decimal number} - elevationMin = {decimal number} 	JSON

¹ Possible values for station classes or existing implemented station classes cannot be found at <http://codes.wmo.int>, but on the next page in this document.

Endpoint	URL	Parameters and codelists	File format
		- elevationMax = {decimal number}	
Search station details	/stations/station/{internal_id}/stationReport	internal_id = internal OSCAR ID of the station	JSON
Search observations of a station	/stations/stationObservation/{internal_id}	internal_id = internal OSCAR ID of the station	JSON
Search deployments of an observation	/stations/deployments/{observation_id}	observation_id = internal OSCAR ID of the observations at the station	JSON
XML download	/wmd/download/{WIGOS ID}	-	XML

3.12.1 API endpoint table

The table below lists parameters that do not feature in any codelist table at <http://codes.wmo.int>.

Table 5. Station classes

Name	Definition	WMO306
Agricultural meteorological station	A station affiliated with the application area "Agricultural meteorology".	agriculturalStation
Aircraft meteorological station	A station affiliated with the Aircraft-based Observing Systems (ABOs) programme.	aircraftStation
Automatic weather station (AWS)	A station measuring one of the following observations automatically: pressure, humidity, precipitation, temperature and horizontal wind speed and direction.	AWS
Climatological station	A station affiliated with the application areas "Climate monitoring (GCOS)", "Climate science" and "Climate applications", or with the programmes "GCOS" or "RBCN".	climatologicalStation
Cryosphere station	A station measuring a cryosphere variable.	cryosphereStation
Precipitation station	A station measuring amount or intensity of precipitation.	precipitationStation
Radar wind profiler station	A station affiliated with the GOS programme "Wind Profilers".	windProfiler
Radiation station	A station measuring a variable related to downwelling or upwelling radiation.	radiationStation

Name	Definition	WMO306
Sea profiling station	A station on sea (fixed, mobile or mobile underwater) measuring the vertical profile of ocean temperature.	SeaProfilingStation
Surface land meteorological station (SYNOP)	A station on land measuring humidity, pressure, temperature and horizontal wind speed and direction.	synopLand
Surface marine meteorological station (SYNOP)	A station on sea (fixed, mobile or on ice) measuring atmospheric pressure.	synopSea
Upper-air/PILOT station	A station measuring upper wind with a radiosonde without additional observations.	upperAirPilot
Upper-air/Radiosonde station	A station measuring vertical profiles of pressure and humidity, temperature or upper wind with a radiosonde.	upperAirRadiosonde
Weather radar	A station affiliated with the Global Observing System Weather Radar (WRO) programme.	weatherRadar

There is one endpoint for adding and editing metadata and another for retrieving the logs for this action. These endpoints require identification and authorization of the machine user. Both endpoints are described in Table 6.

Users wanting to use these endpoints need a security token. Every national focal point can retrieve such a security token in OSCAR under Management > Manage machine access (see [Figure 38](#)). Note that the security token is only displayed the first time. It is helpful to make a screenshot or save it in a separate file as a first step.

The screenshot shows the OSCAR Management interface. The top navigation bar includes links for Home, Search, Critical review, and Management. The left sidebar lists various management options under Stations, Contacts, and Manage machine access. The main content area shows the breadcrumb trail: Homepage > Management > Contacts > Manage machine access. The title is 'Generate security token for'. There is a checkbox for accepting conditions and a 'Generate' button. Below, the 'Security token:' field shows '[Hidden content]', and the 'Expiration date:' field shows '2020-07-09'. A note states: 'This token is only displayed once, immediately after generation. Please copy the token and embed it in your scripts. The token needs to be sent in the HTTP header "X-WMO-WMDR-Token" with each request.'

