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

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WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

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I. Why WMO needs OSCAR/Space ?

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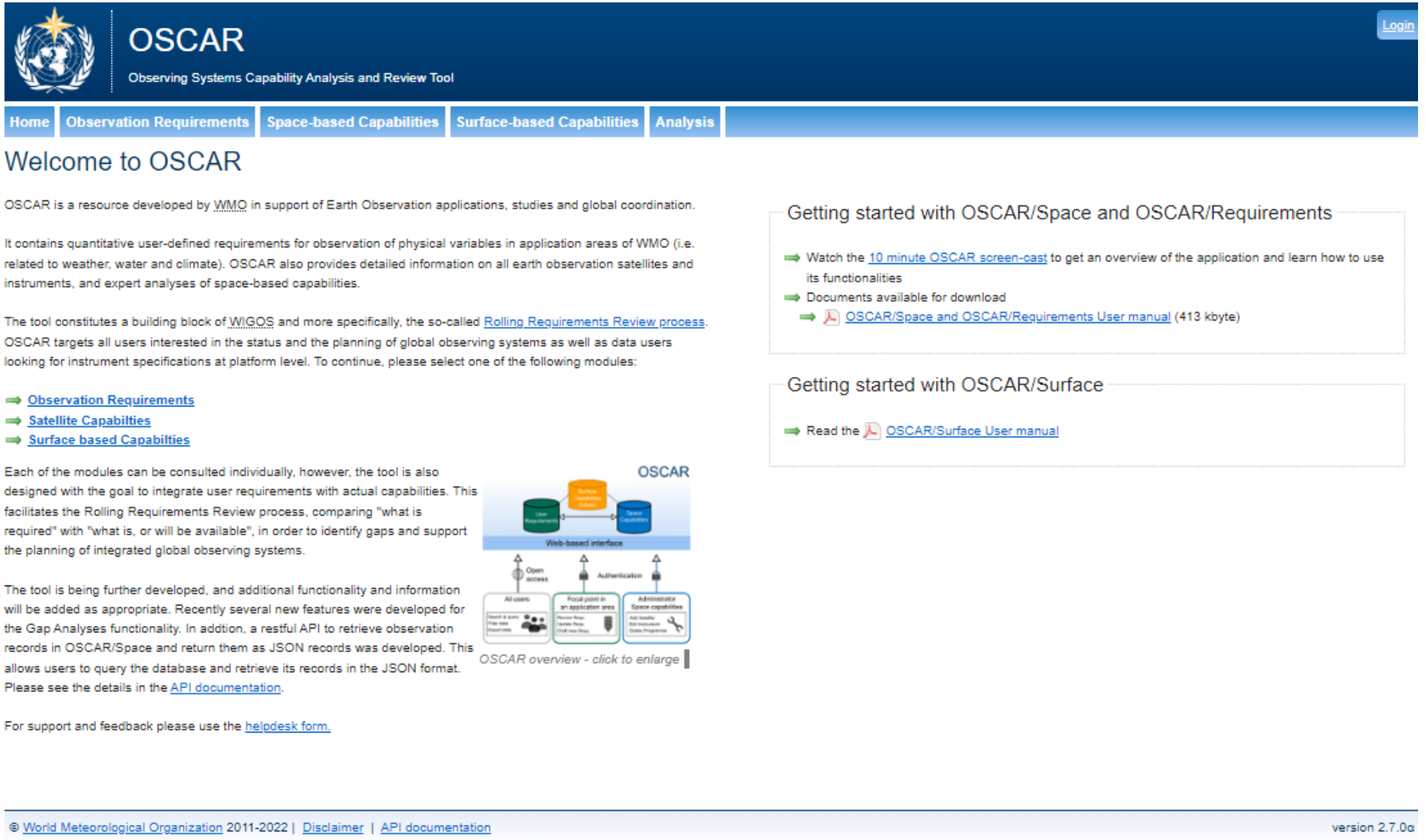
Observing System Capability Analysis and Review Tool

