



## **An Introduction to the Global Space-based Inter-Calibration System from a EUMETSAT Perspective**

S.C. Wagner, T. Hewison, R.A. Roebeling, M. Koenig, J. Schulz, and P. Miu  
EUMETSAT, Darmstadt, Germany (sebastien.wagner@eumetsat.int)

The Global Space-based Inter-Calibration System (GSICS) (Goldberg and al. 2011) is an international collaborative effort which aims to monitor, improve and harmonize the quality of observations from operational weather and environmental satellites of the Global Observing System (GOS). GSICS aims at ensuring consistent accuracy among space-based observations worldwide for climate monitoring, weather forecasting, and environmental applications. This is achieved through a comprehensive calibration strategy, which involves monitoring instrument performances, operational inter-calibration of satellite instruments, tying the measurements to absolute references and standards, and recalibration of archived data. A major part of this strategy involves direct comparison of collocated observations from pairs of satellite instruments, which are used to systematically generate calibration functions to compare and correct the calibration of monitored instruments to references. These GSICS Corrections are needed for accurately integrating data from multiple observing systems into both near real-time and re-analysis products, applications and services.

This paper gives more insight into the activities carried out by EUMETSAT as a GSICS Processing and Research Centre. Currently these are closely bound to the in-house development and operational implementation of calibration methods for solar and thermal band channels of geostationary and polar-orbiting satellites. They include inter-calibration corrections for Meteosat imagers using reference instruments such as the Moderate Resolution Imaging Spectroradiometer (MODIS) on-board the Aqua satellite for solar band channels, the Infrared Atmospheric Sounding Interferometer (IASI) on-board Metop-A and, for historic archive data, the High-resolution InfraRed Sounder (HIRS). Additionally, bias monitoring is routinely performed, allowing users to visualise the calibration accuracy of the instruments in near real-time. These activities are based on principles and protocols defined by the GSICS Research Working Group and Data Management Working Group, which require assessment of the calibration uncertainties to ensure the traceability to community references.