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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Discriminating raining from non-raining clouds at mid-latitudes using Meteosat Second Generation daytime data" *by* B. Thies et al.

Anonymous Referee #1

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The authors suggest a new VIS/IR method for delineation of convective and stratiform precipitation in the mid-latitudes during daytime using MSG data. They use the reflectance in the 0.6 and 1.6 μm channels as proxy for cloud water path and the brightness temperature difference between the 10.8 and 12.1 μm and the 8.7 and 10.8 μm channels to gain information on the existence of ice particles at the upper part of the cloud for the delineation. The authors clearly showed the advantage of using the suggested method comparing to the enhanced convective stratiform technique which was chosen to represent retrieval techniques that use only IR thresholds. The paper is well-written, and the subject matter is appropriate for Atmospheric Chemistry and Physics.

I have few minor comments and suggestions:

(1) The reflectance and the retrieved particle effective radius from the 1.6 μm channel is more sensitive to 3D effects than those of the 3.9 μm channel (See Rosenfeld et al, 2004). This could affect pixels with shallow or broken clouds. Also, using reflectance instead of the retrieved particle effective radius can be sometimes misleading because of the particle phase function (See for example in Rosenfeld et al 2006, figures 1 and 2 and the discussion in the text).

(2) Page 15857 line 18: SSP - this is the only occurrence in the text, should not be abbreviated.

(3) Page 15858 line 15, (and other places): change "channel difference between..." to: brightness temperature difference between... (The same for reflectance, for example in page 15859 line 16; page 15863 line 19)

(4) Page 15859 line 20: high T10.8-12.1 are connected with non precipitating Ci clouds, for example, Inoue (1987) classified clouds with T10.8-12.1 $>$ 2.5 K as Ci clouds.

(5) In figure 3 the ROC is not a curve, it's a plot.

(6) It would be nice if the authors could provide the reader with the occurrence of the data in figures 2a and 2b in a plot with the same axis (i.e. figure 2c will show the occurrence on a NIR 1.6 vs. VIS 0.6 plot and figure 2d will show the occurrence on a T10.8-12.1 vs. T8.7-10.8 plot).

(7) Please use colors in figure 4 (mainly b and c) it is hard to read the figures in gray scale.

References

Inoue, T.: A cloud type classification with NOAA 7 split-window measurements, J. Geophys. Res., 92, 3991-4000, 1987.

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15853, 2007.