World Meteorological Organization

Working together in weather, climate and water

WMO OMM

-OSCAR Database-

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ICTSW-4
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Outline

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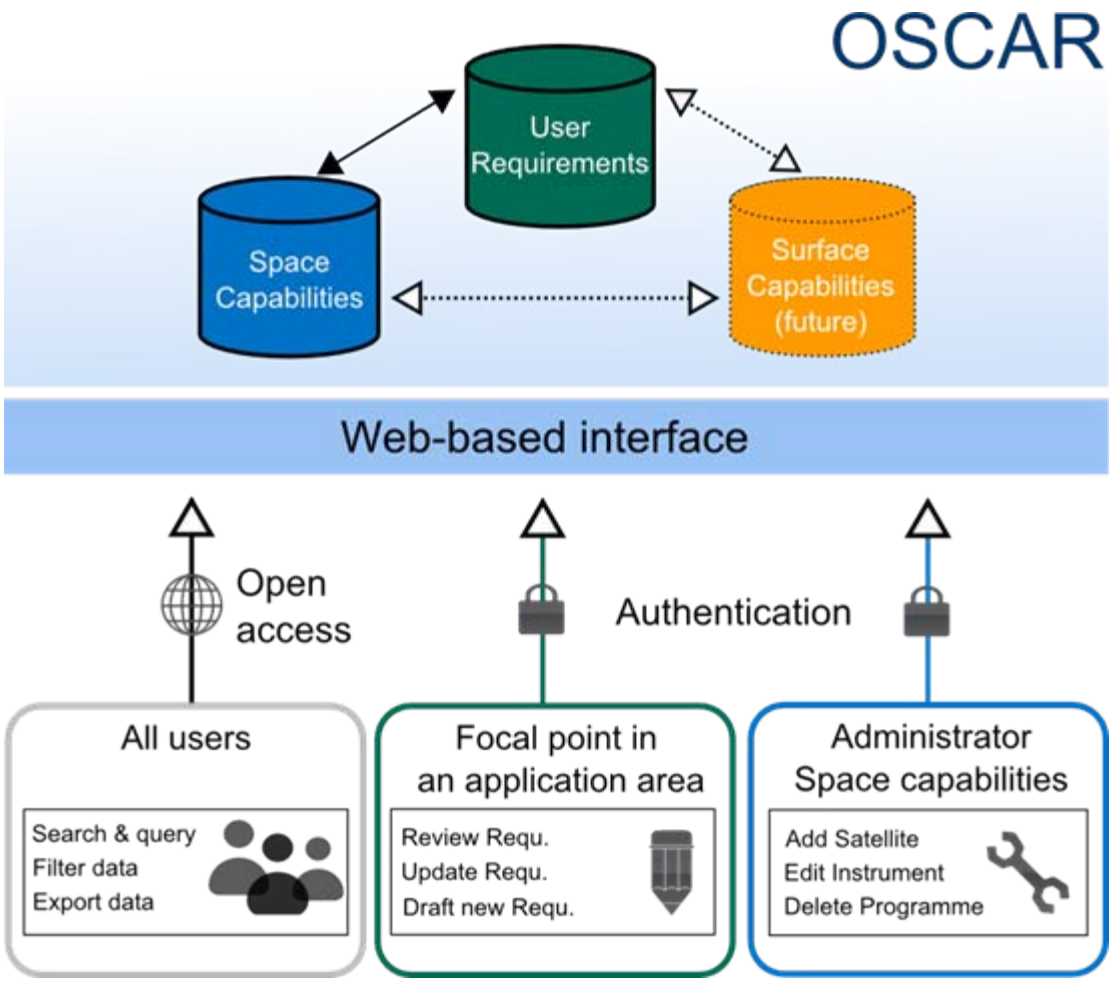
Introducing OSCAR

- Online tool to support lookup, planning, evaluation and gap analysis of observing capabilities
- Available to the public: www.wmo.int/oscar
- 3 modules
  - OSCAR/Requirements
  - OSCAR/Space
  - *OSCAR/Surface (future)*

OSCAR | Components



OSCAR | Objectives

- Convenient access to satellite, instrument and network metadata for all users

  → Facilitate design, planning and global coordination of global observing systems
- Serve as a support tool for the “Rolling Requirement Review” Process

  → Ease collection and maintenance of user requirements and aide comparison with actual capabilities

