# SensorML description of remote sensing instruments for calibration/ validation activities

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# CEOS WGCV


http://wgcv.ceos.org/

Recommendation 1 – CEOS 18th Beijing, China, November 2004

**Reference Datasets** are required to support the understanding of climate change and quality assure operational services by Earth Observing satellites. The data from different sensors and the resulting synergistic data products require a high level of accuracy that can only be obtained through continuous **traceable calibration and validation activities**.

**WGCV Requirement**

Initiate an activity to document a **reference methodology** to predict Top of Atmosphere (TOA) radiance for which currently flying and planned wide swath sensors can be **intercompared**, i.e. define a standard for traceability. Also create and maintain a **fully accessible web** page containing, on an instrument basis, links to all instrument characteristics needed for intercomparisons as specified above, ideally in a common format. In addition, create and maintain a **data-base** (e.g. SADE) of instrument data for specific **vicarious calibration sites**, including site characteristics, in a common format. Each agency is responsible for providing data for their instruments in this common format.

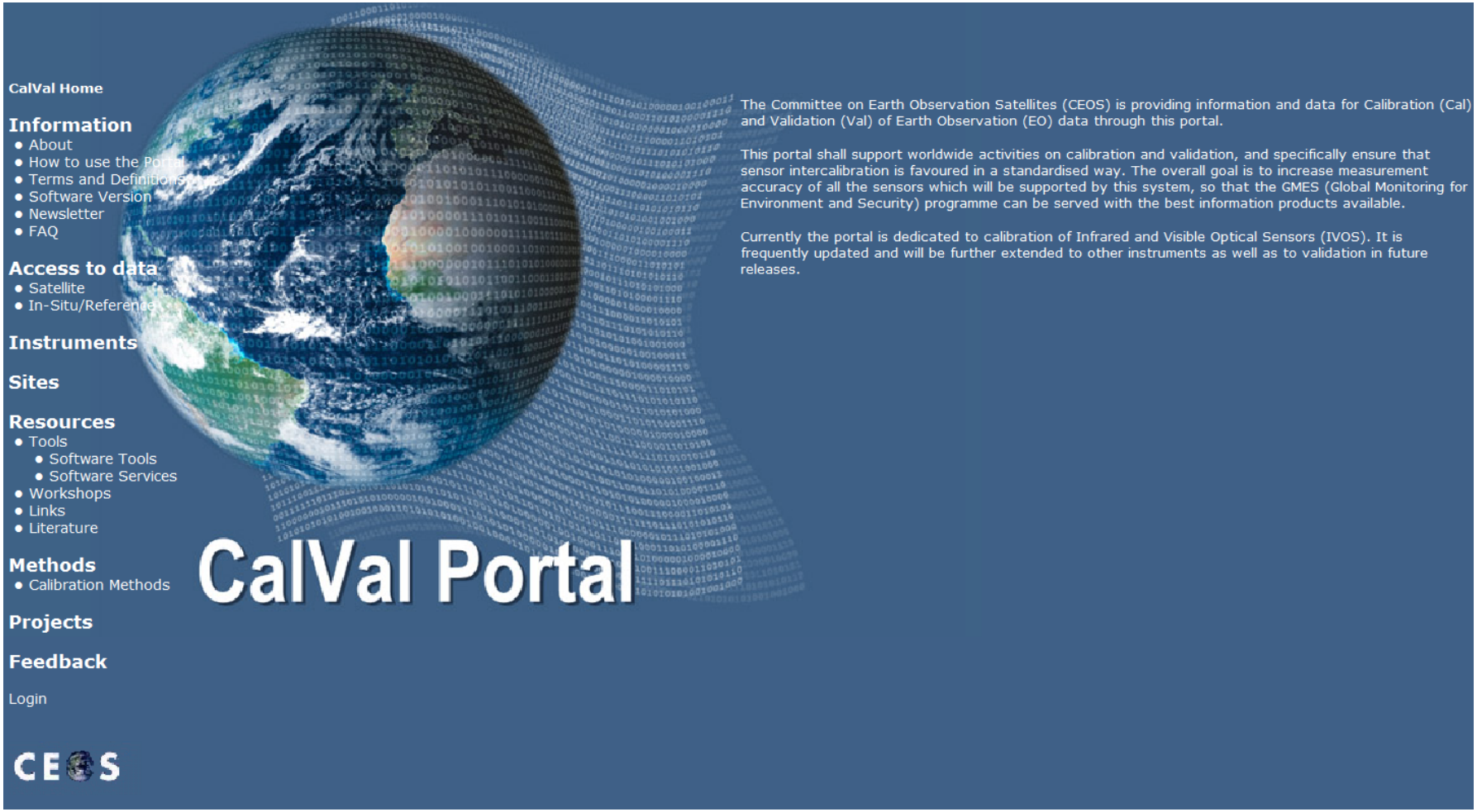
**Recommendation**

The required activities described above should be supported for an implementation period of two years and a maintenance period over two subsequent years. The CEOS should encourage a member agency to accept the lead role in supporting this activity. CEOS should request all member agencies to support this activity by providing appropriate information and data in a timely manner.

