**Response to Review #1**

*This very well written paper deals with possible issue in the knowledge of the SRF of the 6.8 microns channel and its consequences for quantitative use. The method is original and well described and makes a interesting use of the geo platform to propagate the IASI absolute calibration information onto the MODIS instrument. The stringent space-time-angular collocation is to be noted. The case of the 3K cold bias in the MODIS channel is clearly made. I recommend acceptation of the paper with very minor modifications. For the sake of it I list below a few remarks and I let in to the authors to respond and modify their manuscript if needed.*

*-although it is possible to get the information itself, I think it would be nice to provide to the readers some elements on the technique used to calibrate the MTSAT channel (BB vicarious etc..). In particular it would be nice to comment upon the stability of the MTSAT captor over the 6 months period used here.*

For the MTSAT-1R infrared channel calibrations, an onboard calibration system is built into the imager, combining the blackbody source with the cold space view (Puschell et al., 2003). In addition, an intercalibration method utilizing collocated IASI information is employed for monitoring the calibration status of MTSAT-1R infrared channels. It is shown that the calibration performance of MTSAT water vapor channel has been stable with a bias of 0.117 K at 250K and with an RMSE of 0.003K for 26 month period from May 2008 to June 2010 (http://mscweb.kishou.go.jp/monitoring/gsics/ir/techinfo_mt1r.htm).

Puschell, J., Lowe, J. A., Jeter, J., Kus, S., Osgood, R., Hurt, W. T., Gilman, D., Rogers, D., Hoelter, R.: Japanese Advanced Meteorological Imager (JAMI): Design, characterization and expected on-orbit performance, Proceedings of the 13th International TOVS Study Conference, Sainte Adele, Canada, Oct. 29 - Nov. 4, 2003.

*-the scatter plots reveals some collocated pixels with very cold temperature (less than 240K) for tropical-subtropical conditions. Are these very cold pixels clear? Is there any chance to have cirrus cloud contamination here? Or those are large viewing angle scenes for which the linearity of the comparison might not be guaranted. Can you comment on the need or not to filter out these kind of scenes?*

We appreciate your valuable comments. For cloud screening we applied criteria of $TB_{11}$ > 275 K and $TB_{11}$-$TB_{6.7}$ > 25 K, which would remove middle and high clouds quite effectively because the weighting function of the water vapor channel is located mainly between 200 hPa and 500 hPa. Over the tropics and sub-tropics, cold brightness temperatures up to 220 K are common; for example Brogniez et al. (2006) shows that the clear-sky Meteosat WV TB ranges from 220 K to 260 K over the African continent and Atlantic ocean analysis domain. Nonetheless the scenes under smaller viewing angles are much desirable. Now this is discussed in the revised version.

Brogniez, H., Roca, R., and Picon, L.: A clear-sky radiance archive from Meteosat ‘‘water vapor’’observations, J. Geophys. Res., 111, D21109, doi:10.1029/2006JD007238, 2006.

*- while the two (winter and summer) fits both show high statisticals significance, there are no*

*comments on how one should use them or not to actually correct the MODIS temperature. Expanding on the further use of these fits (validity range etc...) would also benefit to the reader.*

Although one summer and one winter months may not be enough to suggest a general correction method for the entire year, the regression equations obtained from analysis in Figure 4 suggest how TB corrections can be made for MODIS water vapor channel measurements. For example, from the obtained regression equation of -6.4 + 1.01 IE$TB_{MODIS}$ = $TB_{MODIS}$ for June 2007, corrected temperature can be $TB_{MODIS}$' = ($TB_{MODIS}$ +6.92)/1.02 for measured temperature $TB_{MODIS}$. Such possibility is now suggested in the text. Also limitations of correction method only for the tropical and subtropical regions are mentioned.

*-the case for the 11 $cm^{-1}$ shift in the spectral function will be stronger if you actually show the plot of the effect of such correction. I encourage you to actually reinforce this last paragraph of Section 4.*

Following the reviewer's suggestion, a new plot is prepared to show the effect of spectral shift on the brightness temperature. In fact, another reviewer also suggested to discuss more about the impact of the shift including Figure 5 to be presented.

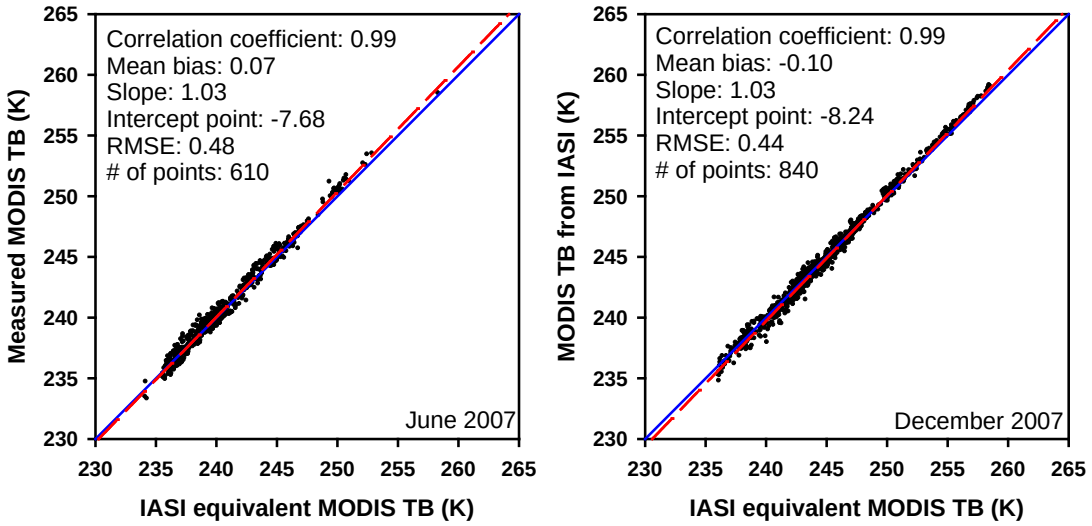


**Fig. 5.** Scatter plots of measured MODIS and IASI equivalent MODIS brightness temperatures for June 2007 (left) and December 2007 (right) after the spectral shift of the response function by +11$cm^{-1}$.