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**OTHER WIGOS RELATED GUIDANCE (NON-REGULATORY) MATERIAL UNDER DEVELOPMENT/FINALIZATION FOR PUBLICATION**

*(Submitted by* *the Secretariat)*

# The Calibration SCHEM of The Global Space Based Inter-calibration System (GSICS) To be referred in THE WMO DOCUMENT “Guide to the WIGOS”

1. **Introduction**

The Global Space Based Inter-calibration System (GSICS) is an international collaborative effort of satellite operators initiated in 2005 by WMO and the Coordination Group for Meteorological Satellites (CGMS) to monitor, improve and harmonize the quality of observations from operational weather and environmental satellites of the WMO Integrated Global Observing System (WIGOS). GSICS delivers calibration products corrections needed for accurately integrating data from multiple observing systems into products, applications and services. This is achieved through a comprehensive calibration strategy which involves: 1) Monitoring instrument performances; 2) Operational inter-calibration of satellite instruments; 3) Absolute references and standards and recalibration of archived data.

1. **Space-based Observing System in WIGOS Document**

*Manual on the WMO Integrated Global Observing System* (WMO-No. 1160) provides information applicable to the space-based subsystem of WIGOS, including GSICS calibration scheme in Chapter 4. “ATTRIBUTES SPECIFIC TO THE SPACE-BASED SUBSYSTEM OF WIGOS” / 4.3. “INSTRUMENTS AND METHODS OF OBSERVATION” / 4.3.1. “Calibration and traceability”. However, little mentioned on the calibration scheme for space-based instruments in *Guide to the WMO Integrated Global Observing System* (WMO-No. 1165).

1. **Guide to the WMO Integrated Global Observing System (WMO-No. 1165)**

The topics in the “Guide to WIGOS” cover the new system of WIGOS station identifiers, the new requirements to record and make available metadata as specified in the WIGOS Metadata Standard, the new Observing Systems Capability Analysis and Review (OSCAR) tool to be used by Members to submit metadata for WMO global compilation, and the new observing network design principles for the surface and space based observation, and Chapter 3 of the Guide describes WIGOS metadata including instrument calibration for ground stations.

The additional description will be proposed for covering the calibration scheme of the space-based observation to be included (highlighted in red) in “3.3.7 Satellites”;

**3.3.7. Satellites**

Satellite observations provide information from all areas of the world. These observations provide information on surface characteristics as well as atmospheric conditions depending on the instrument type. Essential information about satellites are orbit and type of orbit (geostationary or polar orbiting) including height of the satellite, local observation intervals, types of technologies applied (active/passive, optical/microwave, imager/sounder,) including instrument characteristics (bands measured, footprint, measurement approach like scanning versus push broom or similar, swath size if applicable, return period, etc.).

For ensuring consistent accuracy among space-based observations from operational weather and environmental satellites of the Global Observing System (GOS) for climate monitoring, weather forecasting, and environmental applications, the Global Space-based Inter-Calibration System (GSICS), an international collaborative effort initiated in 2005 by WMO and the Coordination Group for Meteorological Satellites (CGMS), develops common methodologies and implements operational procedures to ensure quality and comparability of satellite measurements taken at different times and locations, by different instruments, operated by various satellite agencies.  This is achieved through a comprehensive calibration strategy which involves: 1) monitoring instrument performances, 2) operational inter-calibration of satellite instruments, 3) tying the measurements to absolute references and standards, and 4) recalibration of archived data.  GSICS contributes to the integration of satellite data within the WMO Integrated Global Observing Systems (WIGOS).

Meteorological satellites usually transport a variety of different instruments, each mounted for specific applications required by a diverse user community. In fact, due to this variety of instruments, the specific observation programme chosen, the related metadata have a different nature then with the classical surface based observations (see the *Guide to Instruments and Methods of Observation* (WMO-No. 8), 2014 edition). As a consequence, metadata for satellite observations with calibration information are collected as a separate database, [OSCAR/Space](https://www.wmo-sat.info/oscar/spacecapabilities).

Furthermore, the following three GSICS documentation provides material relevant to GSICS with topics cover the GSICS organization, GSICS technical standards and best practices, GSICS services and tools, GSICS products, and GSICS outreach. Thus it will be proposed to be included in the list of the publications related to the “Guide to WIGOS” in “INTRODUCTION / List of related publications / (e) Guidelines and other related publications:”

Global Space Based Inter-calibration System (GSICS) manuals: *Introduction to GSICS; Vision of GSICS; Guide to GSICS Products and Services*

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