- To monitor and follow the implementation of WIGOS Vision



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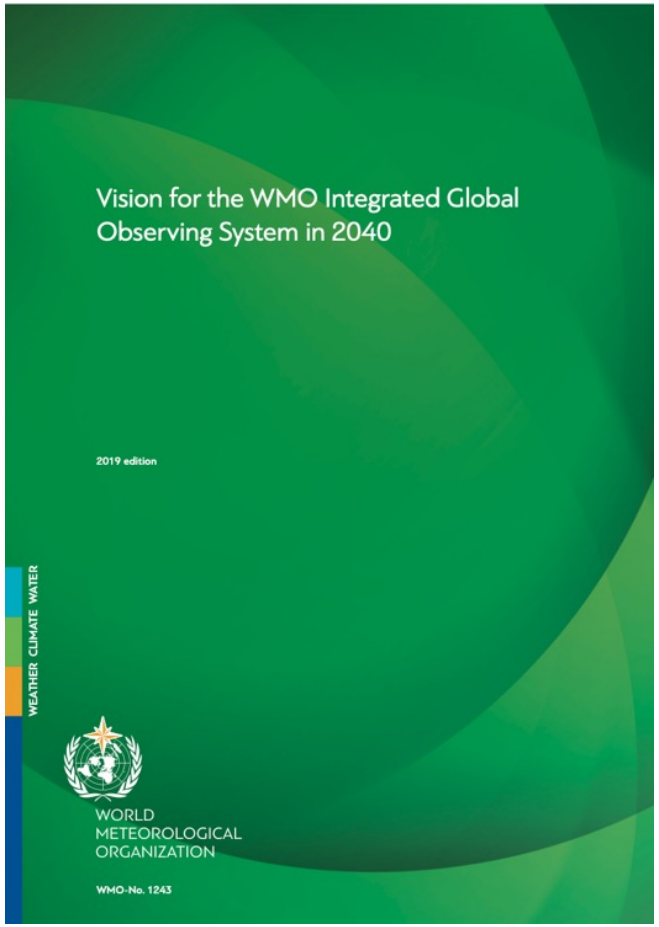
See http://space.oscar.wmo.int

Vision for WMO integrated Global Observing System 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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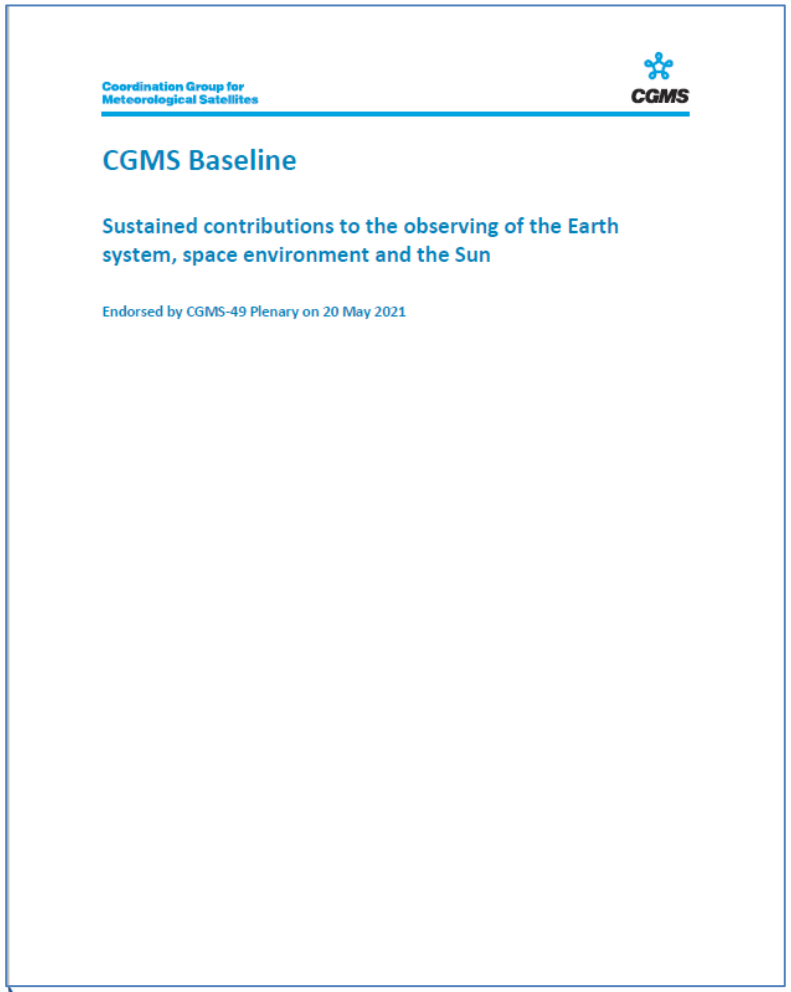
OSCAR/Space and CGMS


