Atmos. Meas. Tech. Discuss., 7, C1614–C1618, 2014
www.atmos-meas-tech-discuss.net/7/C1614/2014/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Remote sensing of cloud top pressure/height from SEVIRI: analysis of ten current retrieval algorithms" *by* U. Hamann et al.

U. Hamann et al.

ulrich.hamann@gmx.net

Received and published: 8 July 2014

Dear Tim Hewison,

we investigated the effect of the GSICS calibration on the retrieval of 13th of June 2008 12:00 UTC. Anke Kniffka performed the calculation with the algorithm of the CM SAF (in the paper CMS). Fig. 1 shows the CTH of the CMS retrieval with the original EUMETSAT calibration, Fig. 2 the CTH with additional GSICS correction, and Fig. 3 the difference between those two.

The very roughly estimated effect of the calibration is in the order of 0.8K (scene bias). With a temperature gradient of 0.6K/100m we expect corrections in the order of about 130m. We note that the effect of the GSICS calibration is smaller than 500m for most

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

satellite pixels, see Fig. 3. In the most extreme case, the CTH was changed by 12km.

In the paper we will add following paragraph: As a first step the raw signal measured by SEVIRI is converted into a radiance. Most of the algorithms use the L1 radiance product as provided by EUMETSAT. Only a few algorithms use an alternative calibration. The CMS algorithm use the calibration described by Meirink et al. (2013). The LAR algorithm use an additional calibration for the 0.65 μm channel against the Aqua MODIS channel and a calibration for the 3.9 μm channel against GOES measurements (Minnis et al., 2002a,b). The UKM algorithm use an ad-hoc calibration for the 13.4 μm channel. Recent finding of the Global Space-based Inter-Calibration System (GSICS) of the WMO found that the 13.4 μm is probably biased by contamination with ice (Hewison and Müller, 2013). GSICS provides time dependent calibration coefficients for the SEVIRI channels according to an inter-calibration against Metop-A IASI. This effort is the most advanced post-calibration available. At the moment none of the SEVIRI algorithms uses the GSICS calibration coefficients. To estimate the benefit of the GSICS calibration on the CTH retrieval, a small case study was performed with the CMS algorithm for the 13 June 2008, 12:00 UTC. The effects on the retrieval results were small in comparison to the fundamental observation differences of the different sensors and the deviations among the SEVIRI algorithms discussed later in this paper. Nevertheless, the GISCS calibration changed the CTH retrieval results for some individual cases by up to 12km. As GSICS provides the most sophisticated calibration, taking advantage of it is certainly beneficial for every algorithm.

We hope this answer sufficiently address your question. Best regards

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 401, 2014.

