

The current status and the future development plans of WMO Observing System Capability Analysis and Review Tool - OSCAR/Space



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World Meteorological Organization

Organisation météorologique mondiale

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- II. OSCAR/Space functionality
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I. Why we need OSCAR/Space ?



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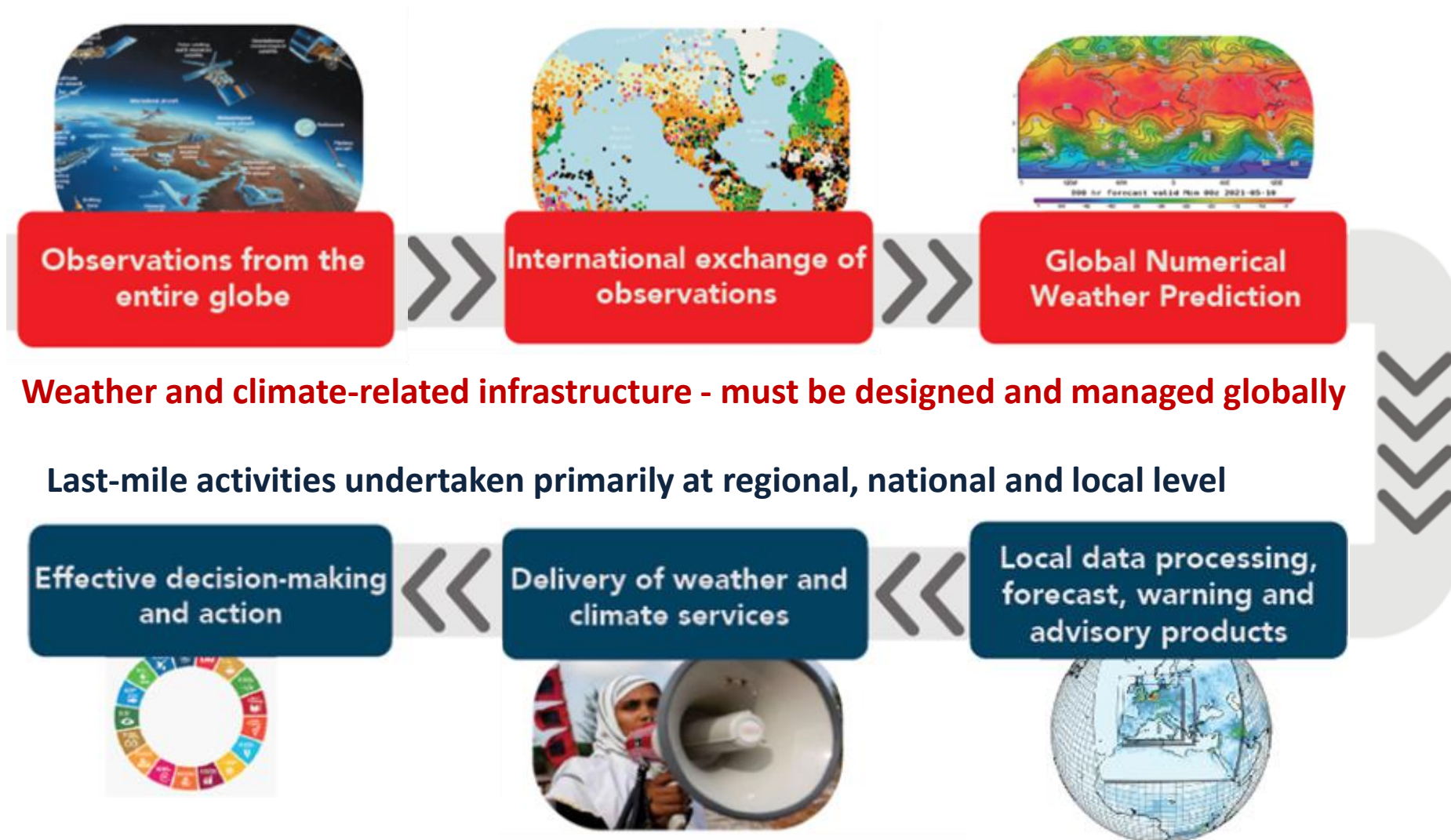
WMO mission

