

## ***Interactive comment on “FORest canopy atmosphere transfer (FORCAst) 1.0: a 1-D model of biosphere–atmosphere chemical exchange” by K. Ashworth et al.***

**Anonymous Referee #2**

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### GENERAL COMMENTS:

This paper describes a new model that looks specifically at the ecosystem-atmosphere interface describing chemical exchange fluxes between these two environments in greater detail. Emission, deposition and transformation of primary species, their oxidation products and particulates formed in the process (limited to equilibrium partitioning) are examined to simulate a forest canopy environment.

This work addresses a key interface of the Earth system that still remains poorly understood but is critical to the understanding of atmospheric compositions and therefore of present and future air quality and climate. Many of the species central to AQ and

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climate are influenced by atmosphere-ecosystem exchange fluxes. Hence, the paper represents pioneering science and is very well suited for publication in GMD.

The paper is well written and presented. The figures included are helpful and contribute to the clear message(s) of the paper. The model description is extensive and model evaluation is very detailed and insightful. I have no major concerns that would prevent the paper from being published

Therefore, I recommend inclusion of this manuscript in GMD after the very few minor technical issues have been addressed.

### SPECIFIC COMMENTS:

p.5198l.25: I think what the authors mean to say is HO<sub>2</sub>\* denotes the sum of HO<sub>2</sub> plus peroxy radicals produced in the isoprene chemistry initiated by reaction with OH; there is no such thing as OH<sup>+</sup> which is currently what's in the text.

p.5201l.5: At this point I wasn't sure anymore what RO<sub>2</sub>\* refers to. It would be very helpful to the reader to repeat that definition very briefly here.

p.5205l.5: citation "Myrdal and Yalkowsky (1997)" seems to be missing from the reference list.

p.5210l.11: please clean up typo.

p.5210l.26: please remove space from "isoprene+OH-derived".

p.5212l.6: please resolve typo; either "these show" or "this shows".

p.5215l.5: please check unit symbols.

p.5215l.10: please check unit symbol.

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Interactive comment on Geosci. Model Dev. Discuss., 8, 5183, 2015.

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