**WGCV follow-up activities**

- WGCV/IVOS to create and distribute an orbital propagator tool for large scale optical sensors (ESA);
- IVOS, in conjunction with the CAL/VAL community and WGISS to specify a data format to be used in a database such as SADE for intercomparison purposes (ESC/CNES);
- WGCV to contact instrument teams to encourage adherence to the previous recommendation, i.e., to provide instrument descriptions and intercomparison data in a common format (IVOS to establish White Paper containing rationale and defining benefits and intended use);
- IVOS in cooperation with WTF to encourage the use of diagnostic sites as established by international CAL/VAL teams.

# CalVal portal




**http://www.brockmann-consult.de/CalValPortal/welcome.do**

# CalVal portal / Instruments

CalVal Portal

CalVal Home

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CEOS

## Instrument Overview

| Platform | Sensor | |
|---|---|---|
| ALOS | | |
| | AVNIR-2 | Advanced Visible and |
| | PRISM | Panchromatic Remot |
| ENVISAT | | |
| | AATSR | Advanced Along-Tra |
| | MERIS | Medium Resolution I |
| ERS-1 | | |
| | ATSR | Along-Track Scannin |
| ERS-2 | | |
| | ATSR-2 | Along-Track Scannin |
| KOMPSAT-2 | | |
| | EOC | Electro-Optical Came |
| LANDSAT-5 | | |
| | TM | Landsat Thematic Mapper |
| LANDSAT-7 | | |
| | ETM | Landsat Enhanced Thematic Mapper |
| NOAA-15 | | |
| | AVHRR-3 | Advanced Very High Resolution Radiometer |
| SPOT-4 | | |
| | HRV | High Resolution Visible Imaging Instrument |
| | Vegetation | Vegetation Instrument |
| TERRA | | |
| | ASTER | Advanced Spaceborne Thermal Emission Radiometer |

**Additional Information**

| | |
|---|---|
| SensorML Handbook | SensorML Handbook describing the package below |
| SensorML Package | SensorML Package including descriptions for all sensors listed above |

## MERIS: Instrument Information

**General Information**

| Resource | Description |
|---|---|
| MERIS | MERIS Overview at ESA Earthnet |
| Sensor Information | Sensor Information in SensorML Format |
| Sensor Information | Structured Presentation of Sensor Description (derived from SensorML) |

**Spectral Response Function Information**

| Graphics | Table | Reference | Title/Description |
|---|---|---|---|
| MERIS-SRF Cam1 B1-5 | MERIS-SRF Cam1 B1-5 | MERIS characteristics | MERIS Instrument Characteristics and Performance |
| MERIS-SRF Cam1 B6-10 | MERIS-SRF Cam1 B6-10 | MERIS characteristics | MERIS Instrument Characteristics and Performance |
| MERIS-SRF Cam1 B11-15 | MERIS-SRF Cam1 B11-15 | MERIS characteristics | MERIS Instrument Characteristics and Performance |

