

Interactive comment on “Discriminating raining from non-raining clouds at mid-latitudes using multispectral satellite data” by T. Nauss and A. A. Kokhanovsky

Anonymous Referee #3

Received and published: 22 February 2006

General comments:

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A valuable article, in which optical properties of clouds are put in correspondence with the probability of precipitation by means of an effective relation. Results obtained by the combination of satellite data from MODIS and a numerical algorithm (SACURA) for retrieving the optical properties of the clouds have been compared to ground radar data in order to obtain a delineation curve which separates the "high-probability of precipitation" from the "low-probability of precipitation" regions in the optical thickness-

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droplet radius space. The results of this new technique, RADS, seem well founded and very promising. Further validations comparing less extreme weather conditions should be explored in future works.

Specific comments:

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The overall presentation of the work is concise and very clear. My only objections are of two types. First, I find that the results should be tested in a more general ground, in order to assess if the effective model for the threshold line depends on having very optically thick clouds with extreme convection (as for the data used in this paper) or, on the contrary, it could be valid in a more general situation. However, even if the results are valid only for strong convective system they are interesting, so such a study can be deferred to a future, more comprehensive work. Second, some technical details of the processing are a bit obscure to me, what avoids reproducibility. In particular, the statistical validation tests are not completely presented: we do not know the sampling size and significance of the results on POD, POFD, etc; notice also that spatial correlations can be important for these systems and so the results on these statistical have less significance, as the total number of degrees of freedom is hence smaller the total number of evaluated pixels. In addition, the improvement in the statistical quality when the resolution is lowered by a factor 20 seems not very significant; to be fair the same type of lowering should be applied to the CS technique and then observe if the parameters for CS do not improve as much as those for RADS. Anyway the results for RADS with the original resolution seem rather convincing without further processing.

Technical corrections:

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It would be convenient to represent the figures in a larger size, as they are difficult to assess in their present form.

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Overall evaluation:

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An interesting article on a novel, promising technique. The work is centered on a subject which is scientifically sound and within the scope of ACP. The subject is well presented and the paper is adequately referenced

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 1385, 2006.

ACPD

6, S92–S94, 2006

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