

## **KMA'S GSICS ACTIVITIES**

This document reports on KMA's GSICS activities.

KMA began to operate GSICS using COMS for IR inter-calibration system with LEOs (AIRS and IASI) after finish the IOT at the end of January. KMA also perform visible channel vicarious calibration using Australian Simpson desert region and deep convection cloud with Seoul National University. These GSICS S/Ws are for near real-time operation and post the results of inter-calibration on KMA/NMSC website.

During 22-25 of March, KMA successfully hosted GSICS Joint Research and Data Working Groups in Daejeon, Korea.

This document reports on KMA's Global Satellite Inter-calibration System (GSICS) activities.

## 1. INTER-CALIBRATION OF COMS INFRARED CHANNELS USING AIRS/IASI

COMS (Communication, Ocean, and Meteorological Satellite), the first Korean geostationary meteorological satellite, was successfully launched on June 26, 2010, and has begun the public service on April 1 after in-orbit test.

KMA had established infrared radiation inter-calibration system with Aqua/AIRS and Metop/IASI based on the GSICS (Global Space-based Inter-Calibration System) Coordinate Center (GCC) distributed Algorithm Theoretical Basis Document (ATBD). KMA implemented GSICS S/W for IR inter-calibration with MTSAT since 2007. The results are presented in the GSICS Executive Panel meeting on 2008 and the results are similar with JMA.

The preliminary results show the low-bias between COMS IR channels and polar-orbit except IR1 for January to August 2011. Difference between COMS and AIRS/IASI brightness temperature shows positive bias in the cold scenes while negative bias in the warm scenes except IASI IR4. AIRS comparisons have larger bias and RMSE than IASI.

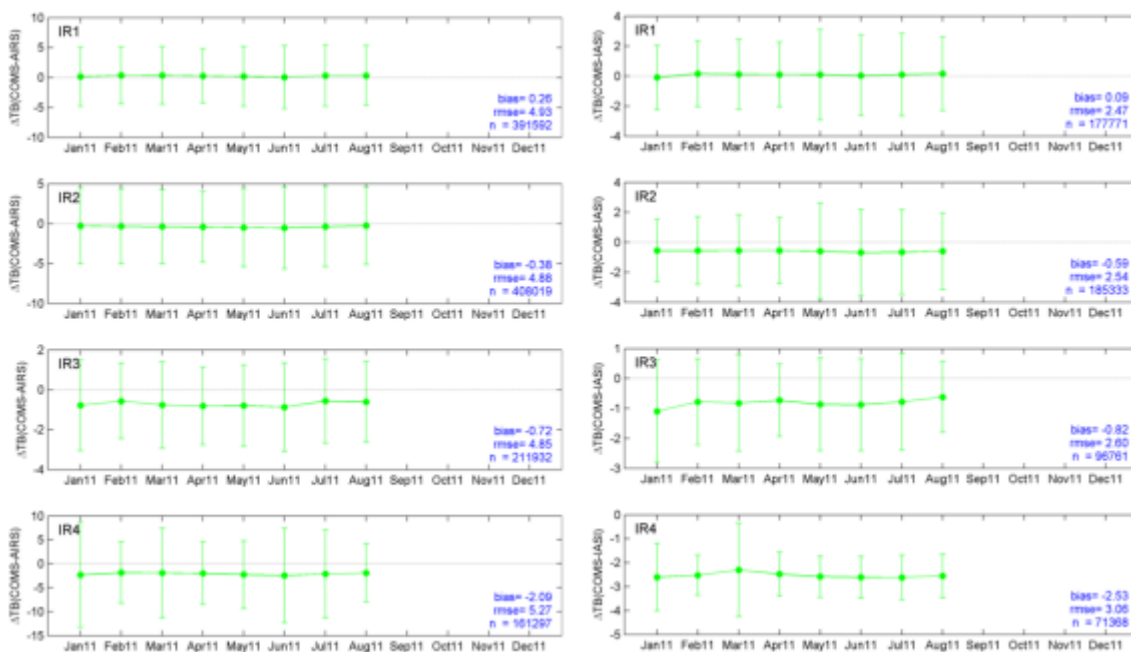


Figure 1 COMS TB vs. polar-orbit TB. Delta TB represents COMS – polar-orbit TB. COMS vs. AIRS (left) and COMS vs. IASI (right).

