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Prepared by JMA
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JMA'S GSICS AND SCOPE-CM ACTIVITIES

This paper reports on JMA's activities regarding GSICS and SCOPE-CM.

JMA began operation of the MTSAT-1R infrared intercalibration system on GSICS on 2 July 2008. The Agency plans to change the current intercalibration system to satisfy the guidelines on GSICS correction determined by GSICS Research and Data Working Groups this year. JMA has completed the description of its ATBD on the current operational algorithm, and will update this documentation when the intercalibration system is changed for GSICS correction.

JMA has reprocessed the calibration of GMS-5 and MTSAT-1R visible images in cooperation with the University of Tokyo and Chiba University, and has also made homogeneous ice clouds a new target of investigation to improve the accuracy of simulated reflectivity.

JMA participated in the establishment of SCOPE-CM (formerly named R/SSC-CM), and will proceed with initial activities related to Essential Climate Variable (ECV) satellite products of Atmospheric Motion Vectors (AMVs) and Clear Sky Radiance (CSR) as a pilot project within the framework of SCOPE-CM.

JMA'S GSICS AND SCOPE-CM ACTIVITIES

This paper reports on the activities of the Japan Meteorological Agency (JMA) regarding the Global Satellite Intercalibration System (GSICS) and the Sustained, Coordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM).

1 STATUS OF AND PLANS FOR THE MTSAT-1R INFRARED INTERCALIBRATION SYSTEM ON GSICS

JMA began operation of the MTSAT-1R infrared intercalibration system on GSICS on 2 July 2008, as reported at CGMS-36 JMA-WP-05. The Agency operationally implements intercalibration of MTSAT-1R's infrared channels by comparing data from the AIRS high spectral resolution sounders installed on the AQUA satellite and the IASI installed on the Metop-A satellite. JMA has developed a spectral compensation method for comparison to simulate the infrared radiances of geostationary satellites with a high spectral resolution sounder, and the method has been adopted as a GSICS baseline algorithm.

The development of GSICS correction was recommended as a core product at the joint meeting of the GSICS Research Working Group (GRWG) and the Data Working Group (GDWG) held in January 2009. The consensus is that GSICS correction should be centered on quantifying the inter-satellite bias that depends on the satellite itself, channels, timing and possible other factors, and that it is well characterized in terms of uncertainty. The guidelines on GSICS correction were discussed and determined within the GRWG and the GDWG. JMA proposed a linear regression equation to produce corrected radiance values from the disseminated digital count as a GSICS correction formula for MTSAT-1R in the GRWG. The Agency plans to change the intercalibration system in consideration of the guidelines determined by the GRWG and the GDWG this year.

It was agreed that GSICS Processing and Research Center (GPRC) members should describe their algorithms in the Algorithm Theoretical Basis Document (ATBD) as the framework for GSICS, and a hierarchical structure has been specifically designed for the GSICS ATBD. JMA has completed the description of its ATBD on the current operational algorithm, and will update this documentation when the intercalibration system is changed for GSICS correction.

JMA has also researched the generation of composite data regarding geostationary satellites that addresses the climate, weather forecasting and other environmental needs in cooperation with the University of Tokyo's Center for Climate System Research (CCSR) and Chiba University's Center for Environmental Remote Sensing (CEReS). The achievements of this study will be reported to the GRWG.

2 PREPARATIONS TOWARD MTSAT-1R VISIBLE VICARIOUS CALIBRATION

In a program of collaborative research with CCSR and CEReS, JMA has reprocessed the calibration of GMS-5 and MTSAT-1R visible images. The reprocessing is examined through comparison of visible observations with simulated reflectivity over various homogeneous targets such as ocean areas, bare ground in Australia and liquid cloud. The surface and atmospheric parameters used in the simulation are independent from those of GMS-5 and MTSAT-1R observations such as ground-based measurement, Moderate Resolution Imaging Spectroradiometer (MODIS)-retrieved properties and atmospheric fields analyzed by the Japanese

25-year Reanalysis Project (JRA-25). As a radiative transfer model, RSTAR (the System for Transfer of Atmospheric Radiation) developed by CCSR is employed.

To improve the accuracy of simulated reflectivity, homogeneous ice cloud (which is brighter than liquid cloud) has been selected and investigated as a new target. The achievements of this study will be reported to the GRWG.

JMA plans to introduce MTSAT-1R visible vicarious calibration into its operations this year.

3 CONTRIBUTION TO SCOPE-CM

JMA participated in the establishment of SCOPE-CM (formerly named R/SSC-CM). Based on the recommendations of the SCOPE-CM planning meeting, the Agency will proceed with initial activities related to Essential Climate Variable (ECV) satellite products of Atmospheric Motion Vectors (AMVs) and Clear Sky Radiance (CSR) as a pilot project within the framework of SCOPE-CM.

JMA has progressed with GMS, GOES-9 and MTSAT-1R reprocessing in its AMV and CSR products with utilization in the Japanese 55-year Reanalysis Project (JRA-55) in mind. The Agency plans to provide the dataset to other reanalysis centers once reprocessing is complete. It set up a web page to provide information and updates on the status of reprocessing, which can be accessed at http://mscweb.kishou.go.jp/product_reprocess/index.htm.

JMA has also completed the derivation of a long-term surface albedo dataset from the recalibrated visible dataset of GMS-5 using a EUMETSAT algorithm as recommended at CGMS-33 (Recommendation 33.07).