OSCAR

Observing Systems Capability Analysis and Review Tool

- User Manual -

Updated in August 2013

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INTRODUCTION

This document describes and explains the functionality of the web-based interface of the **Observing Systems Capability Analysis and Review Tool (OSCAR)** for the general public. This manual is complemented by the special **OSCAR/Requirements Manual for Focal Points**, which specifically targets users with a dedicated account who are responsible for maintaining observation requirements in their respective area.

OSCAR is a resource provided by WMO in support of Earth Observation studies and global satellite mission coordination. The information contained in OSCAR is updated by the WMO Secretariat to the best of its knowledge, in close cooperation with space agencies. However, satellite systems and plans are continuously evolving. Neither WMO, nor the space agencies, nor any of their employees or contractors, makes any warranty on the data contents, or any assumed legal liability for the accuracy, completeness, or usefulness of this information.

It is underlined that the assessments contained in OSCAR are performed according to objective criteria, based on instrument design characteristics, and submitted to validation by international expert teams (primarily the WMO/CBS Expert Team on Satellite Systems). These assessments only reflect a relative, and generally qualitative, evaluation. This first level analysis does not replace a detailed analysis of instrument performances or a detailed evaluation of the quality of derived environmental data records for a specific user application.

Information contained in OSCAR may be used freely. Publications using information from OSCAR should acknowledge WMO.

System Requirements

The web-application is platform-independent, and can be accessed with any recent web-browser. JavaScript and Cookies need to be enabled for proper functionality. The application has been tested and is known to work with Internet Explorer 7 or higher, Firefox 4 or higher, Chrome and Safari. The application is simply started by accessing the URL, accessible under http://www.wmo.int/oscar/.

Basic Structure

OSCAR as shown in Figure 1 consists of three modules, Observation Requirements, Satellite Capabilities, and Surface-based capabilities. These modules can be accessed by the general public via one single web-interface. Users with special rights, such as WMO Focal Points or Administrators are able to maintain data in their respective field. Currently only Observation Requirements and Space-based capabilities have been implemented; the third component, Surface capabilities is still being designed and is planned to become operational in 2015.

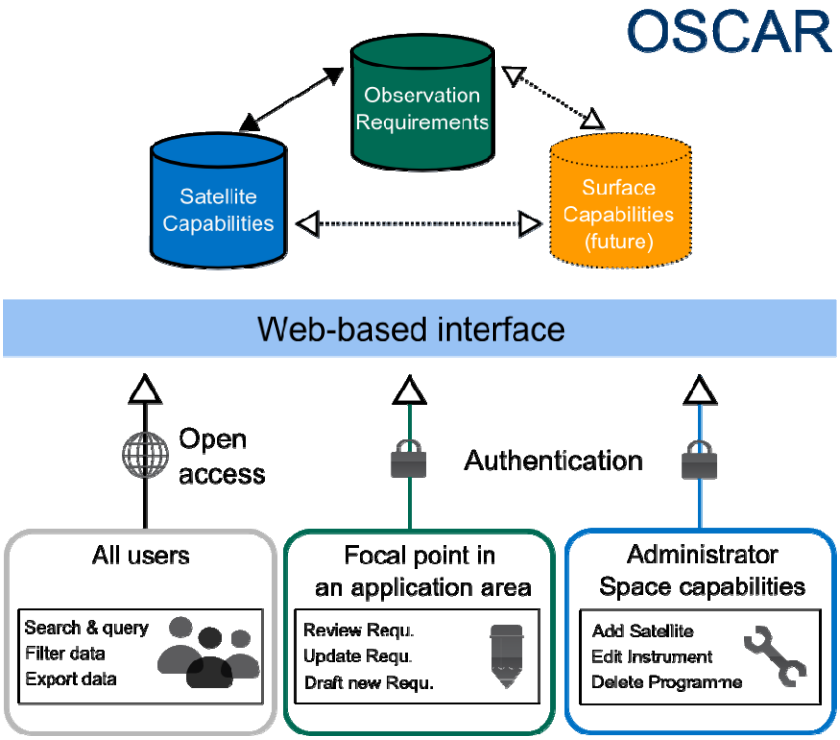


Figure 1 Basic Structure of OSCAR and examples of access

USING OSCAR

Home Page and Navigation

The first page users see consists of the head section (indicated as the green box in Figure 2), which includes a simple navigation bar and the login for registered users. This head section stays the same throughout OSCAR and allows direct access to all core content. The three main modules can be accessed from the navigation bar.