- Facilitate **worldwide cooperation** in the design and delivery of meteorological services
- Foster the rapid **exchange of meteorological information**
- Advance the **standardization** of meteorological data
- Build **cooperation** between meteorological and hydrological services



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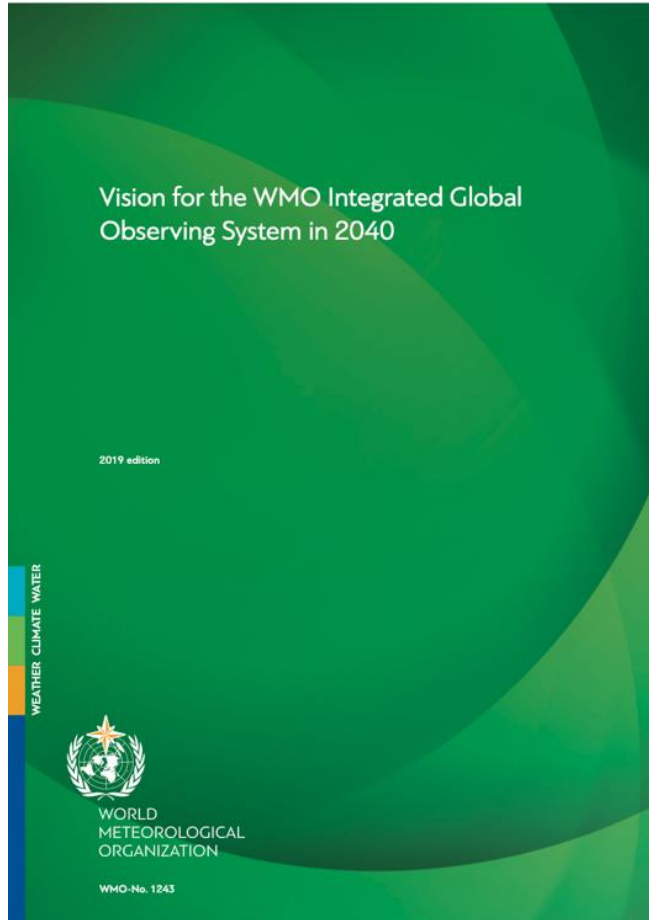
The Value Chain



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Successful delivery and use of weather and climate services depends on all elements in the value chain working properly

Vision for WIGOS 2040



- Describes the space- and surface based observing networks we desire to operate by 2040
- The space-based component consists of four subcomponents:
 1. Backbone system with specified orbital configuration and measurement approaches
 2. Backbone system with open orbit configuration and flexibility to optimize the implementation
 3. Operational pathfinders, and technology and science demonstrators
 4. Additional capabilities (e.g. contributions by commercial operators)



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Observing System Capability Analysis and Review Tool

- To monitor and follow the implementation of WIGOS Vision

The screenshot shows the OSCAR website with a dark blue header containing the WMO logo and the text "OSCAR Observing Systems Capability Analysis and Review Tool". A navigation bar below the header includes links for Home, Observation Requirements, Space-based Capabilities, Surface-based Capabilities, and Analysis. The main content area is titled "Welcome to OSCAR" and contains several paragraphs of text. On the right side, there are two boxes with links to get started with OSCAR/Space and OSCAR/Requirements, and another box with a link to get started with OSCAR/Surface. At the bottom, there is a footer with copyright information and a version number.

OSCAR
Observing Systems Capability Analysis and Review Tool

Home | Observation Requirements | Space-based Capabilities | Surface-based Capabilities | Analysis

Welcome to OSCAR

OSCAR is a resource developed by [WMO](#) in support of Earth Observation applications, studies and global coordination.

It contains quantitative user-defined requirements for observation of physical variables in application areas of WMO (i.e. related to weather, water and climate). OSCAR also provides detailed information on all earth observation satellites and instruments, and expert analyses of space-based capabilities.

