

PREPARATION OF A WEB PAGE FOR INTERCALIBRATION REPORT

This working paper summarizes the present status and plans of MSC/JMA on the response to the Action 29.26 at CGMS-XXIX.

MSC/JMA will soon open the information on the routine-basis intercalibration with GMS-5 and NOAA-16 on its web page.

No action is required on this subject.

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MSC/JMA has been striving to enhance the intercalibration method with sensors of GMS-5 and NOAA. The review of the past activities on this study is shown in the working paper (6), JAPAN-WP-11 presented at the CGMS-XXIX meeting and the MSC's Web page. MSC/JMA is continuously making efforts to establish routine-basis intercalibration method and provide the results via the new Web page as a response to the Action 29.26 at CGMS-XXIX.

Action 29.26 Satellite operators to post on the CGMS homepage available relevant papers on satellite radiance (VIS, IR, WV) inter-comparisons and to start routine inter-comparisons of LEO and GEO calibrations as soon as possible, striving to post results every quarter on their own web pages. Deadline: June 2002.

MSC upgraded the network capacity and has been obtaining all GAC data of NOAA-16 AVHRR experimentally since June 2002. The comparisons of the infrared 1 (11microns) and the infrared 2 (12microns) channels of GMS-5 with AVHRR infrared 4 and infrared 5 of GAC data have been carried out as a preliminary routine-basis intercalibration. The intercalibration method of MSC is based on that described in the working paper (1), USA-WP-15 presented at CGMS-XXV meeting and Tokuno and Kurihara (1999).

The outline of the intercalibration method in MSC/JMA is as follows:

1. The time and area of the intercalibration are consistent with those of the data requested by ISCCP/SCC conducting the intercalibration between NOAA and geostationary meteorological satellites in the world.
2. The mean values of sub-grid areas (1 degree by 1 degree) within the target area are compared with each other.
3. The area where mean TBB is greater than 293K is defined as clear area.
4. The time difference of observations of each satellite is less than 15 minutes.
5. The difference of viewing angle of satellites at target area is less than 10 degree and the zenith angle of satellites are less than 30 degree.
6. To take into account of the difference of each spectral response function, the definition of the value of the intercalibration is given as follows:

$$TBB = TBB_{mean} - TBB_{calc}$$

where TBB_{calc} is the difference between theoretical TBBs calculated by using LOWTRAN 7 radiative transfer model and each spectral response function. TBB_{mean} indicates the mean measured TBB difference in a target area.

Figure1 and Figure2 show the TBB difference and Standard Deviation between GMS-5 and NOAA-16 as a test work.

Tokuno and Kurihara(1999) reported that the result indicates that the adjusted temperature of VISSR IR channels 1 and 2 is about 1 K lower than that with AVHRR channels 4 and 5 on NOAA14,taking the difference between each spectral response function into account . Six months investigation show that TBB of VISSR IR channels 1 and 2 is about 0.5 K to 2 K

lower than that with AVHRR channels 4 and 5 on NOAA-16 with some fluctuation. More data and intercomparisons will be required to make it clear whether this variation is due to seasonal effects or not. In the future, we also explore the effect of age on the instruments.

MSC will make further investigation for the improvement of the method and the result of the intercalibration on a routine basis. The results will be shown in the MSC Home page.