OSCAR/Requirements

- Official repository of requirements for observation of physical variables in support of WMO Programmes
- Requirements are defined in a “technology-free” manner
- Stores definitions and details of around 250 variables (94 Space Weather related) and more than 600 requirements

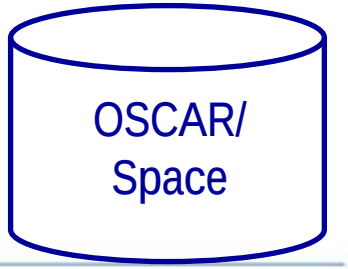
OSCAR/Requ. | Process

- For each Application Areas, designated focal points have limited editing rights
- Requirements can be directly maintained on-line by the focal points (ICTSW: Terry Onsager)
- After review and endorsement, these changes become visible to the public
- Process overseen by CBS IPET-OSDE

Definition of a Requirement

- Each requirement is defined
  - by one « owner » Application area — Space Weather
  - for one of the pre-defined Variables with units — Interplanetary magn. field
  - in one or several vertical « Layers » — Earth-Sun interspace
  - over part or whole of the horizontal « coverage » — L1
- The requirement states
  - Uncertainty (G,BK,T and stability over a decade) — 0.05, 0.1, 1, -- (nT)
  - Horizontal resolution (G,BK,T) — --
  - Vertical resolution (G,BK,T) — --
  - Temporal resolution (G,BK,T) — 1, 10, 60 (s)
  - Timeliness (G,BK,T) — 1, 5, 15 (min)
  - Level of confidence of the requirement — Tentative
  - Approval date/stamp and body — 2011/05/01, ICTSW-1
  - Comments

OSCAR/Space



- Inventory of factual information
  - Satellites (600+)
  - Instruments (850+, incl. 250+ for Space Weather)
  - Agencies and other related info
- Expert assessments of space-based capabilities
  - Network review against pre-defined capabilities
  - Assessment of the relevance and limitations of instruments for particular measurements

Factual information and Performance evaluation

Instrument: EXIS

Instrument details

Acronym	EXIS				
Full name	Extreme Ultraviolet Sensor / X-Ray Sensor Irradiance Sensors				
Type of Instrument	22. Solar processes monitor				
Purpose	To monitor EUV and X-rays from the solar disk				
Short description	Two units: EUVS (EUV Sensor) and XRS (X-Ray Sensor). EUVS measures EUV flux in the 5-127 nm range. XRS measures soft-X-rays fluxes in two bands, 0.05-0.4 and 0.1-0.8 nm				
Background	Evolution of SXI on GOES 12 to 15				
Scanning Technique	Sun pointing, full disk				
Resolution	N/A				
Coverage / Cycle	N/A				
Mass	30 kg	**Power**	40 W	**Data Rate**	0.9 kbps

Providing Agency	NOAA
Utilization Period:	≥2015 to ≥2035
Last update:	2013-11-12

Detailed characteristics

Satellites this instrument is flying on

Note: a red tag indicates satellites no longer operational, a green tag indicates operational satellites, a blue tag indicates future satellites

- Geostationary Operational Environmental Satellite - 3rd generation (NOAA)
  - GOES-R (2015 - 2026)
  - GOES-S (2017 - 2028)
  - GOES-T (2019 - 2030)
  - GOES-U (2024 - 2035)

Contribution to Space Capabilities

The instrument contributes to the following Capabilities, as identified in the "Vision for the GOS in 2025" and the Implementation Plan for the Evolution of Global Observing Systems:

➡ Space Weather: solar activity, solar wind and deep space monitoring

Tentative Evaluation of Measurements

The following list indicates which measurements can **typically** be retrieved from this category of instrument. To see a full Gap Analysis by Variable, click on the respective variable.

Note: table can be sorted by clicking on the column headers.