The tool constitutes a building block of [WIGOS](#) and more specifically, the so-called [Rolling Requirements Review process](#). OSCAR targets all users interested in the status and the planning of global observing systems as well as data users looking for instrument specifications at platform level. To continue, please select one of the following modules:

- [Observation Requirements](#)
- [Satellite Capabilities](#)
- [Surface based Capabilities](#)

Each of the modules can be consulted individually, however, the tool is also designed with the goal to integrate user requirements with actual capabilities. This facilitates the Rolling Requirements Review process, comparing "what is required" with "what is, or will be available", in order to identify gaps and support the planning of integrated global observing systems.

The tool is being further developed, and additional functionality and information will be added as appropriate. Recently several new features were developed for the Gap Analyses functionality. In addition, a restful API to retrieve observation records in OSCAR/Space and return them as JSON records was developed. This allows users to query the database and retrieve its records in the JSON format. Please see the details in the [API documentation](#).

For support and feedback please use the [helpdesk form](#).

Getting started with OSCAR/Space and OSCAR/Requirements

- Watch the [10 minute OSCAR screen-cast](#) to get an overview of the application and learn how to use its functionalities
- Documents available for download
- [OSCAR/Space and OSCAR/Requirements User manual](#) (413 kbyte)

Getting started with OSCAR/Surface

- Read the [OSCAR/Surface User manual](#)

OSCAR overview - click to enlarge

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version 2.7.0a



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See <http://space.oscar.wmo.int>

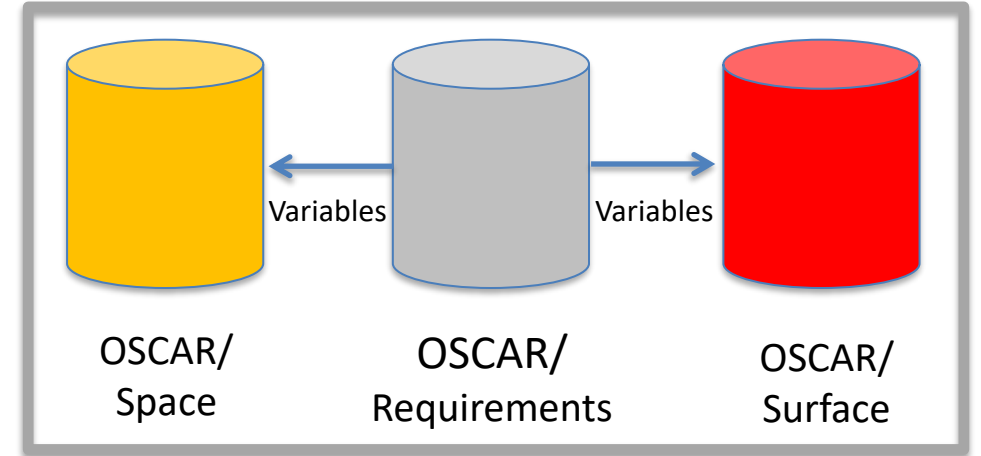
II. OSCAR/Space functionality



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OSCAR combines three databases

- WMO-maintained online resource with 3 components:
 - **OSCAR/Space:**
 - Satellite programmes, satellites and their instruments
 - **OSCAR/Surface:**
 - Surface-based stations/platforms under WIGOS
 - **OSCAR/Requirements:**
 - Observation requirements for all **WMO application areas** and for all relevant **variables**



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OSCAR/Space

1. Information on satellites and instruments (“*capabilities*”)

- 93 agencies (CGMS and CEOS)
- Over 800 satellites
- Over 1000 instruments (1/3 for space weather)
- Weather and climate
- Environmental monitoring