Coordination Group for Meteorological Satellites

CGMS

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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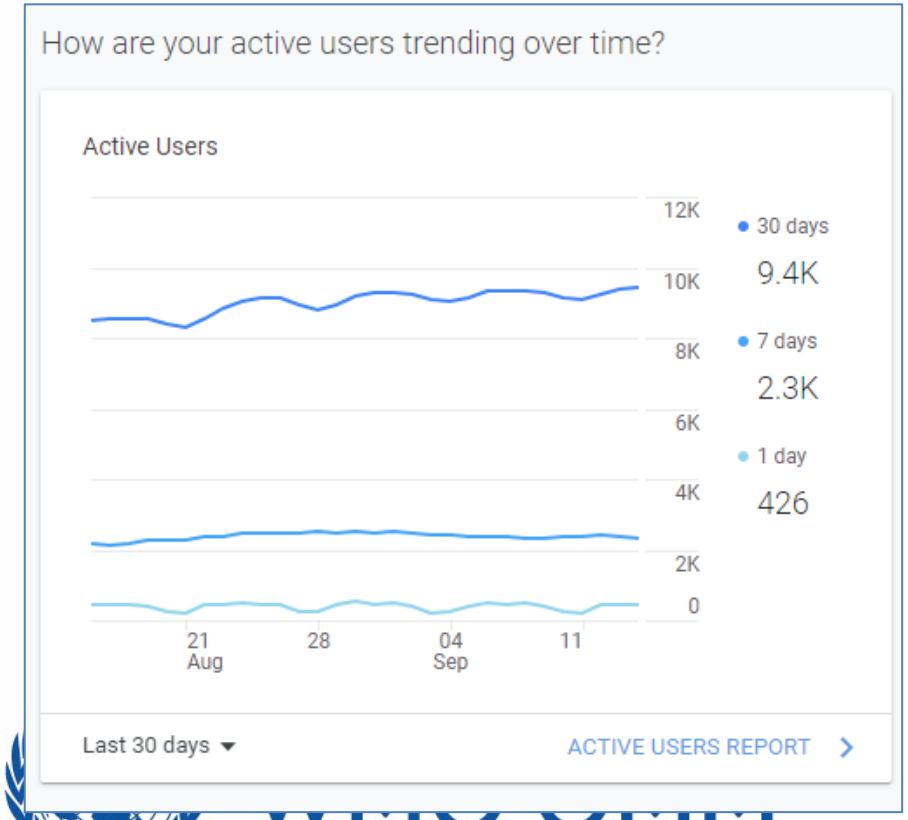
See https://cgms-info.org

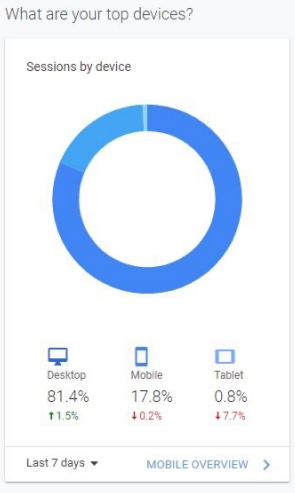
OSCAR/Space - the most accessed WMO web portal!

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%)



II. OSCAR/Space functionality

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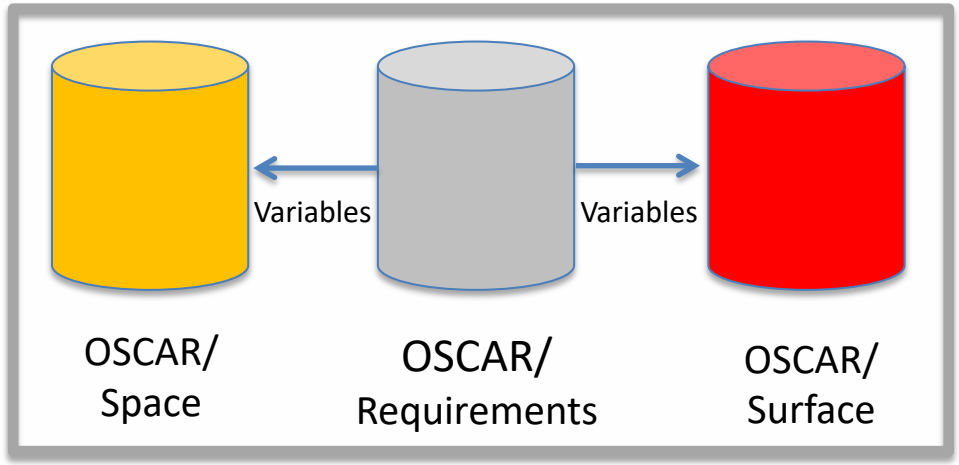
OSCAR combines three databases