Variable	Relevance for measuring this Variable	Operational Limitations	Processing maturity
Solar EUV flux	2-High	Referring to the Photosphere	Consolidated methodology
Solar X-ray flux	2-High	Referring to the Photosphere	Consolidated methodology

Categorization principles

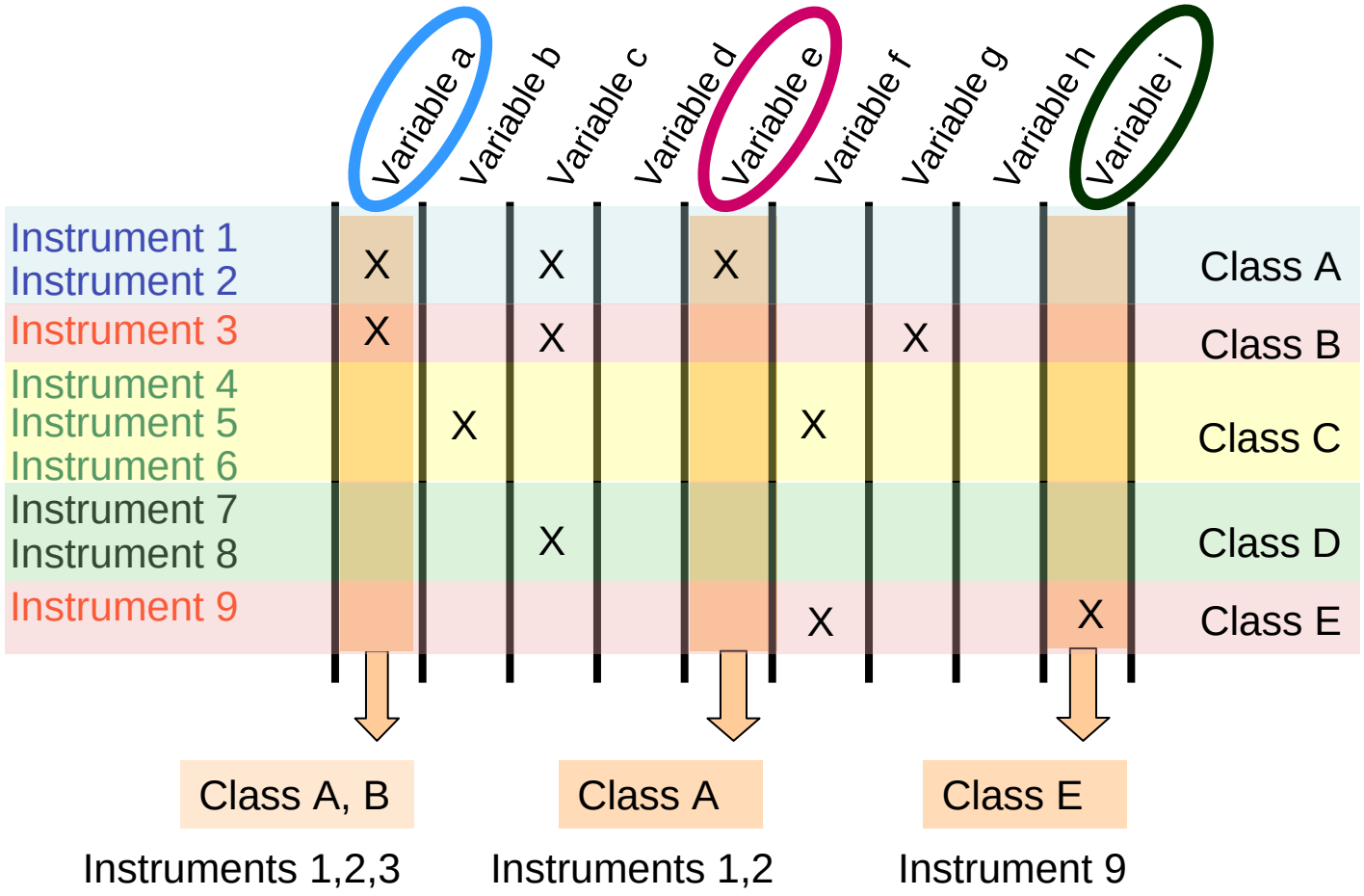
→Instrument **types** define broad groups of instrument functionalities (Space Weather: 5 types)

→Within one type, instrument **classes** group instruments with “similar” characteristics and performance

→Every instrument belongs to only one class

Solar Processes Monitor	Instrumentclass A	Instrument 1
	Instrumentclass B	Instrument 2
		Instrument 3
	Instrumentclass C	Instrument 4
		Instrument 5
		Instrument 6
Solar Wind and cosmic radiation monitor	Instrumentclass D	Instrument 7
	Instrumentclass E	Instrument 8
		Instrument 9

From *(classes of)* instruments to variables and from variables to *(classes of)* instruments



Demonstration of OSCAR