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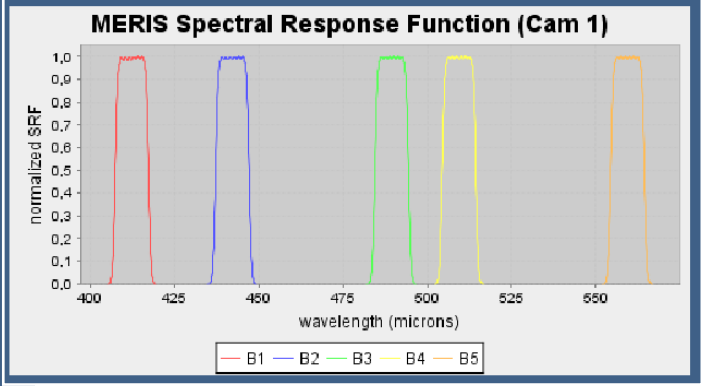
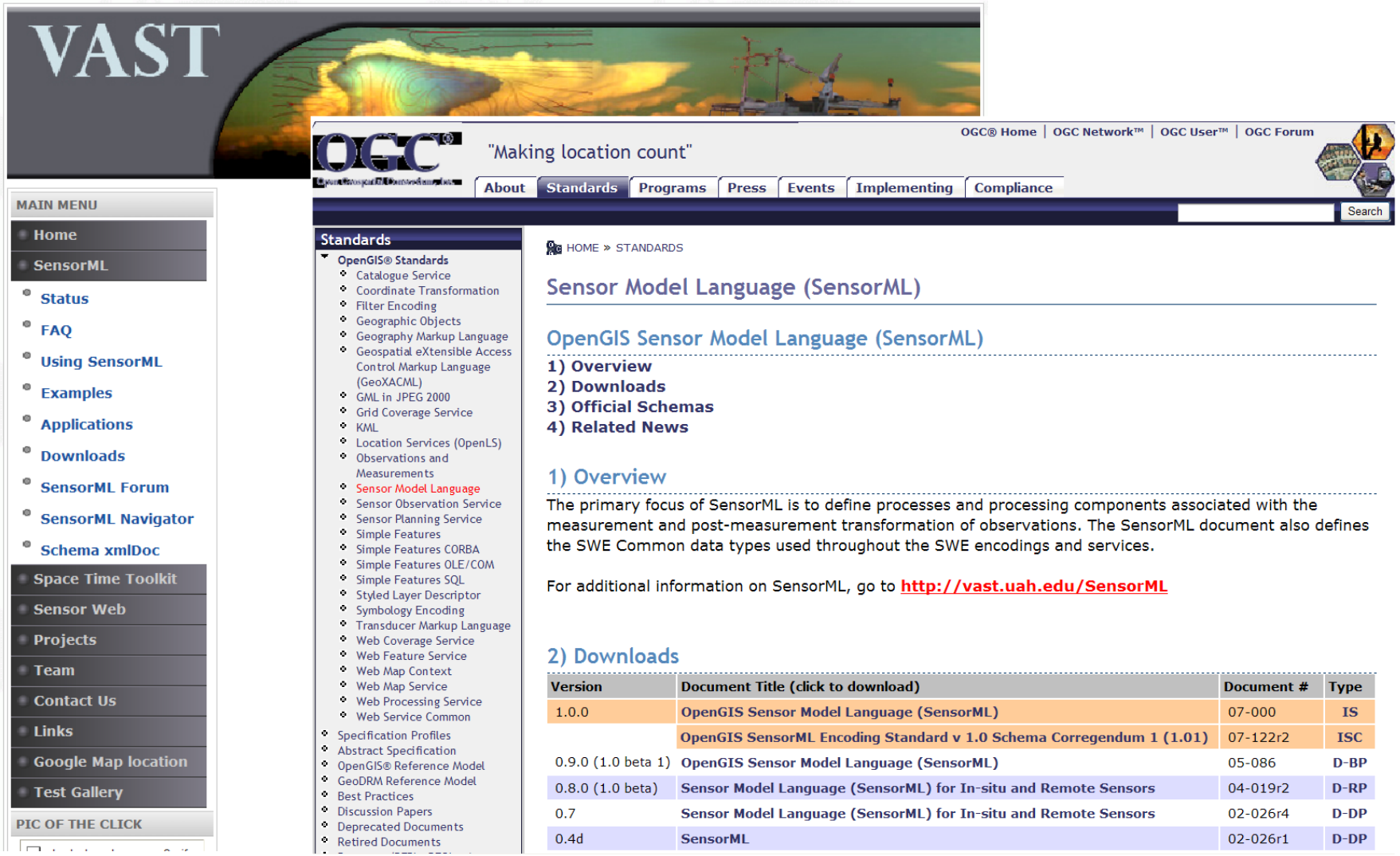
**MERIS Spectral Response Function Information**