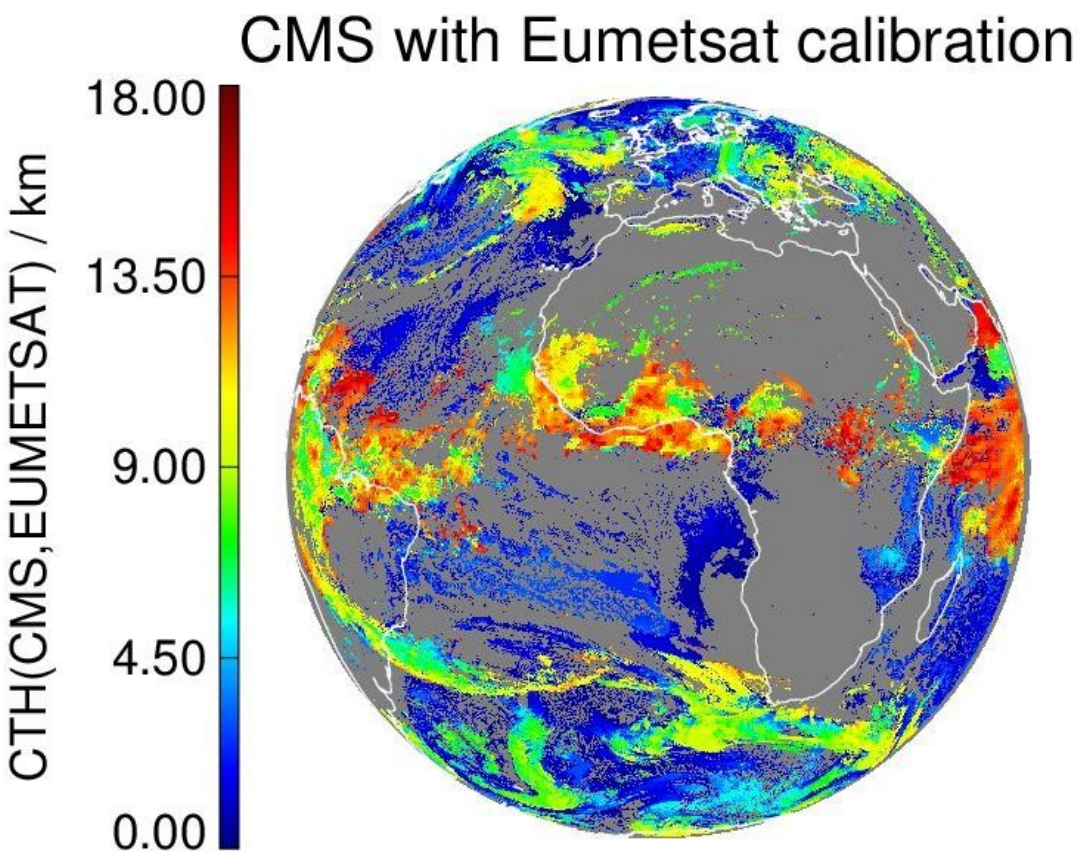

Fig. 1. The CTH retrieval of the CMS algorithm with EUMETSAT radiances

AMTD
7, C1614–C1618, 2014

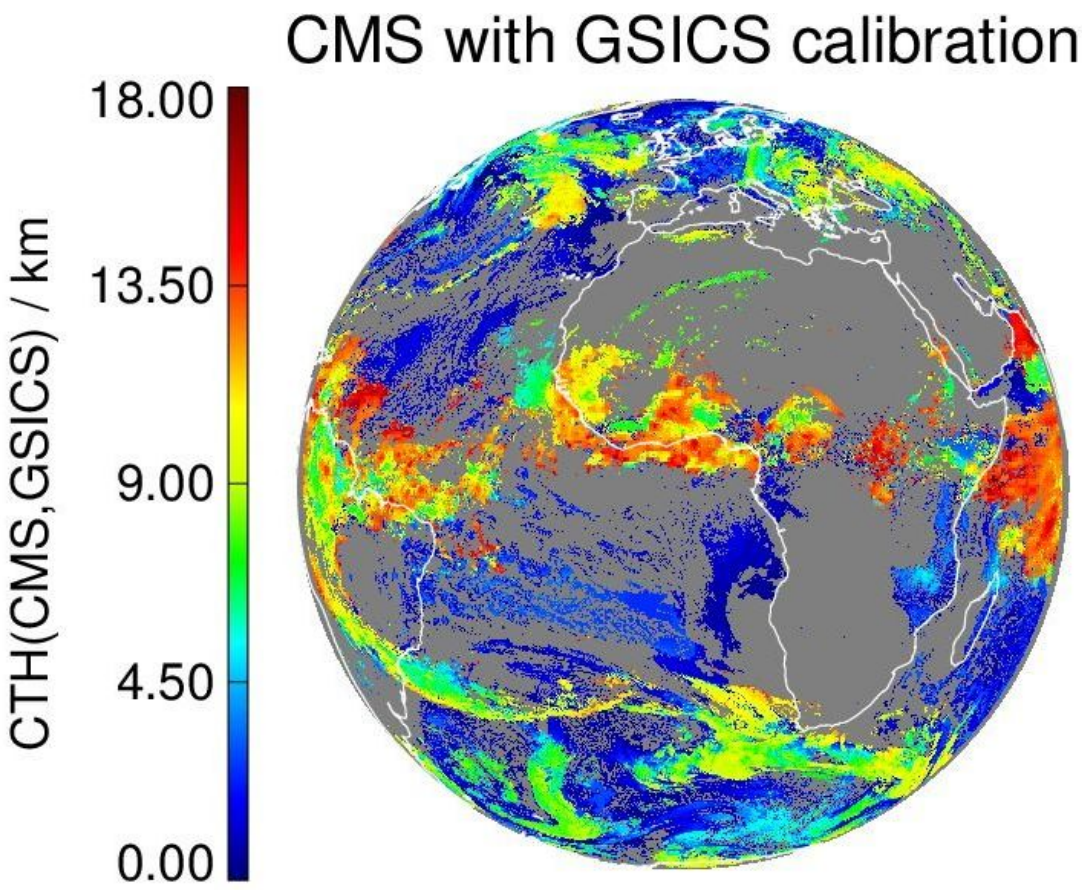