KMA will also compare and analyze the results in various conditions by land/ocean, ascending/descending, day/night, and cloud/clear for the long-term GEO-LEO inter-calibration products. The method has been implemented for near real-time operation and post the analysis of the inter-calibrations on a KMA public website.



Figure 2 KMA/NMSC Website for near real-time operation and analysis of the inter-calibration

## 2. VICARIOUS CALIBRATION OF VISIBLE CHANNEL

As a part of COMS Meteorological Data Processing System (CMDPS), KMA developed the system collaborates with Seoul National University (SNU) for COMS visible vicarious calibration using deep convective cloud (DCC). For the vicarious calibration, ocean, desert, and cloud targets are used. For the simulation, 6S (Second Simulation of the Satellite Signal in the Solar Spectrum) radiative transfer model is used. NCEP total water vapor, OMI column ozone amount, and MODIS BRDF parameter are used as inputs.

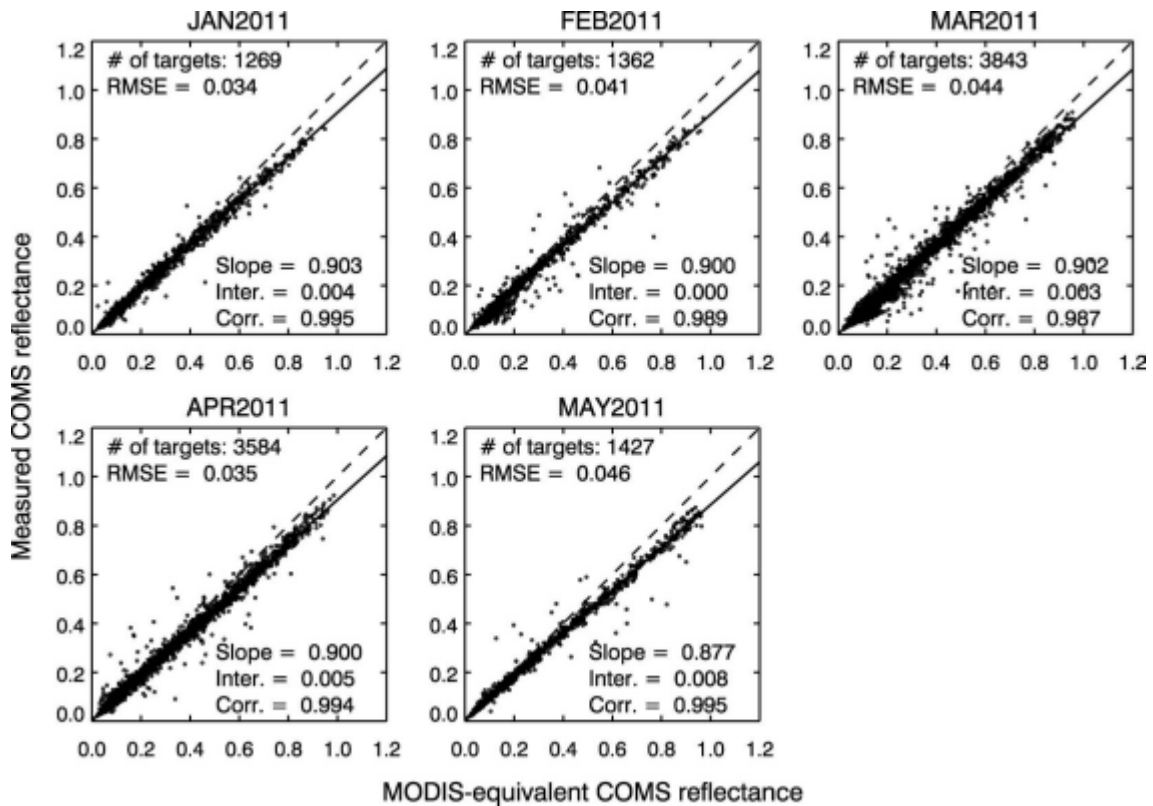


Figure 3 Inter-calibration of COMS Visible channel using MODIS as a reference for January to May 2011.

### 3. GSICS JOINT RESEARCH AND DATA WORKING GROUPS

KMA successfully hosted GSICS Joint Research and Data Working Groups in Daejeon during 22-25 of March. There were 25 attendees from KMA, WMO, EUMETSAT, NOAA/NESDIS, NASA, USGS, JMA, CMA.