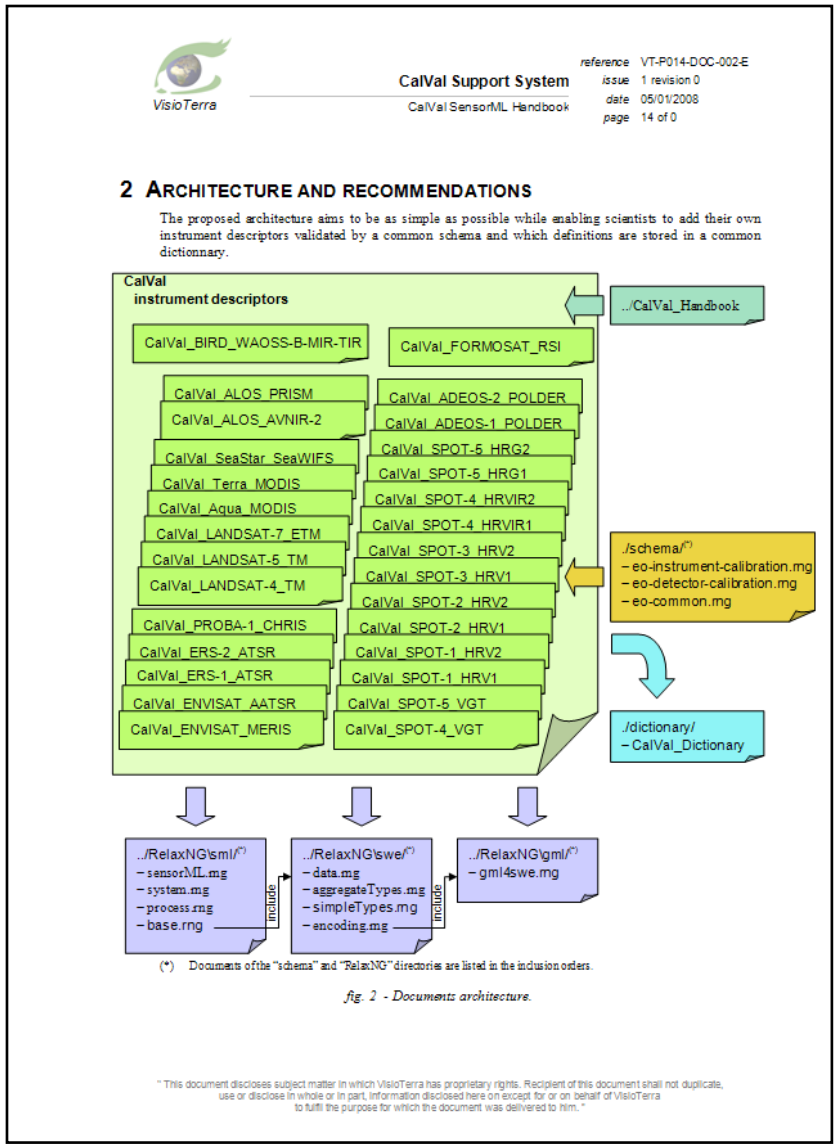


# SensorML – VAST - OGC




**http://www.opengeospatial.org/standards/sensorml**

# CalVal SensorML – Schema - Handbook - Dictionnary



VisioTerra

CalVal Support System
CalVal SensorML Handbook

reference VT-P014-DOC-002-E
issue 1 revision 0
date 05/01/2008
page 14 of 0

## 2 ARCHITECTURE AND RECOMMENDATIONS

The proposed architecture aims to be as simple as possible while enabling scientists to add their own instrument descriptors validated by a common schema and which definitions are stored in a common dictionnary.



(*) Documents of the "schema" and "RelaxNG" directories are listed in the inclusion orders.