- 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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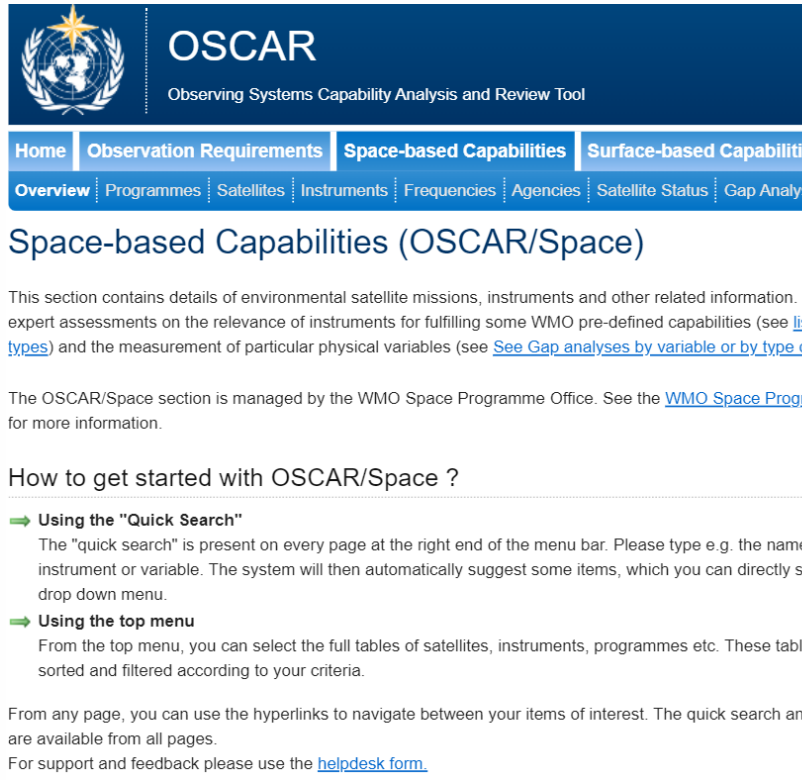
OSCAR/Space

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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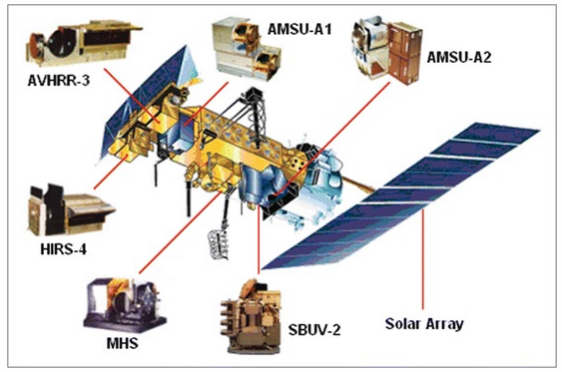
Factual information content (Part 1)

Agency

Programme

Satellite

- Name, purpose
- Mass, power
- Orbit (type, alt, ECT, longitude)
- Launch date, end date, status
- Data access, telecom frequencies



Payload

- Instrument status, dates
- Link to calibration events

Instruments

- Name, purpose
- Mass, power
- Type, description, scan mode
- Resolution, FOV, coverage
- Spectral characteristics

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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?

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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

III. OSCAR/Space content management

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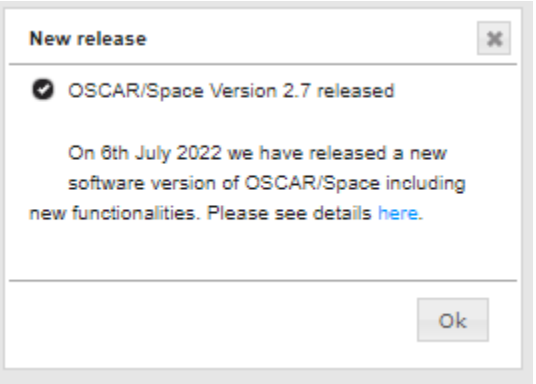
OSCAR/Space software development

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

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/)

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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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