Fig. 2. The CTH retrieval of the CMS algorithm with GSICS post calibration

AMTD
7, C1614–C1618, 2014

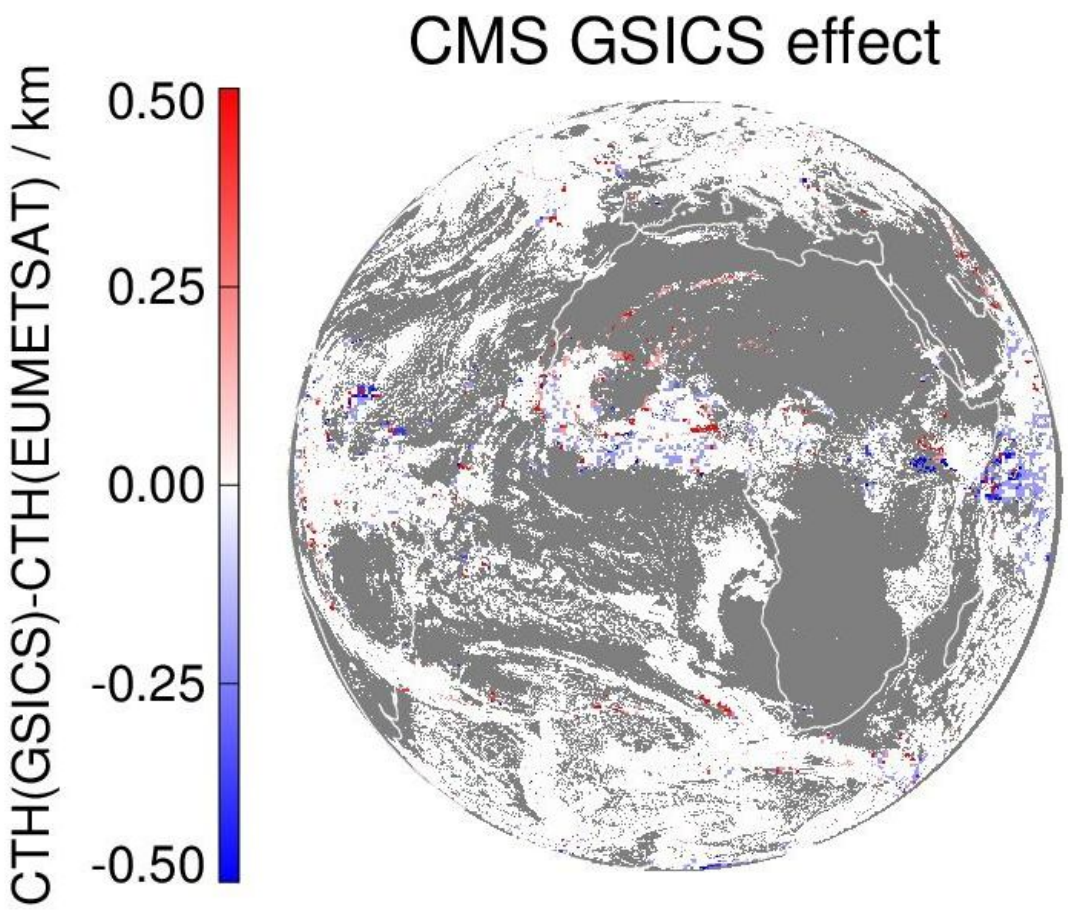

Fig. 3. The effect of the GSICS post calibration

AMTD
7, C1614–C1618, 2014