*fig. 2 - Documents architecture.*



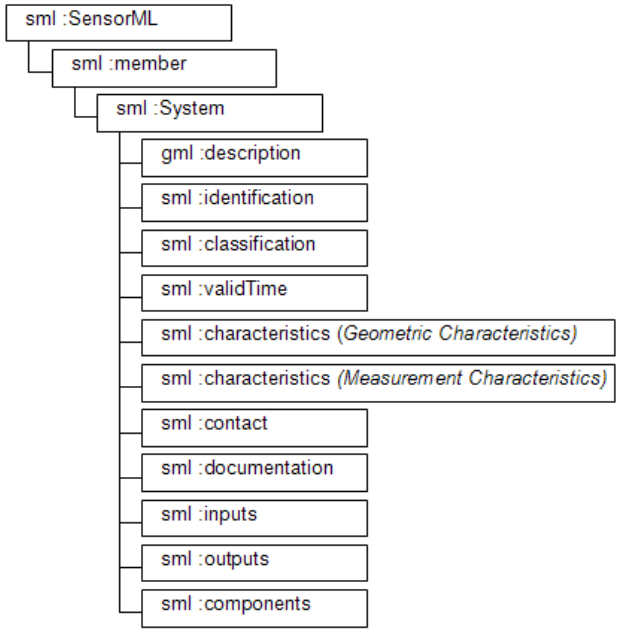
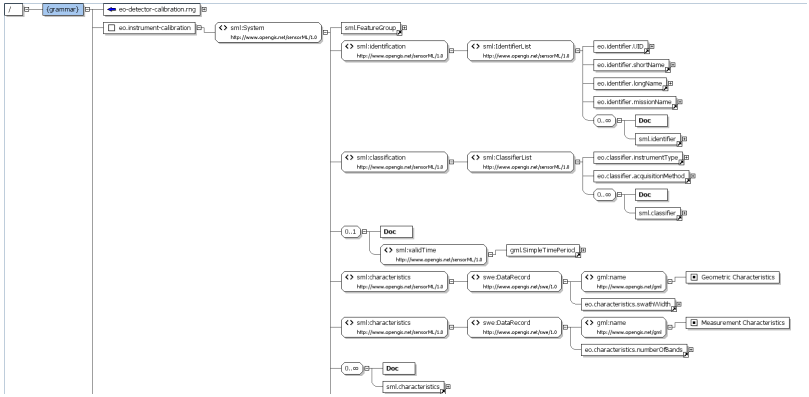
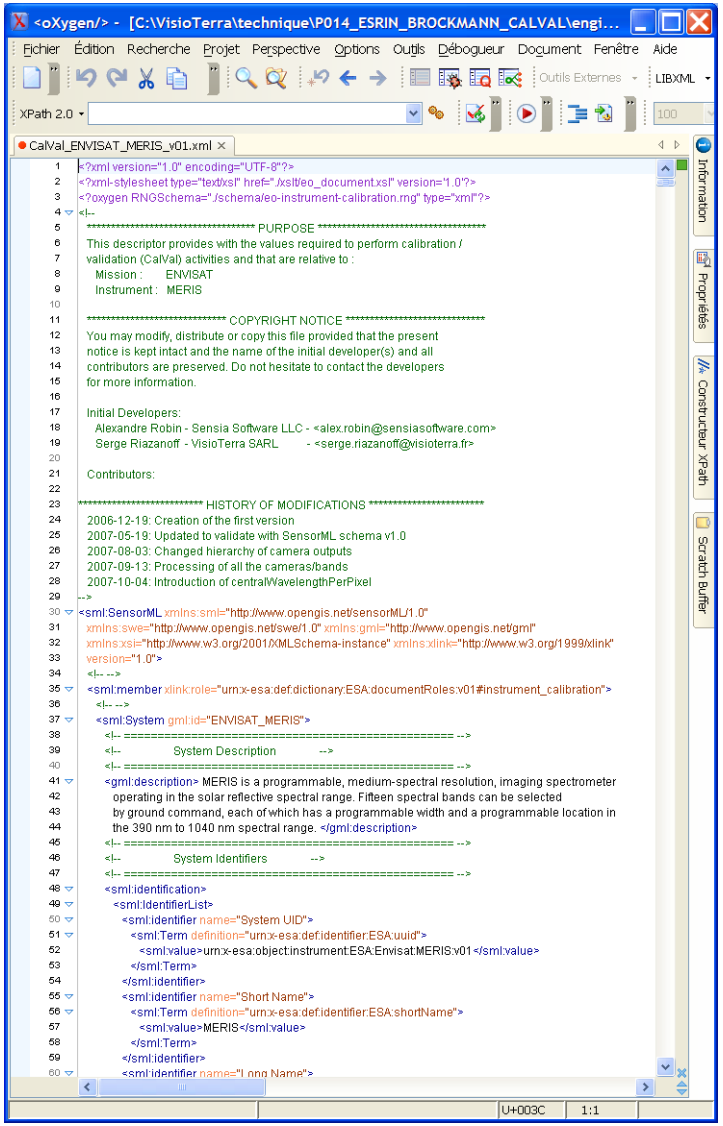



*fig. 3 - CalVal structure – "SensorML" element*



# CalVal SensorML




**Instrument Calibration Information - ENVISAT_MERIS**

## Description

MERIS is a programmable, medium-spectral resolution, imaging spectrometer operating in the solar reflective spectral range. Fifteen spectral bands can be selected by ground command, each of which has a programmable width and a programmable location in the 390 nm to 1040 nm spectral range..

## Identification

**System UID:** urn:x-esa:object:instrument:ESA:Envisat:MERIS:v01

**Short Name:** MERIS

**Long Name:** Medium Resolution Imaging Spectrometer

## Classification

**Instrument Type:** Imaging Multispectral Radiometer

**Acquisition Method:** Pushbroom

## Geometric Characteristics

**Swath Width at Nadir:** 1150 km

## Measurement Characteristics