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IEEE Transactions on Geoscience and Remote Sensing Special Issue on "Inter-Calibration of Satellite Instruments"

The ability to detect and quantify changes in the Earth's environment using remote sensing is dependent upon sensors providing accurate and consistent measurements over time. A critical step in providing these measurements is establishing confidence and consistency between data from different sensors and putting them onto a common radiometric scale. However, ensuring that this process can be relied upon long term and that there is physical meaning to the information requires traceability to internationally agreed, stable, reference standards ideally tied to the international system of units (SI). This requires robust on-going calibration, validation, stability monitoring, and quality assurance, all of which need to be underpinned and evidenced by comparisons involving a reference standard or sensor and a methodology with defined uncertainty (in an absolute or temporal sense). This process can be used to provide calibrations to other sensors (i.e. Inter-calibration).

Inter-calibration and comparisons between sensors have become a central pillar in calibration and validation strategies of national and international organizations. The Global Space-based Inter-Calibration System (GSICS) is an international collaborative effort initiated by World Meteorological Organization (WMO) and the Coordination Group for Meteorological Satellites (CGMS) to monitor and harmonize data quality from operational weather and environmental satellites. The Infrared Visible Optical Sensors (IVOS) sub-group of the Committee on Earth Observation Satellites (CEOS) Working Group on Calibration and Validation (WGCV) extends this vision to include all Earth observation sensors and satellite operating agencies. Inter-calibration techniques provide a practical means of correcting biases between sensors and bridging any potential data gaps between non-contiguous sensors in a critical time-series and the inter-calibration reference serves as a transfer standard. It is expected that promotion of the use of robust inter-calibration techniques will lead to improved consistency between satellite instruments, reduce overall costs, and facilitate accurate monitoring of planetary changes.

List of topics

Contributions for this special issue are welcome from the research community. This special journal issue will focus on how inter-calibration and comparison between sensors can provide an effective and convenient means of verifying post-launch sensor performance and correcting the differences. The guest editors invite submissions that explore topics including, but not limited to, pseudo-invariant calibration sites, instrumented sites, simultaneous nadir observations and other ray-matching comparisons, lunar and stellar observations, deep convective clouds, liquid water clouds, Rayleigh scattering and Sun glint. The inter-calibration results should focus on rigorous quantification of bias and associated sources of uncertainty from different sensors, crucial for long-term studies of the Earth. The goal of this special journal issue is to capture the state-of-the-art methodologies and results from inter-calibration of satellite instruments, including full end-to-end uncertainty analysis. Accordingly, it will become a reference anthology for the remote sensing community.

Paper submission deadline: 31 January 2012

Submission guidelines

Normal page charges, peer-review, and editorial process will apply. Prospective authors should follow the regular guidelines of TGRS, and should submit their manuscripts electronically to <http://mc.manuscriptcentral.com/tgrs>. Please indicate during your submission that the paper is intended for this Special Issue. Inquiries with respect to the special issue should be directed to the Guest Editors.

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