

Interactive comment on “Synergetic cloud fraction determination for SCIAMACHY using MERIS” by C. Schlundt et al.

Anonymous Referee #1

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The paper describes the new developed algorithm to use different satellite instruments with different spatial resolution using MERIS and SCIAMACHY. The authors present a method to use the high spatial resolution to overcome the lower spatial resolution of SCIAMACHY in order to improve the cloud masking. They really used the synergy that both instruments are aligned on the same satellite. The paper is well structured and well written. It covers globally what is expected from a paper describing a new cloud masking retrieval scheme. I suggest the paper being published provided some minor changes/improvements are applied.

In detail the authors need to address the following issues:

a) page 2, paragraph 2.1, column 2, line 9: Explain what 240 km means.

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- b) Similar as a) on page 3, paragraph 3, column 1, line 2: 7200 km² (off-nadir?)
- c) Page 3, column 2, paragraph 3, line 12: It would be interesting in how many cases (%) the algorithm fails to derive a cloud mask. Or delete the sentence.
- d) The different steps how to come to a cloud mask with the MICROS algorithm are nicely described, however, the method relies on fixed thresholds. The authors should explain, how the threshold have been calculated (e.g. 0.08 for channel 13) as well as demonstrate the impact of a proper validation on this thresholds? How accurate are the MERIS measurements?
- e) How are aerosols treated in MICROS, I would expect that they contaminate the radiance signal.
- f) Page 5, paragraph 3.4.1, column 1, line 3ff: How the empirical thresholds have been determined? Is it based on e.g. the 95 percentile of observed or calculated radiances?
- g) Page 6, paragraph 3.5, column 1, line 23: Typo: should be “on the one hand”
- h) Figure 8 not mentioned in text. Remove it.
- i) Figures X (b)+(f) , more general: the frequency differences are hardly observable, I recommend to use relative distributions.
- j) In the caption you mention the “most simultaneous” occurrences. What is the definition for that i.e. less what time difference?

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