

Prepared by WMO
Agenda Item: 3
Discussed in WG III

OSCAR/SPACE DATABASE CONTENTS UPDATING PROCEDURE

In response to CGMS Actions WG III/A47.04, WG III/A47.06a and WG III/A46.06c

OSCAR/Space (see <https://www.wmo-sat.info/oscar/spacecapabilities>) is a key tool and information source to support the WMO Rolling Review of Requirements (RRR) process (see <https://community.wmo.int/rolling-review-requirements-process>) and WMO Gap Analysis (see CGMS-48-WMO-WP-13a and CGMS-48-WMO-WP-13b), which are used to monitor the compliance of satellite programmes in the implementation of the CGMS Baseline and the space-based component of the Vision for WIGOS in 2040 (WMO-No. 1243).

Updating the OSCAR/Space database content is a continuously ongoing WMO Space Programme Office activity with on average 4000 individual database content edits made every year. The main mechanism for WMO to collect the relevant information is through templates submitted to the OSCAR/Space Support Team (O/SST) members, usually conducted three to four times per year. Through this concerted effort, OSCAR/Space has become the most up-to-date and complete data source for space-based observing system capabilities, available to the general public. Approximately 200 users per day access the database.

The satellite status updating is particularly challenging with regards to information of non-CGMS satellites, including from commercial operators, and of space weather instruments.

This working paper reviews the OSCAR/Space database content updating status and procedures, outlines the challenges and suggests improvements.

Actions proposed:

1. CGMS members, through their O/SST focal points, shall provide accurate and timely updates on OSCAR/Space database content in response to requests made to them by the WMO Space Programme Office.
2. WMO to continue preparing templates on OSCAR/Space data that needs to be updated and submitting them to O/SST, approximately 3-4 times a year, for providing the missing information. The latest update template provided to O/SST is contained in working paper CGMS-48-WMO-WP-10b.
3. WMO to continue efforts to establish reliable O/SST focal points from CEOS, non-CGMS/CEOS and commercial satellites operators.

OSCAR/SPACE DATABASE CONTENTS UPDATING PROCEDURE

1 INTRODUCTION

The Observing Systems Capability Analysis and Review Tool (OSCAR) (see <https://www.wmo-sat.info/oscar/>) is a publicly available online resource, which is established and maintained by WMO,

It includes three modules:

- OSCAR/Requirements: a repository of observation requirements;
- OSCAR/Surface: records the characteristics of surface-based observing capabilities;
- OSCAR/Space: records the characteristics of space-based observing capabilities .

It is a key tool and information source to support the WMO Rolling Review of Requirements (RRR) process in the context of the WMO Integrated Global Observing System (WIGOS) (see <https://community.wmo.int/rolling-review-requirements-process>).

Another important application of OSCAR/Space is to conduct the WMO Gap Analysis (see CGMS-48-WMO-WP-13a and CGMS-48-WMO-WP-13b) Both are used to monitor the compliance of satellite programmes in the implementation of the CGMS Baseline and the space-based component of the Vision for WIGOS in 2040 (WMO-No. 1243).

The WMO Space Programme Office is responsible for the OSCAR/Space (see <https://www.wmo-sat.info/oscar/spacecapabilities>) maintenance. The primary function of the WMO OSCAR/Space database is to collect information on programmes, satellites and instruments operated by CGMS members and observers as well as by non-CGMS satellite operators and supporting WMO Application Areas, for the benefit of satellite users and satellite operating agencies worldwide.

Presently, OSCAR/Space contains information related to 770 satellites and approximately 1000 instruments, of which 650 are dedicated to Earth observation missions and 350 to space weather missions. The accuracy of the information maintained in the database depends on the information provided by satellite operators.

This working paper describes the OSCAR/Space database contents updating status and procedures.

2 O/SST AND UPDATING PROCEDURE

2.1 OSCAR/Space Support Team (O/SST)

At CGMS-45, CGMS Members were asked to support the effort to update OSCAR/Space database contents. The OSCAR/Space Support Team (O/SST) was

established and each CGMS Members was asked to nominate a focal point in response to a request made in CGMS-45-WMO-WP-06. The updated Terms of Reference (ToRs) for O/SST are attached in the Appendix to this working paper.

The present membership of O/SST is shown in the Table 1.

Table 1. *The O/SST focal points nominated by CGMS Members as of May 2020.*

Agency	Focal Point
CMA	Feng Lu
CNES	Pierre Tabary
CNSA	-
CSA	Ralph Girard
ECCC	Shannon Kaya, Christopher Linklater
ESA	Ivan Petiteville
EUMETSAT	Stephan Bojinski
IMD	A.K. Mitra
ISRO	Raj Kumar
JAXA	Riko Oki
JMA	Akiyoshi Ando
KMA	Dohyeong Kim
KARI	Lim Hyo-Suk
NASA	Charles Webb
NOAA	Mary Ann Kutny
ROSCOSMOS	Alexander Karelin
ROSHYDROMET	Sergey A. Uspensky

2.2 Updating procedure

The main mechanism for the WMO Space Programme Office to collect the relevant information is through templates submitted to the OSCAR/Space Support Team (O/SST) members, usually three to four times per year.

The template was first introduced in working paper CGMS-47-WMO-WP-17b. An updated version of the template is provided to O/SST focal points three to four times per year. The latest version of the template provided to O/SST is contained in working paper CGMS-48-WMO-WP-10b.

O/SST focal points are expected to collect missing or outdate information within their respective organization or agency and to return the completed templates in a timely manner within the stated deadlines.