2. Assessment of instruments (“*analysis and review*”)

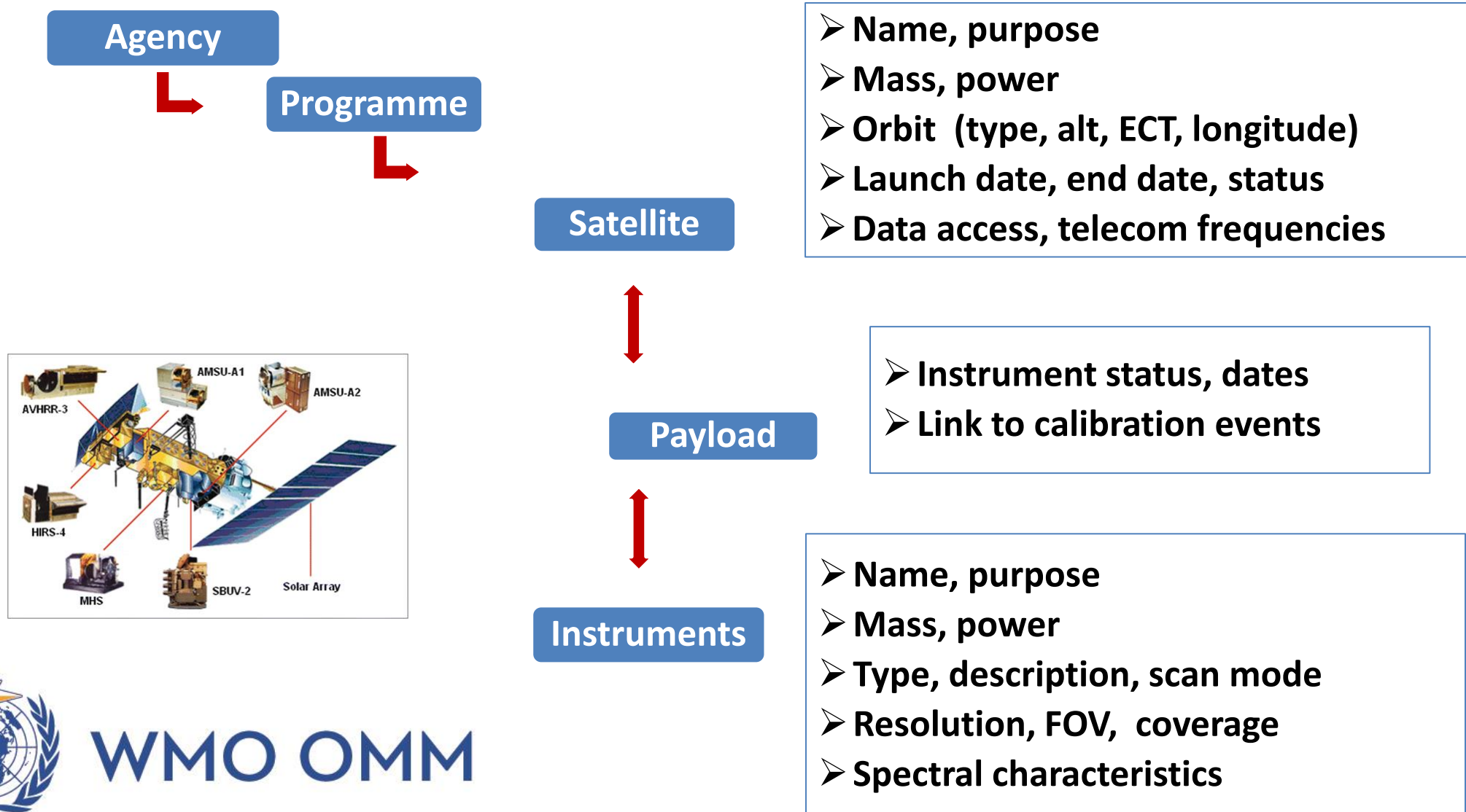
- Mapping instruments to measured variables
- “Gap analysis” by measured variable, or by the type of the mission
- Mapping instruments by WIGOS Subcomponent (CGMS Baseline)



