

## ***Interactive comment on “On the capability of IASI measurements to inform about CO surface emissions” by A. Fortems-Cheiney et al.***

**Anonymous Referee #2**

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This is a well-written and informative paper, illustrating the quantitative value of the IASI CO retrievals in optimizing surface emissions. The components of the inverse modeling system (satellite retrievals and model), and the inverse modeling methodology are described well. Comparison with the MOPITT retrievals is also a valuable component of this paper. I recommend publication in ACP after addressing the comments below.

p.7508, l.9: give chemical formula for MCF

p.7508, l.19: might be clearer as: '... errors in the fluxes from errors in initial concentrations for the first couple of weeks.'

p.7509, l.3-4: rewrite as: 'Our approach for determining the posterior uncertainty consists of ...'

C464

p.7509, l.15: syllable missing: 'simplification'

p.7510, l.12: 'constraint to'

p.7511, l.16: The current MOPITT product is Version 3 (V3). The label L2V5 doesn't seem right.

p.7511, l.25: Neither reference cited says that there is a bias in nighttime MOPITT retrievals. There are differences between day and night retrievals (due to surface temperature changes); that can be the reason given for not using the night data.

p.7512, l.7: It would be much clearer and simpler to just compare to the total number of model grid boxes instead of revering to them as "super-observations".

p.7512, l.13: identify A as the averaging kernel

p.7512, l.16: leave out 'at NASA and LATMOS respectively'

p.7514, l.4: 'lower-sounding' is quite vague – perhaps say the averaging kernels peak at a lower altitude, or that MOPITT is more sensitive at lower altitudes.

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C465