In addition to the information collected through templates, O/SST members are expected to provide short-term updates as necessary in accordance with the O/SST Terms of Reference (Appendix).

WMO Space Programme Office also makes use of other information sources to update OSCAR/Space database contents, such as CGMS, CEOS, WMO and other meetings and the following online sources:

1. Web sites of responsible space agencies
2. ESA-maintained EO portal (<https://eoportal.org>)
3. CEOS MIM (<http://database.eohandbook.com>)
4. SpaceflightNow (<https://spaceflightnow.com>)
5. Gunter's Space Pages (<https://spaceflightnow.com>)
6. N2YO (<http://www.n2yo.com>)

SpaceflightNow and Gunter's Space Pages are used to obtain information on planned launches and on launches that have taken place. N2YO is used for up to date orbit information. Occasionally updates (around once per month) are also received from individual researches using OSCAR/Space via the OSCAR Helpdesk form, accessible through <https://oscar.wmo.int/surface//index.html#/support>.

The latest request for clarifications or missing information was sent to O/SST focal points in January 2020, specifically requesting updates from CMA, ESA, EUMETSAT, ISRO, JAXA, KMA, NASA, NOAA and ROSCOSMOS.

This was in follow-up to a previous request for clarifications or missing information sent in August 2019, with requests for updates to all agencies represented in O/SST.

The next request will be sent to O/SST focal points in July 2020.

WMO is also continuing efforts to establish reliable O/SST focal points from CEOS, non-CGMS/CEOS and commercial satellites operators, to support the updating of database content related to these operators.

3 CHALLENGES FOR CONTENTS UPDATING

Updating the OSCAR/Space database contents according to the procedure described above is a considerable amount of work. According to the OSCAR/Space editing history statistics there are around 4000 individual content edits annually. This effort is making OSCAR/Space the most up-to-date and complete data source for the space-based observing system capabilities available globally. T

Through this concerted effort, OSCAR/Space has become the most up-to-date and complete data source for space-based observing system capabilities, available to the general public. Approximately 200 users per day access the database.

3.1 Satellite status update

Some challenges have been recognized when updating the actual operational status of the satellites and their instruments. Unfortunately, while space agencies are used to provide reasonably complete information on their future plans, the satellite/instrument descriptions and launch events, they are far less forthcoming with sharing information on the status of the satellites and their instruments.

As of end of 2019, OSCAR/Space recorded 42 satellites with expected End of Life (EoL) in 2019. However, due to lack of information on the real status of these satellites, their status in OSCAR/Space is reflected as "unclear" even if those satellites are very unlikely to be active any longer.

Year by year the number of satellites with status “unclear” has been constantly growing, which has an impact on the accuracy of the WMO Gap Analysis. To avoid this problem, a new status called “presumably inactive” was recently implemented to exclude satellites with this status from the WMO Gap Analysis.

3.2 Requesting updates from various satellite operators

The updating of the satellite status is particularly challenging when collecting information from non-CGMS satellite operators and from commercial satellite operators. This is expected to increasingly become a growing issue in the future, with more and more commercial satellite operators entering the field. Currently there are 12 companies operating satellites recorded in the OSCAR/Space.

WMO is therefore continuing efforts to establish reliable O/SST focal points from CEOS, non-CGMS/CEOS and commercial satellites operators, to support the updating of database content related to these operators.

A list of the CEOS members, national agencies and commercial companies operating satellites recorded in OSCAR/Space are provided in working paper CGMS-48-WMO-WP-11b.

4 CONCLUSION

OSCAR/Space (see <https://www.wmo-sat.info/oscar/spacecapabilities>) is a key tool and information source to support the WMO Rolling Review of Requirements (RRR) process (see <https://community.wmo.int/rolling-review-requirements-process>) and WMO Gap Analysis (see CGMS-48-WMO-WP-13a and CGMS-48-WMO-WP-13b), which are used to monitor the compliance of satellite programmes in the implementation of the CGMS Baseline and the space-based component of the Vision for WIGOS in 2040 (WMO-No. 1243).

This working paper reviews the OSCAR/Space database content updating status and procedures, outlines the challenges and suggests improvements.

5 ACTIONS FOR CONSIDERATION BY CGMS WG III

1. CGMS members, through their O/SST focal points, shall provide accurate and timely updates on OSCAR/Space database content in response to requests made to them by the WMO Space Programme Office.
2. WMO to continue preparing templates on OSCAR/Space data that needs to be updated and submitting them to O/SST, approximately 3-4 times a year, for providing the missing information. The latest update template provided to O/SST is contained in working paper CGMS-48-WMO-WP-10b.
3. WMO to continue efforts to establish reliable O/SST focal points from CEOS, non-CGMS/CEOS and commercial satellites operators.

APPENDIX

Terms of Reference for OSCAR/Space Support Team (O/SST)

The O/SST is composed of focal points to the WMO Space Programme Office, with the required expertise to provide accurate and up to date information on satellite missions and their instruments, nominated by satellite operators supporting WMO Application Areas.

Focal points will:

1. Provide accurate and timely replies with information in response to templates submitted to them by the WMO Space Programme Office approximately 3-4 times/year.
2. Regularly confirm that the factual satellite and instrument information contained in OSCAR/Space concerning their own satellites and instruments is correct and up to date;
3. Provide initial programme and mission information for newly launched or planned satellites;
4. Report updated information as soon as possible, in case of satellite or instrument anomalies.

O/SST focal points may elect a chair from among the O/SST members, who shall assist the WMO Space Programme Office with timely resolving any matters related to the updating of the OSCAR/Space database.