

## ***Interactive comment on “A comparison of OEM CO retrievals from the IASI and MOPITT instruments” by S. M. Illingworth et al.***

### **Anonymous Referee #1**

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general comments:

This manuscript addresses an important subject of understanding the differences between the products of two satellite sensors. The techniques are sound and related formulations are well described. I particularly like the use of GOES-CHEM model as a tool in the inter-comparison. However, I have a few major concerns that I believe should be addressed before it is accepted.

In addition, the algorithm description for the IASI CO product was published in a separate manuscript at AMTD "A new optimal estimation retrieval scheme for carbon monoxide using IASI spectral radiances – Part 1: Sensitivity analysis, error budget and simulations", but not yet at AMT, even though the referee comments were posted on

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3 Sept, 2010. The acceptance of this inter-comparison manuscript should be pending on the outcome of the algorithm paper.

specific comments:

1. Not enough spatial and temporal coverage for this subject. The advantage of inter-comparing different satellite datasets is in its statistical properties. There are multiple years of observations from both sensors, and they both provide daily global coverage. I'm not sure if I understand about the choice of location and date included in this paper. I could understand it if this choice was to support a field campaign, to test their new products with a specific in situ dataset, or to address a unique science problem. To understand the quality of a new satellite product, validation should be provided to cover a reasonable range of scenarios. Even if the authors stated that "the continuation of this work is to extend the intercomparisons over a larger temporal range, and to different regions," why not wait to publish so that this manuscript can represent a much more comprehensive study.

2. Not enough description on the IASI algorithm that is been evaluated. Even if an algorithm description paper was referenced, which is not yet a refereed publication, the major components in the algorithm should be summarized for completeness. What I don't understand is how much description that was given on MOPITT in contrast. MOPITT is well documented in a large number of publications such that the community is well aware what are all included in the algorithm even the latest updates on the forward model and V3 vs V4 features. There is much discussion in a whole paragraph about the MOPITT forward model MOPFAS, but only one sentence on the forward model that is used in the ULIRS IASI CO retrievals. Details about the ULIRS IASI CO retrievals need to be provided such as, but not limited to: the noise treatment, cloud treatment, the sources of the temperature, moisture, and ozone profiles used by the forward model.

3. Not enough reviews of other people's similar works and there is very limited discus-

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sion/review of other AISI CO products.

technical corrections:

4. The panel marks “A, B, C, D” are difficult to see for Fig. 5, 6, 10, and 11.

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Interactive comment on Atmos. Meas. Tech. Discuss., 3, 4889, 2010.

**AMTD**

3, C2398–C2400, 2011

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