Figure 38. Generation of security token

Table 6. Endpoints for editing metadata and retrieving the corresponding logs

Endpoint	URL	Description and instructions	Output
Upload WMDR XML	/wmd/upload	REST call to upload XML file according to the WIGOS Metadata Representation. It requires a valid authentication token to be communicated under an HTTP header with the following name: X-WMO-WMDR-Token.	JSON with ID of the uploaded XML, status of parsing, logs of parsing
Get logs of WMDR upload	/wmd/get-log/{xmlId}	Retrieve parsing logs of provided ID. It requires a valid authentication token to be communicated under an HTTP header with the following name: X-WMO-WMDR-Token.	JSON

3.13 Help and learning resources for OSCAR/Surface

Apart from this Manual, there are other materials where users can find additional information on how to use OSCAR::

- The OSCAR/Surface Moodle platform:

<https://etrp.wmo.int/course/view.php?id=146>

This platform contains all presentations from training events, the OSCAR/Surface blog, the interactive forum and the recordings of the OSCAR/Surface webinars, which take place once a month.

- The OSCAR/Surface FAQ on the OSCAR/Surface website:

<https://oscar.wmo.int/surface//index.html#/faq/>

- The OSCAR/Surface helpdesk, which can be contacted via the contact form (accessed via the **Support** button) on the OSCAR/Surface website:

<https://oscar.wmo.int/surface//index.html#/support>)

Requests submitted through this form are tracked and answered by the OSCAR/Surface operating team and the WMO Secretariat.

3.14 How to report bugs

If you have feedback, found a bug or experienced unexpected behaviour in the application, please use the contact form on the OSCAR/Surface website to inform the development team (see above). Your feedback is very valuable!

ANNEX 1 LIST OF FIELDS ON OSCAR/SURFACE SCREEN

The following figures ([Figure 39](#)-[Figure 41](#)) show screenshots from OSCAR/Surface with a list of input fields. The fields marked in red are mandatory and enforced by the graphical user interface of OSCAR/Surface. Stations cannot be registered/edited without these fields. All other mandatory fields as defined by the WIGOS Metadata Standard are marked in yellow. These fields are not needed to save a station in OSCAR/Surface but they are mandatory for a complete metadata representation of a station.

In order to get an overview of the fields needed to complete the information for a station, one can also create a “dummy” station, which is saved as a draft or not saved at all, using the **register new station** dialogue. It allows browsing through all forms and fields required for creating a new station.

Name: * ?

Station alias: ? [Add station alias](#)

Date established: * ?

Date closed:

Station type: * ?

WMO region: * ?

Country / territory: * ? [Add country / territory](#)

WIGOS Station Identifier(s): * ? [Add WIGOS Station Identifier](#)

Coordinates: * ? [Add latitude / longitude / elevation / geopositioning method](#)

Time zone: ** [Add time zone](#) filled (coordinates)

Supervising organization: ** ? [Add supervising organization](#) filled (coordinates)

Station URL:

Other link (URL):

Site description: ? [Add site description](#)

Climate zone: ? [Add climate zone](#) filled (coordinates)

Predominant surface cover: ? [Add predominant surface cover](#)

Surface roughness: ? [Add surface roughness](#)

Topography or bathymetry: ? [Add topography or bathymetry](#) filled (coordinates)

Population in 10km / 50km (in thousands): ? [Add population](#)

Station / platform event logbook: ? [Add station / platform event log entry](#)

Photo gallery ? [Add photo](#)

Programs / network affiliations ?

[Add program / network affiliation *](#)

Observations / measurements

[Add measurement program * ?](#)

Station contacts

Bibliographic references

Documents

correlation

Add measurement program

1) Select one or more observed variables

2) Insert basic information for measurement program

Observed variable *	Geometry *	Program / network affiliation *	Observed since	Observing method	Actions
Air temperature (at specified distance from reference surface)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="+"/> <input type="button" value="x"/> <input type="button" value="grid"/> <input type="button" value="list"/> <input type="button" value="x"/> <input type="button" value="trash"/>

filled (coordinates)

Figure 39. Station information and variables

General information

Deployment made (Period auto-generated based on maximum extent of existing data generations):

From: To:

Source of observation:

Distance from reference surface (m) (conditional)

Type of reference surface:

Application area(s): Add application area

Exposure of instrument:

Configuration of instrument:

Representativeness of observation:

Measurement leader / principal investigator:

Organization:

Near Real Time: Yes No

Near Real Time URL:

Data centre:

Data communication method:

Instrument QA/QC schedule:

Maintenance schedule:

Certified observation: Yes No

Comments:

Photo: Add photo

Instrument characteristics

Instrument: Assign instrument in use at station New instrument at station

Manufacturer:

Model:

Serial number:

Observing method: X

Method details:

Method comments:

Method details will be overwritten during the automatic import of data. However the method comments will remain.

