Institute for Advanced Sustainability Studies (IASS)

VOC Source Attribution of OH, O_3 and NO_3 Reactivity

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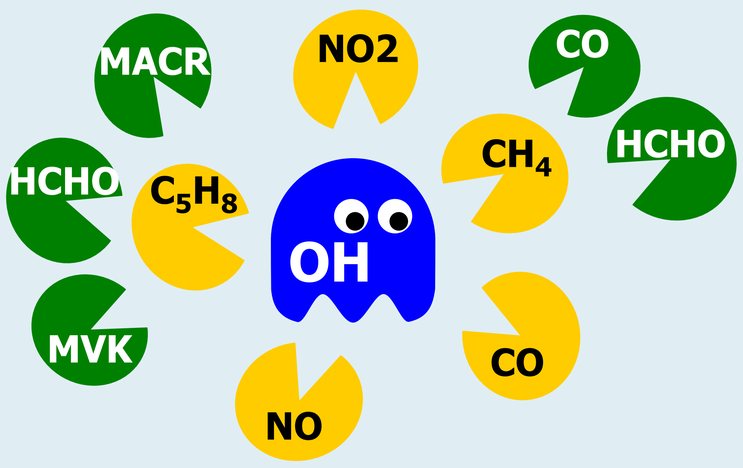
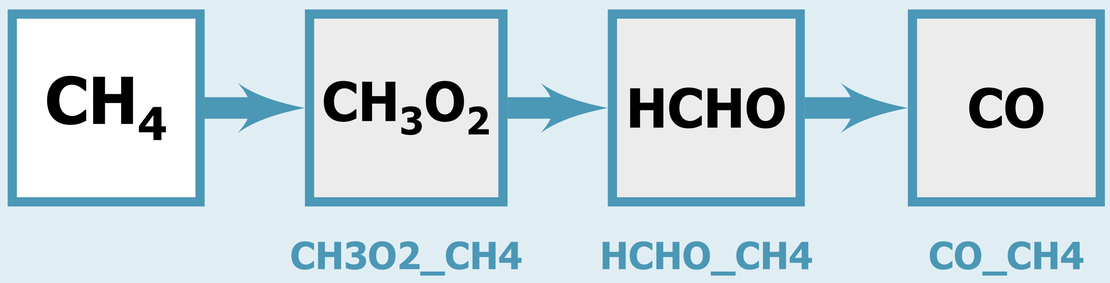
Objective

- Determine total VOC impacts on oxidant reactivities.



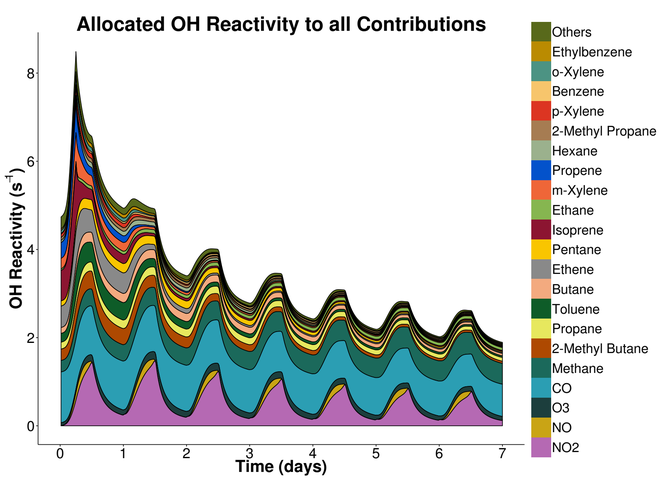
Approach

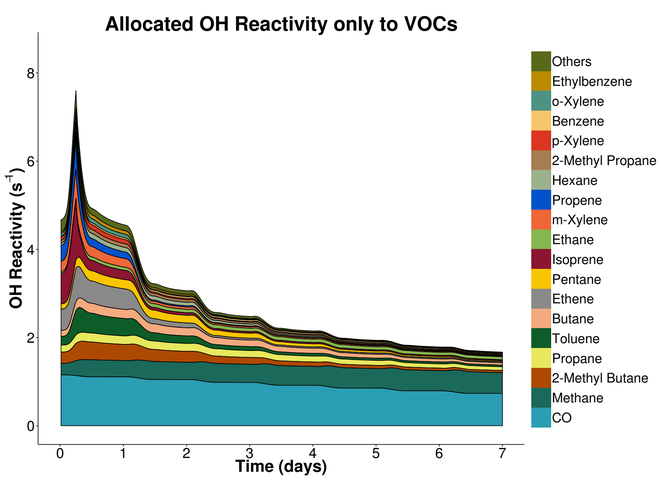
- Chemical box model using MCM v3.2.
- Chemical mechanism tagging [1] allows reactivity allocation back to emitted VOC.
- Tagging used to calculate many atmospheric oxidant reactivities (OH, O_3, NO_3 and others).