The content section (shown in red box) provides basic information about OSCAR

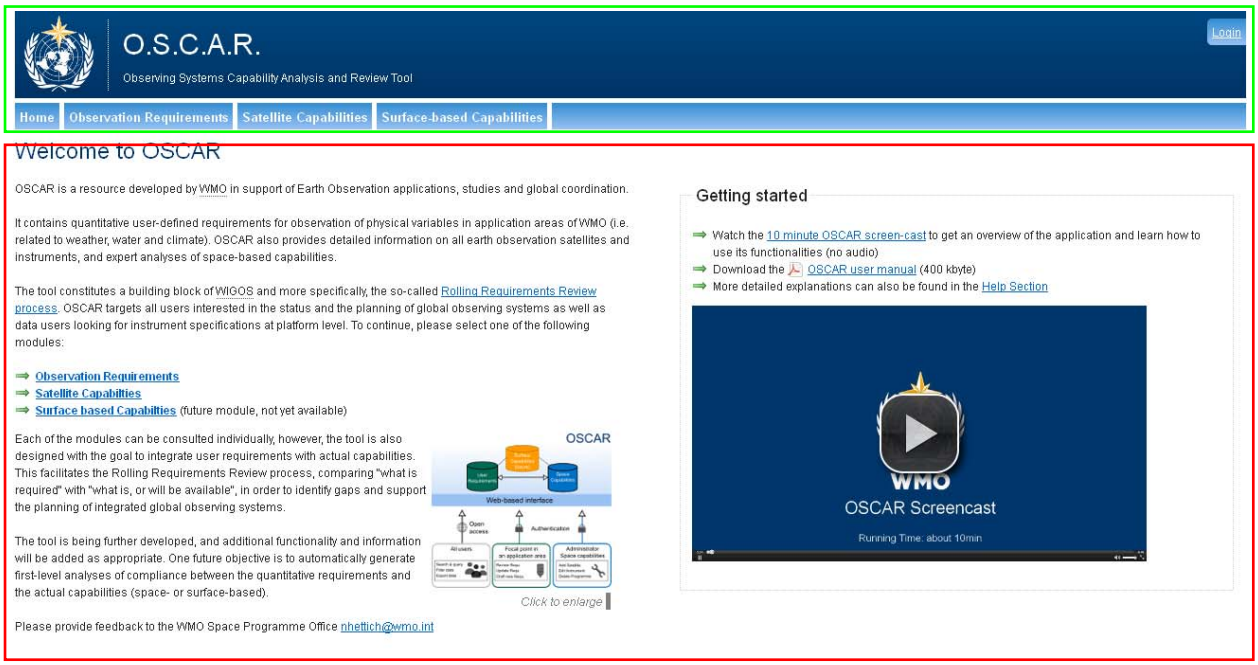


Figure 2: Home Page of OSCAR

Accessing factual data

There are 2 general ways of accessing data in OSCAR, either through a the **"quick search"** – helpful if searching for any particular Variable, Instrument, Satellite etc, or via the **full data tables**, if the objective is to get an overview over multiple data items.

"Quick Search"

The quick search box is located in the right top header, and is available in both modules, but not on the homepage. This free-text search field (Figure 3) expects the name or partial name of either

- **Variable** or **Application Area** (when in the *Observing Requirements* module)
- **Satellite, Programme, Instrument, Instrument type, Capability, Space Agency** or **Variable** (when in the *Satellite capabilities* module)

The search will presents possible matches in a structured list while typing. The search is started as soon as at least 2 characters are entered in the field.

The "quick search" not only takes the acronym and name fields into account, but also the description field (if such information is available). Therefore it is also possible to use keywords, if the exact name of an item is not known. For example, the term "lightning" will return the instrument "LMI".

As Figure 3 shows, the Search instantaneously returns some suggested results, trying to "guess" the users intention (in this case, searching for "Aerosol Effective Radius"). As soon as these results pop up, it is possible to directly click on any item, which takes the user to the required page.

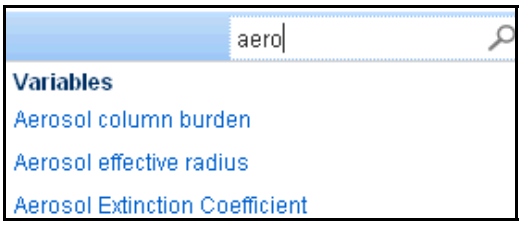


Figure 3: Free Text Search, searching for Term "aero"

Note

The “quick search” is **context-sensitive**, which means it only searches trough the data items that are part of the currently selected module (e.g. variables, application areas for OSCAR/Requirements; Satellites, Instruments, Space agencies, Variables etc. for OSCAR/Space)

The quick search is not **case-sensitive**, i.e. **Aerosol** and **aerosol** will return the same results.