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The screenshot shows the OSCAR/Space website. At the top is the OSCAR logo with the tagline 'Observing Systems Capability Analysis and Review Tool'. Below this is a navigation bar with links: Home, Observation Requirements, Space-based Capabilities (highlighted), and Surface-based Capabilities. A secondary navigation bar includes Overview, Programmes, Satellites, Instruments, Frequencies, Agencies, Satellite Status, and Gap Analysis. The main heading is 'Space-based Capabilities (OSCAR/Space)'. The text below explains that this section contains details of environmental satellite missions, instruments, and related information, including expert assessments on instrument relevance for WMO capabilities and physical variable measurements. It mentions that the section is managed by the WMO Space Programme Office. A section titled 'How to get started with OSCAR/Space?' provides instructions on using the 'Quick Search' feature (located at the top right of the menu bar) and the top menu. It also notes that hyperlinks are available for navigation and that a helpdesk form is available for support and feedback.

Factual information content (Part 1)



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Assessments:

Mapping instruments to variables, gap analyses (Part 2)

- Which variables can be measured with a given instrument?
- Which instruments can measure a given variable?
- Which instrument are contributing to certain WIGOS subcomponent, for example CGMS Baseline?



Measurement timeline for WIGOS Subcomponent 1

Hint: Move around in the timeline by scrolling up, down, left or right.

This table has a large number of results. [Show inactive instruments](#)

| Instrument | NRT? | Satellite | Orbit | DLR | 2021 | 2022 | 2023 | 2024 | 2025 |
|---------------------------|------|------------------------------|------------|-----|------|------|------|------|------|
| ABI | | GOES-16 | 75.2°W | 19 | X | X | X | X | X |
| ABI | | GOES-18 | 137°W | | | X | X | X | X |
| ABI | | GOES-U | 75°W | | | | | X | X |
| ABI | Yes | GOES-17 | 137.2°W | 19 | X | X | X | X | X |
| ACC | | SWARM-C | 87.35 ° | | X | X | | | |
| ACC | | SWARM-B | 87.75 ° | | X | X | | | |
| ACC | | SWARM-A | 87.35 ° | | X | X | | | |
| ACS-limb | | Meteor-MP N1 | 15:30 asc | | | | | | X |
| ACS-limb | | Meteor-MP N2 | 09:30 desc | | | | | | |
| ACS-nadir | | Meteor-MP N1 | 15:30 asc | | | | | | X |
| ACS-nadir | | Meteor-MP N2 | 09:30 desc | | | | | | |
| AEISS | | KOMPSAT-3 | 13:30 asc | | X | X | | | |
| AEISS | | KOMPSAT-3A | 13:30 asc | | X | X | | | |
| AEISS-HR | | KOMPSAT-7 | 10:50 asc | | | | X | X | X |
| AEISS-HR | | CAS 500-1 | 10:50 asc | | X | X | X | X | X |
| AEISS-HR | | CAS 500-2 | 10:50 asc | | | X | X | X | X |
| AGRI | Yes | FY-4A | 104.7°E | | X | X | X | | |
| AGRI | | FY-4B | 133°E | | X | X | X | X | X |
| AGRI | | FY-4C | 86.5°E | | | | | X | X |
| AGRI | | FY-4D | 105°E | | | | | | |
| AGRI | | FY-4E | 86.5°E | | | | | | |
| AGRI | | FY-4F | 105°E | | | | | | |
| AGRI | | FY-4G | 86.5°E | | | | | | |
| AHI | Yes | Himawari-8 | 140.7°E | 17 | X | X | X | X | X |

OSCAR/Space and CGMS

Coordination Group for
Meteorological Satellites



CGMS Baseline

Sustained contributions to the observing of the Earth
system, space environment and the Sun

Endorsed by CGMS-49 Plenary on 20 May 2021

OSCAR/Space is essential for the implementation of space-based observing system component of WIGOS:

- **CGMS Risk Assessment**
 - In support of sustaining the CGMS Baseline
 - Annually
- **WMO Gap Analysis**
 - In support of evolving towards implementing the Vision for WIGOS in 2040
 - Annually
- **WMO Rolling Review of Requirements (RRR) process**
 - The needs expressed by the users reviewing the status of observing technologies