Coordinates: Add coordinates

Instrument operating status: Add status

Firmware version:

Instrument specifications

Observable range:

Relative uncertainty:

Absolute uncertainty:

Drift per unit time: Expressed as % per year

Specification URL:

Uncertainty evaluation procedure:

Frequency

Observation frequency and polarization: Add observation frequency and polarization

Telecommunication frequency: Add telecommunication frequency

Comments:

Maintenance logbook: Add maintenance log entry

Quality assurance logbook: Add quality assurance log entry

Figure 40. Observation deployment information

Period covered:
From:
To:

Sampling

Sampling strategy
Sampling interval
Sampling period
Spatial sampling resolution
Sampling procedure
Sampling procedure description
Sample treatment

Processing

Aggregation period
Data processing method
Software / processor and version
Software / source code repository URL
Processing / analysis centre

Reporting

Intended for international exchange:
Yes
No

Schedule
Year round, 24/7
Month
From
To
Day
From
To
Hour and minute
From
To
Diurnal base time
Hour
Minute

Reporting interval
Number of observations in reporting period
Measurement unit
Data policy
Spatial reporting interval (m) (conditional)
Timeliness
Numerical resolution
Level of data
Data format
Data format version
Reference datum (conditional)
Reference time source
Is the observation traceable to a standard?
Yes
No
Reference time source
Is the observation traceable to a standard?
Yes
No
Data quality flagging system
Primary observation
Yes
No
Meaning of timestamp in data reports
Attribution
Title of work
Attribution (URL)
Originator of work
Source work is based on (URL)

Figure 41. Deployment information: data generation

ANNEX 2 AN EXAMPLE OF XML REPRESENTATION OF A STATION

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<wmdr:WIGOSMetadataRecord xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:wmdr="http://def.wmo.int/wmdr/2017"
xmlns:gco="http://www.isotc211.org/2005/gco" xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:ns6="http://def.wmo.int/opm/2013" xmlns:ns7="http://def.wmo.int/metce/2013"
xmlns:om="http://www.opengis.net/om/2.0" xmlns:ns9="http://www.isotc211.org/2005/gts"
xmlns:sam="http://www.opengis.net/sampling/2.0" xmlns:sams="http://www.opengis.net/samplingSpatial/2.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" gml:id="id1"
xsi:schemaLocation="http://def.wmo.int/wmdr/2017 http://schemas.wmo.int/wmdr/1.0RC9/wmdr.xsd">

  <wmdr:headerInformation>
    <wmdr:Header/>
  </wmdr:headerInformation>

  <wmdr:facility>
    <wmdr:ObservingFacility gml:id="_0-20000-0-teststationblog">
      <gml:identifier codeSpace="0-20000-0-teststationblog">0-20000-0-teststationblog</gml:identifier>
      <gml:name>Teststation Blog</gml:name>
      <wmdr:responsibleParty>
        <wmdr:ResponsibleParty>
          <wmdr:responsibleParty>
            <gmd:CI_ResponsibleParty>
```

```

    <gmd:organisationName>
        <gco:CharacterString>WMO</gco:CharacterString>
    </gmd:organisationName>
    <gmd:role>
        <gmd:CI_RoleCode codeList="http://codes.wmo.int/wmdr/owner"
codeListValue="owner"/>
    </gmd:role>
</gmd:CI_ResponsibleParty>
</wmdr:responsibleParty>
<wmdr:validPeriod>
    <gml:TimePeriod gml:id="id-time_orga">
        <gml:beginPosition>2019-03-01</gml:beginPosition>
        <gml:endPosition/>
    </gml:TimePeriod>
</wmdr:validPeriod>
</wmdr:ResponsibleParty>
</wmdr:responsibleParty>
<wmdr:geospatialLocation>
    <wmdr:GeospatialLocation>
        <wmdr:geoLocation>
            <gml:Point gml:id="id-coord">

```

