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Interactive comment on "Current estimates of biogenic emissions from Eucalypts uncertain for Southeast Australia" *by* K. M. Emmerson et al.

Anonymous Referee #2

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Review of Emmerson et al., "Current estimates of biogenic emissions from Eucalypts uncertain for Southeast Australia"

Synopsis

Emmerson et al., report on a study to determine the emission factors of isoprene and monoterpenes by vegetation in Southeast Australia, as measured during a number of field campaigns and modelled using the MEGAN emission module coupled to the CSIRO Chemical Transport Model. They identify large discrepancies between measured and modelled emission fluxes, which they attribute to overestimated isoprene emission factors used in MEGAN. They give suggestions on how to improve this, but caution that they did not find a single change that would improve predictions under all conditions investigate, and call for further observations to better the situation.

General remarks

The paper is clearly written and well structured. Methods and results are presented in a concise manner, and the conclusions drawn are sound. I did not find anything of concern while conduction my review and hence recommend for publication after the two following minor comments are addressed:

Detailed comments

P 2 L 26: The effect of soil moisture on plant emissions seems to be an unknown which could potentially have considerable influence on predictions. Even if the model would include it - how good is the soil moisture in the model?

p 4 l 18: CB05 is almost 10 years old now, and our knowledge on isoprene chemistry has improved considerably - IEPOX formation, ISOPOOH and the associated OH recycling directly impact the influence of isoprene on O3, and hence your evaluation. Can you assess how well CB05 performs compared to other mechanisms with a more updated isoprene chemistry? At least mention this potential source of error.

p 8 l 19: Do you have any evaluation of the boundary layer height performance of the modeling system? The modelled concentrations are highly sensitive to this parameter, and especially its dynamic behavior (i.e. the collapse at dusk) can easily be wrong in the model.

Figures: Is it possible that the figures are copy-pasted from Excel or similar? Please improve their quality (spurious frames around them, resolution) to publication standards.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-92, 2016.