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See <https://cgms-info.org>

III. OSCAR/Space content management

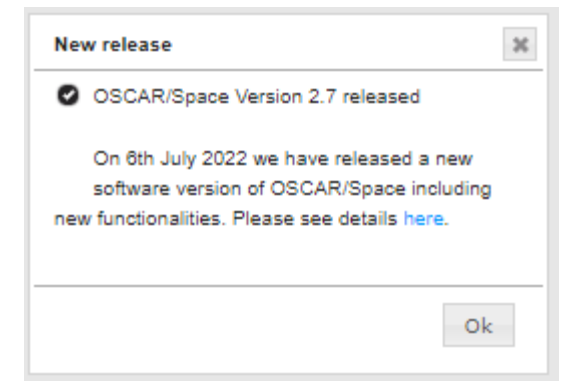


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OSCAR/Space software development

| WP | Task description |
|----|--|
| 1. | Implementing the data latency record in OSCAR/Space |
| 2. | Reorganizing the presentation of the frequencies (SFCG cooperation) |
| 3. | Restructure the “Mission Objectives” area in the Instrument descriptive page |
| 4. | Restructure the instrument filter architecture of the WIGOS Gap Analysis |
| 5. | The Excel export for Gap Analysis Results |
| 6. | Improved usability of Gap Analysis Content |
| 7. | Fixing recognized bugs and usability issues |

- The development needs are coming from the CGMS working groups, WMO internal needs or as direct feedback from the users
- SW version 2.7 released in July
- Releases advertised in WIGOS newsletter and via CGMS
- Popup window notification when access the portal after the SW release



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OSCAR/Space database content updating

- For Gap Analysis and Risk Assessment the accuracy of the current status information of the instruments (active, inactive, commissioning, operational,...) and expected lifetime are the key information content
- WMO has OSCAR/Space Support Team (O/SST) to collect missing or outdate information in portal and report back to WMO
- WMO request to collect updates three to four times per year
 - *Latest update request sent in August.*
- We also contact CEOS agencies and use several online resources



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O/SST members

| Agency | Focal Point |
|-------------|-------------------------------------|
| CMA | Feng Lu |
| CNES | Adrien Deschamps |
| CNSA | Yong Gan |
| CSA | Ralph Girard |
| ECCC | Shannon Kaya, Christopher Linklater |
| ESA | Ivan Petiteville |
| EUMETSAT | Stephan Bojinski |
| IMD | A.K. Mitra |
| ISRO | Raj Kumar |
| JAXA | Toshiyuki Kurino |
| JMA | Takuya Sakashita |
| KMA | Dohyeong Kim |
| KARI | Lim Hyo-Suk |
| NASA | Jamie Wicks, Lacey McCarthy |
| NOAA | Natalia Donoho |
| ROSCOSMOS | Alexander Karelin |
| ROSHYDROMET | Sergey A. Uspensky |

Online sources

- ESA-maintained EO portal (<https://eoportal.org>)
- CEOS MIM (<http://database.eohandbook.com>)
- SpaceflightNow (<https://spaceflightnow.com>)
- Gunter's Space Pages (<https://spaceflightnow.com>)
- N2YO (<http://www.n2yo.com>)
- NWP SAF for data latency (<https://nwp-saf.eumetsat.int/site/>)