```

        <gml:pos>46.224331 6.146441 3750.0</gml:pos>
    </gml:Point>
</wmdr:geoLocation>
<wmdr:validPeriod>
    <gml:TimePeriod gml:id="id-time_coord">
        <gml:beginPosition>2019-03-01</gml:beginPosition>
        <gml:endPosition/>
    </gml:TimePeriod>
</wmdr:validPeriod>
</wmdr:GeospatialLocation>
</wmdr:geospatialLocation>
<wmdr:facilityType xlink:href="http://codes.wmo.int/wmdr/landFixed"/>
    <wmdr:dateEstablished>2019-03-01</wmdr:dateEstablished>
<wmdr:wmoRegion xlink:href="http://codes.wmo.int/wmdr/europe"/>
<wmdr:territory>
    <wmdr:Territory>
        <wmdr:territoryName xlink:href="http://codes.wmo.int/wmdr/CHE"/>
        <wmdr:validPeriod>
            <gml:TimePeriod gml:id="id-time_territory">
                <gml:beginPosition>2019-03-01</gml:beginPosition>
                <gml:endPosition/>
            </gml:TimePeriod>
        </wmdr:validPeriod>
    </wmdr:Territory>
</wmdr:territory>

```

```

        </gml:TimePeriod>
    </wmdr:validPeriod>
</wmdr:Territory>
</wmdr:territory>
<wmdr:programAffiliation>
    <wmdr:ProgramAffiliation>
        <wmdr:programAffiliation xlink:href="http://codes.wmo.int/wmdr/GOS"/>
        <wmdr:reportingStatus>
            <wmdr:ReportingStatus>
                <wmdr:reportingStatus xlink:href="http://codes.wmo.int/wmdr/operational"/>
                <wmdr:validPeriod>
                    <gml:TimePeriod gml:id="id-time_prog">
                        <gml:beginPosition>2019-03-01</gml:beginPosition>
                        <gml:endPosition/>
                    </gml:TimePeriod>

                </wmdr:validPeriod>
            </wmdr:ReportingStatus>
        </wmdr:reportingStatus>
    </wmdr:ProgramAffiliation>
</wmdr:programAffiliation>
<wmdr:observation>

```

```

    <wmdr:ObservingCapability gml:id="id-obs1_stat">
      <wmdr:facility xlink:href="_0-20000-0-teststationblog"/>
      <wmdr:programAffiliation xlink:href="http://codes.wmo.int/wmdr/GOS"/>
      <wmdr:observation>
        <om:OM_Observation gml:id="id-obs1_geom">
          <om:type xlink:href="http://codes.wmo.int/wmdr/point"/>
          <om:metadata>
          </om:metadata>
          <om:phenomenonTime/>
          <om:resultTime/>
          <om:procedure>
        </om:OM_Observation>
      </wmdr:observation>
    </wmdr:ObservingCapability>
  <wmdr:Process gml:id="id-obs1_proc">
    <wmdr:deployment>
      <wmdr:Deployment gml:id="id-obs1_dep1">
        <wmdr:dataGeneration/>
        <wmdr:validPeriod/>
        <wmdr:localReferenceSurface/>
        <wmdr:applicationArea/>
        <wmdr:sourceOfObservation/>
        <wmdr:exposure/>
      </wmdr:Deployment>
    </wmdr:deployment>
  </wmdr:Process>

```

```
</wmdr:deployment>
</wmdr:Process>
    </om:procedure>
    <om:observedProperty xlink:href="http://codes.wmo.int/wmdr/251"/>
    <om:featureOfInterest xsi:nil="true"/>
    <om:result>
    </om:result>
    </om:OM_Observation>
    </wmdr:observation>
    </wmdr:ObservingCapability>
    </wmdr:observation>
    </wmdr:ObservingFacility>
    </wmdr:facility>
</wmdr:WIGOSMetadataRecord>
```
