

Interactive comment on “Nine years of global hydrocarbon emissions based on source inversion of OMI formaldehyde observations” by Maite Bauwens et al.

Anonymous Referee #1

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In my opinion, this is a great paper, and surely a benchmark in the field. Although it is long!

It presents a thorough discussion of the inferred top-down fire and isoprene emissions, and compares them both to independent emissions inventories and flux measurements (for isoprene). Figures are excellent (though units should really be attached to colour bars in figs 1, 2, 5, 6, 16)

If I had one issue, and this is maybe really for a future paper, it would be to compare the simulated IMAGES tracers based on the a-priori and optimised emissions against observations. That it is actually compare the simulated concentrations of isoprene, HCHO + other key VOCs and tracers against in-situ ground and aircraft observations

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to really see how the model improves. Comparing with other emission estimates is good, but you really want to see if the model does better in simulating atmospheric chemistry. There are plenty of observational datasets during the studied time period to do this.

Minor comments.

Abstract: first sentence does sound right when you read it. Maybe: 'As HCHO is a high yield...'

OMI row anomaly - did you check how the number of observations changes per grid cell, and how that correlates with inferred emission trends. Did you also try only the OMI rows 5-23 which are unaffected throughout the mission?

page 5, line 24: 'Inversions are performed separately for each year' - in the framework of a continuous adjoint simulation? i.e was it a start-stop inversion?

page 6, line 23: there is a '(s)' -is this a typo?

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