Working with the full data tables

Another way of accessing the content of OSCAR is by navigating through the submenu of each module of the tool (Figure 4). This option offers tabular access to all available data, i.e. all Variables, Satellites, Instruments, and Application Areas etc. with respective links to more detailed pages.

Figure 4: Observation Requirements Sub-menu

Filtering

Instead of browsing through the entire table, there is the possibility to use the “**Filter**” option(s) provided for most tables to pre-select items which are of most interest. Figure 5 shows the use of the filter option on the Satellite page.

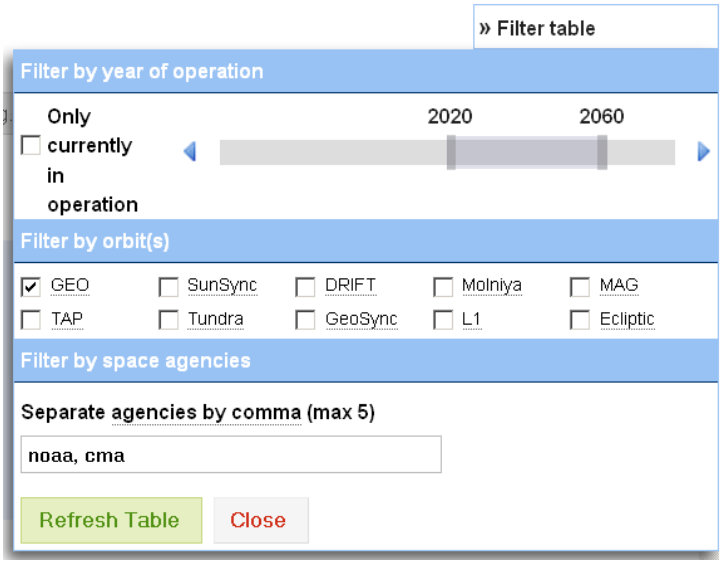


Figure 5: Filter options of the Satellite page

In this example, three types of different filters are provided: By year of operation, orbit in which the satellite is flying and by agencies which are involved in the mission. All available filter options can be combined to create complex conditions such as

Show all currently active Satellites in GEO or Drift Orbit, operated by NOAA or CMA

Note:

Generally, if no item is selected, all are returned.

The **export functionality** takes the current filter into account

Sorting

In tables data can be sorted in ascending and descending order where indicated by small arrows, (red circle in Figure 6). Sort direction is changed by clicking on the respective column head.

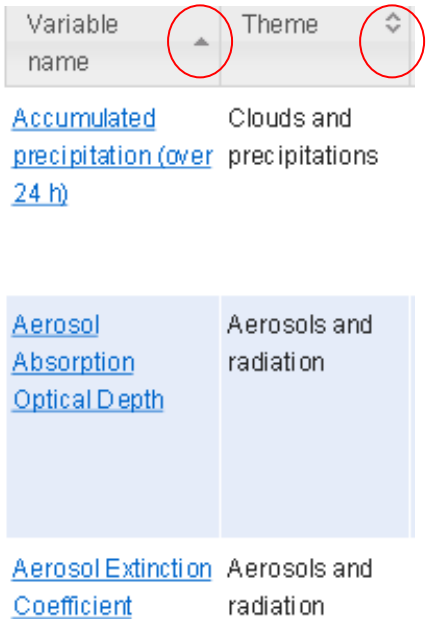


Figure 6: Detailed view of Table, with sort options in columns

Export

All Tables indicated with **Export** (such as Requirements, Variables, Themes, Satellites, Instruments etc.) can be downloaded and saved in .xslx Format, a native Office 2007 format, which can be read by most other spreadsheet software. These files are automatically generated and thus reflect the current status of the Database. The export function also takes the current filter status into account. Please note that the generation of a large table might take a few seconds.

Detail pages

All data items, such as Variables, Requirements, Instruments or Satellites have their own dedicated detail pages which are accessible through a unique URL (and can thus be bookmarked). These pages can be accessed directly through the quick search, but also from the tables. Detail pages contain all information that is available, e.g. in the case of a satellite, there can be many additional details that are not shown in the overview tables, such as comments on status, frequencies used for downlink, the field of view etc.