IV. User statistics

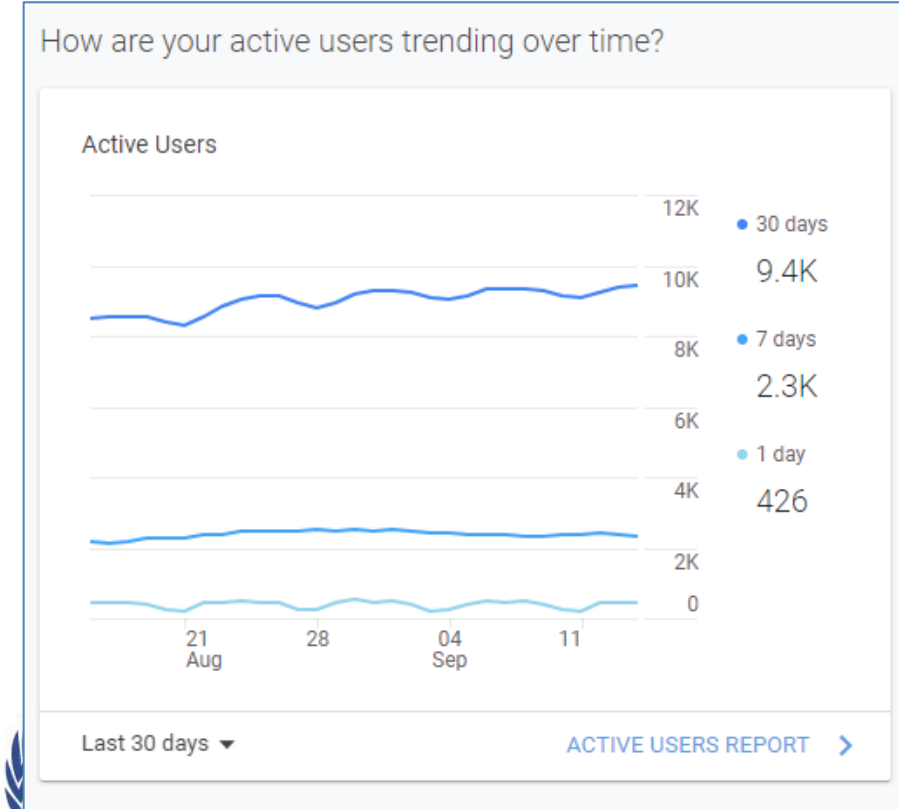


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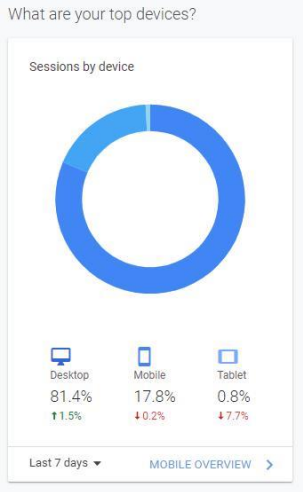
OSCAR/Space - the most accessed WMO web portal!

More than 2000 user per week

The most active users per country in 30 days



| Country ? | Acquisition | |
|-------------------|-------------|-----------------------------|
| | Users ? | ↓ |
| | 9,370 | % of Total: 100.00% (9,370) |
| 1. United States | 2,015 | (21.16%) |
| 2. China | 931 | (9.78%) |
| 3. India | 837 | (8.79%) |
| 4. Russia | 500 | (5.25%) |
| 5. Germany | 383 | (4.02%) |
| 6. United Kingdom | 319 | (3.35%) |
| 7. France | 305 | (3.20%) |
| 8. Japan | 263 | (2.76%) |
| 9. Australia | 209 | (2.19%) |
| 10. Netherlands | 191 | (2.01%) |



Tweet

Aravind @aravind_raves

Can't recommend OSCAR enough - I know what I know about Earth observation satellites and sensors, thanks to this portal.

space.oscar.wmo.int/spacecapabilities

Roger Saunders @sat_metman · 56m

If you want information on any past or future earth observation or space weather satellite/instrument then visit OSCAR-SPACE space.oscar.wmo.int/spacecapabilities which is a useful resource. Feedback is also appreciated.

Summary

- OSCAR/Space is needed for monitoring of the implementation of WIGOS Vision 2040 together with CGMS Risk Assessment and WMO Gap Analysis
- OSCAR/Space contains details of 1000 satellite instruments with their status and lifetime
- Information content is updated with the support of space agency focal points in the context of CGMS
- Software features are constantly developed to support user needs
- It has the highest number of user among all the WMO web portals



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Thank you
Merci

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