

## ***Interactive comment on “Characterization of dust aerosols in the infrared from IASI and comparison with PARASOL, MODIS, MISR, CALIOP, and AERONET observations” by S. Peyridieu et al.***

**E. Highwood (Editor)**

e.j.highwood@reading.ac.uk

Received and published: 15 March 2013

Following the appearance of these two conflicting reviews of this paper, I have been carefully considering whether a revised submission is appropriate. Reviewer 1 recommends publication of the manuscript following some minor revisions. Reviewer 2 however states that they feel the manuscript should not be published since it does not demonstrate significant new understanding compared to a previous paper by the same authors. Additional comments are made about the quality of the science of both the present and the 2010 paper. However, a substantial list of detailed points are also given.

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The previous paper does indeed use the same technique and retrieval, but on a different instrument. The comparisons are also made in the 2012 paper with additional instruments (e.g. MISR and AERONET). The current paper also includes work on the coarse mode effective radius, that was not considered in the earlier paper. My opinion is therefore that some new science is indeed presented alongside complementary work to the 2010 paper with a new instrument.

As such, I am recommending that the authors provide a response to the reviewers comments provided here, and to my comments below, and then submit a revised manuscript taking into account those comments. This can then be considered for ACP publication.

Additional points to consider: Page 23095 line 24: "remote sensing in the IR remains marginal" is a very vague term, please be more explicit about work that has been done elsewhere, however minimal.

Page 23100: comparison with AERONET. I have some concerns about the ability of AERONET to represent coarse mode aerosol accurately so perhaps some discussion about the limitations of the radius derived from AERONET might be useful here.

Page 23102 line 17-20: What physical mechanism would be responsible for the late arrival of the coarse mode compared to the fine mode?

Page 23104 line 30: The point that the MITR model is inappropriate for many regions is important and should be made more strongly.

Page 23112 line 10: I find the phrase "a promise for future fruitful works" and in fact the whole of this final paragraph to be too vague. If you intend to advertise the new instrument, please give some more specific ideas of how it will increase IASI performance with reference to your specific results.

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Interactive comment on Atmos. Chem. Phys. Discuss., 12, 23093, 2012.

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