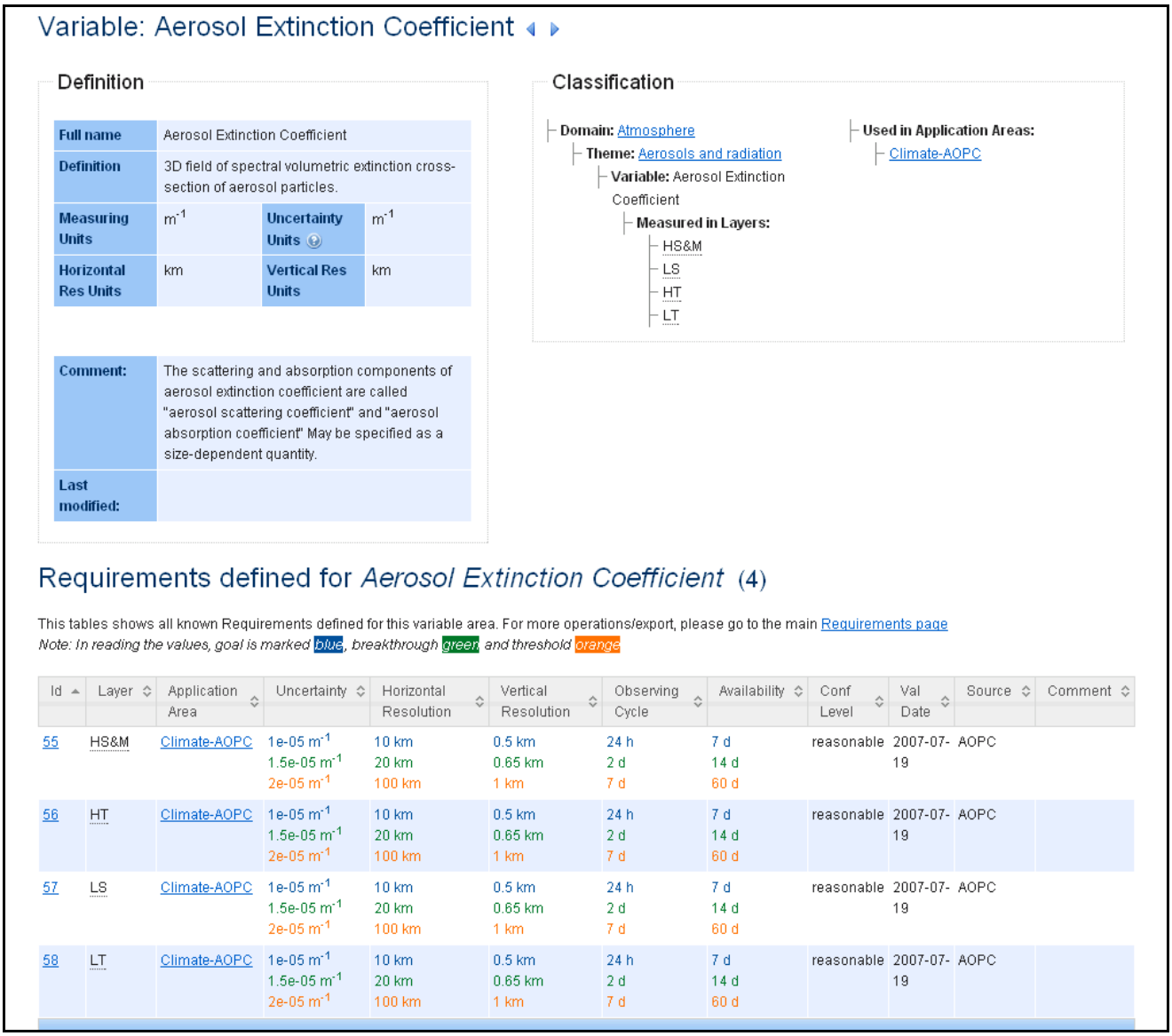


Figure 7: Detail page: All information on a specific variable

Expert analysis tools

Oscar also serves as a first level analysis tool providing expert assessments on the relevance of the various instruments to fulfil particular missions, or for measuring particular variables. However, this should only be seen as a starting point for more detailed, specific studies. The following has to be kept in mind:

- OSCAR assessments are based on instrument categories rather than individual instruments
- OSCAR assessments are primarily based on instrument design features, and do not take into account other important criteria such as: instrument operational status, calibration, actual data availability, etc

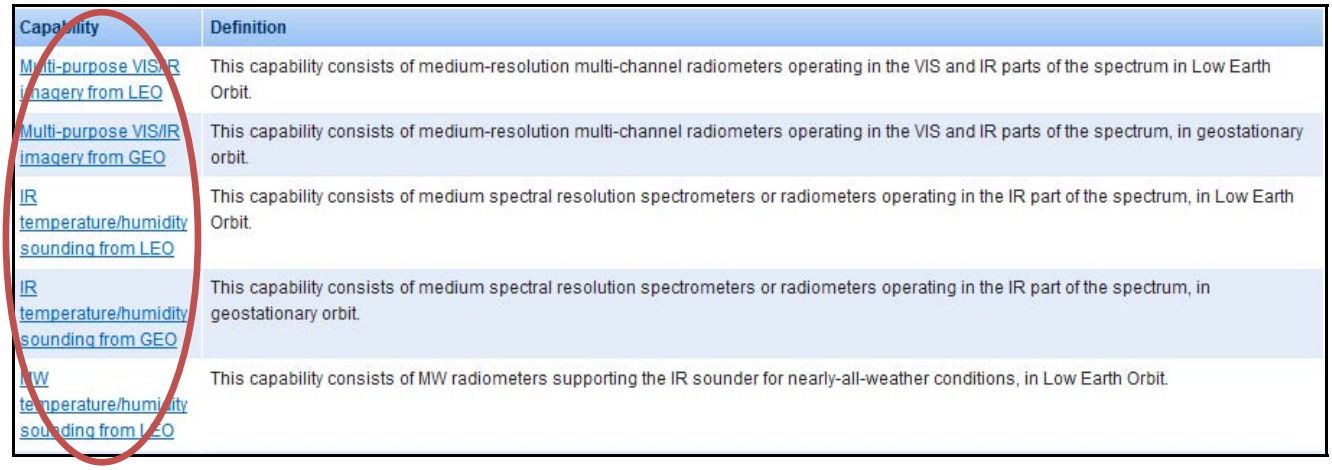
This choice was made deliberately, in order to limit the scope of OSCAR to what is thought to be maintainable by the WMO Secretariat and its Expert Groups. Reference should be systematically made to satellite operators' websites for updated status information.

Two kinds of expert assessments are currently provided:

Capability review

This is an internal tool for WMO Members. It refers to the list of capabilities identified either in the WMO Vision of Global Observing Systems for 2025, or to the Implementation Plan for Evolution of Global Observing Systems. The "rating" of instruments is a simplified index, limited to five levels, that is used to identify which classes of instruments are most suitable to provide the capability identified in WMO plans, and to evaluate the status of implementation of these plans.

To see instruments contributing to a particular capability and their evaluation against the reference observation strategy, as established by the CBS Expert Team on Satellite Systems (ET-SAT), one can select that capability (red circle Figure 8).



Capability	Definition
Multi-purpose VIS/IR imagery from LEO	This capability consists of medium-resolution multi-channel radiometers operating in the VIS and IR parts of the spectrum in Low Earth Orbit.
Multi-purpose VIS/IR imagery from GEO	This capability consists of medium-resolution multi-channel radiometers operating in the VIS and IR parts of the spectrum, in geostationary orbit.
IR temperature/humidity sounding from LEO	This capability consists of medium spectral resolution spectrometers or radiometers operating in the IR part of the spectrum, in Low Earth Orbit.
IR temperature/humidity sounding from GEO	This capability consists of medium spectral resolution spectrometers or radiometers operating in the IR part of the spectrum, in geostationary orbit.
MW temperature/humidity sounding from LEO	This capability consists of MW radiometers supporting the IR sounder for nearly-all-weather conditions, in Low Earth Orbit.

Figure 8: Capability Review

Gap Analyses by Variables

The Gap Analysis by Variable is based on an expert assessment of the relevance of each instrument for the measurement of particular geophysical variables. This tool can be used to draw measurement timelines by specific Variables, by selecting a theme (E.g. Atmosphere, Land, Ocean) and the particular variable. The resulting data (Figure 10) can be sorted by clicking on the header columns (e.g. satellite, instrument, year, etc). Filtering by satellite or instrument is also possible.