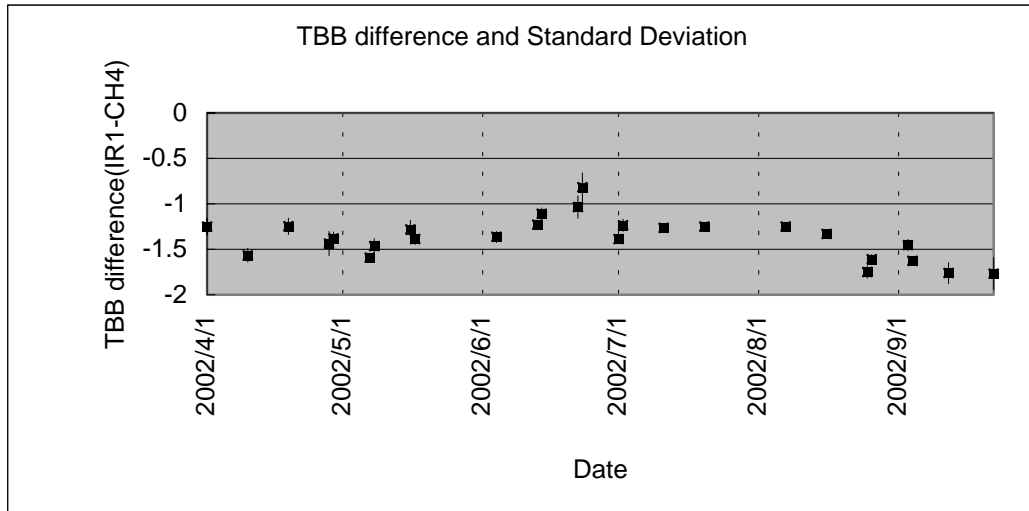


Fig. 1 TBB difference and standard deviation (IR1-CH4). Error bars show the standard deviation.

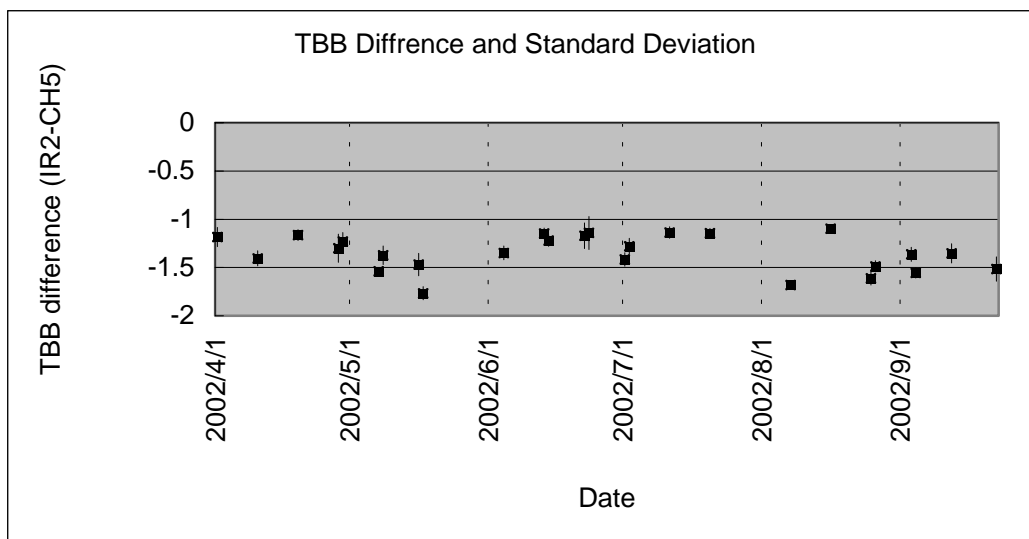


Fig.2 TBB difference and standard deviation (IR2-CH5). Error bars show the standard deviation.

References

1. Wanzong, S., and W. P. Menzel, 1997: Intercalibration of GOES, Meteosat, and HIRS Infrared Radiances, USA-WP-15, CGMS-XXV
2. The Intercalibration Activities, JAPAN-WP-12, CGMS-XXVI
3. Tokuno, M., and S. Kurihara, 1999: Intercalibration of GMS-5 IR channels and NOAA-14

AVHRR channels 4 and 5, Adv. Space Res., 23, No. 8, 1349-1356.

4. Inter-calibration of GMS-5 and NOAA-14 AVHRR Visible Channel, JPN-WP-18, CGMS-XXVII
5. Preliminary Study on Inter-calibration of the Visible Channels between GMS-5 and NOAA-14, JPN-WP-11, CGMS-XXVIII
6. Present Status of Intercalibration Activities in MSC/JMA, JPN-WP-11, CGMS-XXIX