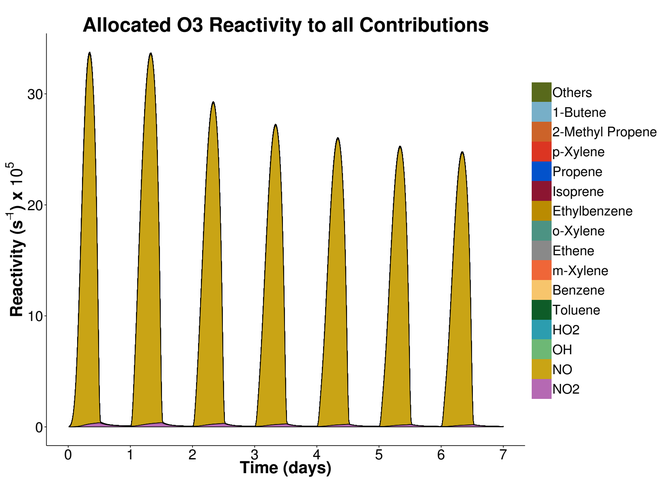
Application

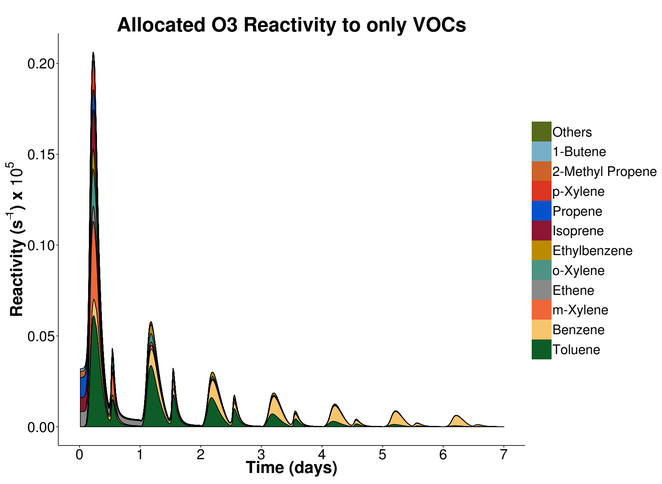
OH Reactivity



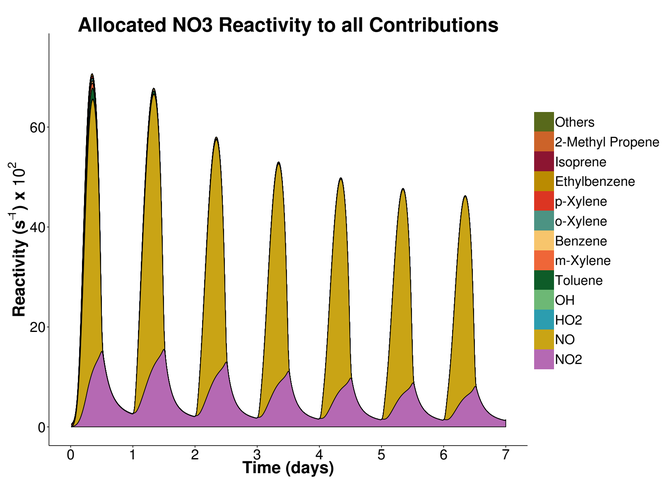


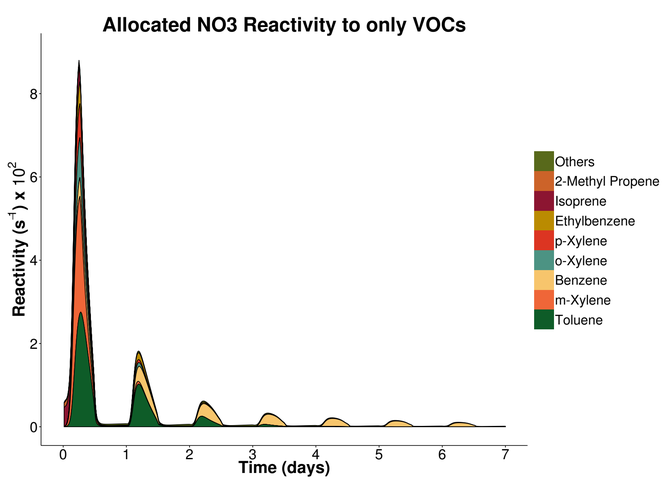
O_3 Reactivity





NO_3 Reactivity





Summary

- Tagging chemical mechanisms allows source attribution of atmospheric oxidant reactivities.
- Reactivity attribution to emitted VOCs separated from inorganic contributions.

References

[1] T. M. Butler, M. G. Lawrence, D. Taraborrelli, and J. Lelieveld. Multi-day ozone production potential of volatile organic compounds calculated with a tagging approach. Atmospheric Environment, 45(24):4082–4090, 2011.

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