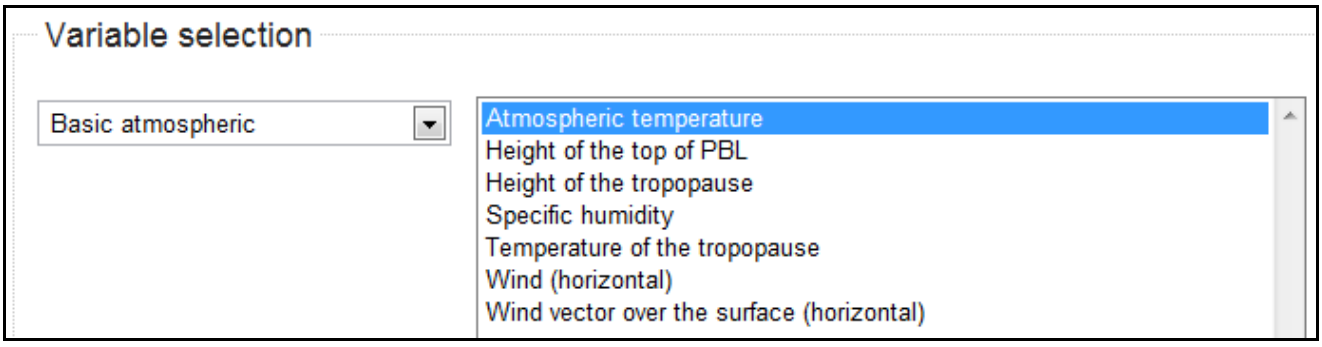
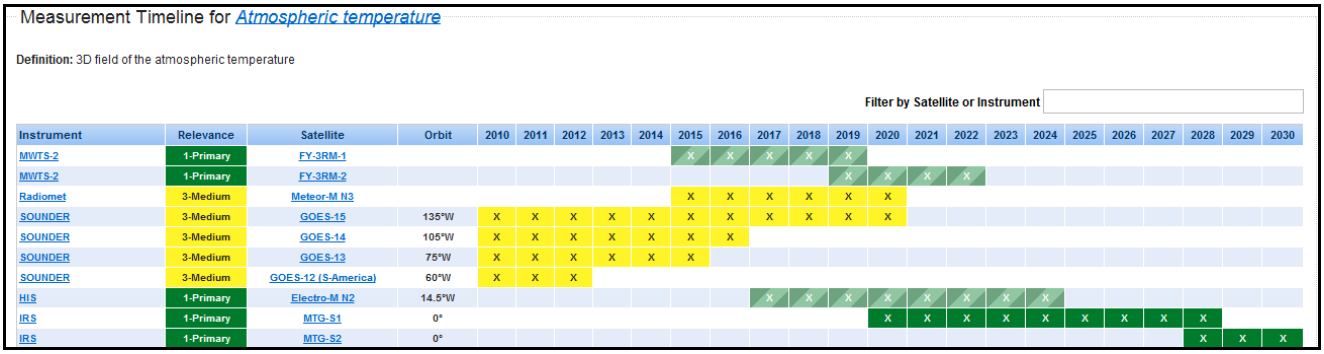


Figure 9: Selecting a Variable and Theme for Gap Analysis



Measurement Timeline for *Atmospheric temperature*

Definition: 3D field of the atmospheric temperature

Filter by Satellite or Instrument

Instrument	Relevance	Satellite	Orbit	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
MWTS-2	1-Primary	FY-3RM-1							X	X	X	X	X											
MWTS-2	1-Primary	FY-3RM-2											X	X	X	X								
Radiomet	3-Medium	Meteor-M N3							X	X	X	X	X	X										
SOUNDER	3-Medium	GOES-15	135°W	X	X	X	X	X	X	X	X	X	X	X										
SOUNDER	3-Medium	GOES-14	105°W	X	X	X	X	X	X	X														
SOUNDER	3-Medium	GOES-13	75°W	X	X	X	X	X	X															
SOUNDER	3-Medium	GOES-12 (S-America)	60°W	X	X	X																		
HIS	1-Primary	Electro-M N2	14.5°W								X	X	X	X	X	X	X	X						
IRS	1-Primary	MTG-S1	0°											X	X	X	X	X	X	X	X	X		
IRS	1-Primary	MTG-S2	0°																			X	X	X

Figure 10: Result of a Gap Analysis

Note: Instruments to fly on satellites which are not firmly planned are shaded with stripes in the table. A warning icon () indicates a degraded satellite. Hover over the icon or select the satellite to see details on the type of degradation