

Interactive comment on “Future changes in isoprene-epoxydiol-derived secondary organic aerosol (IEPOX-SOA) under the shared socioeconomic pathways: the importance of explicit chemistry” by Duseong S. et al.

Anonymous Referee #2

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The authors present a suite of simulations of IEPOX SOA formation using a recent parameterization that they developed (Jo et al. 2019) which uses, in their words, "explicit chemistry".

The idea that VBS or other volatility-based approaches is insufficient to capture the multiphase chemistry IEPOX is not novel, and it is obvious from an atmospheric chemistry and physics point of view. This intercomparison should not be given emphasis in an ACP paper. The community has accepted the idea that multiphase pathways of SOA formation must be represented separately from volatility-based representations

C1

for fifteen years or more.

That being said, the new explicit IEPOX SOA scheme, which has already been peer reviewed and published in Jo et al. 2019 and therefore will not be the focus of my review, is of value, and this manuscript validates it as compared to field data and demonstrates its application to climate predictions as implemented in CESM. The paper would benefit greatly from deeper discussion comparing the performance of this model to other IEPOX SOA chemistry representations in, e.g., CMAQ, GEOS-Chem, WRF-Chem, and the CESM work of the Penner group, rather than the current focus on VBS.

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C2