

1 *Supplementary for*

2 **Implementation and Evaluation of an Observation-Constrained**  
3 **Secondary Organic Aerosol Parameterization in MOZART–**  
4 **GOCART Chemistry in WRF-Chem**

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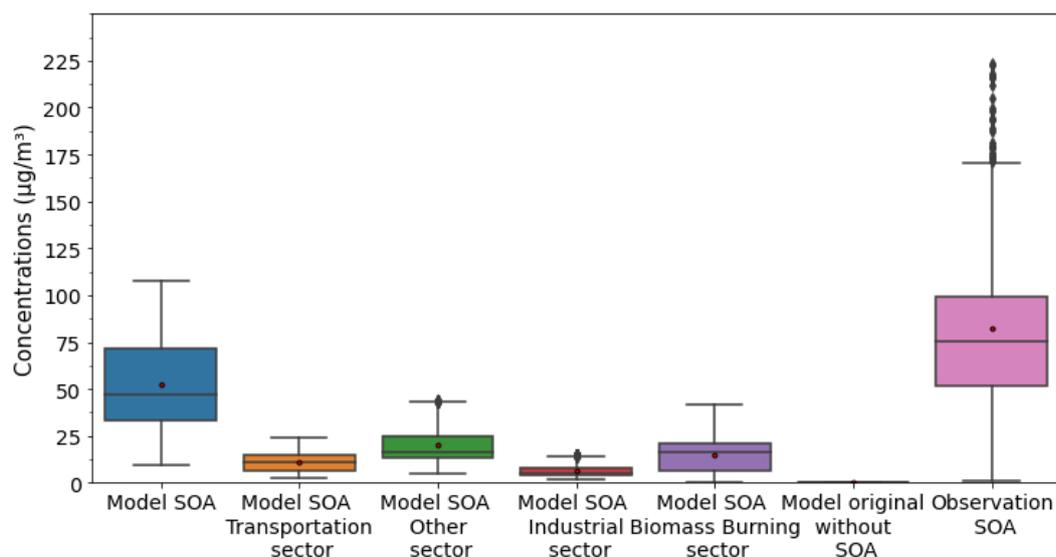
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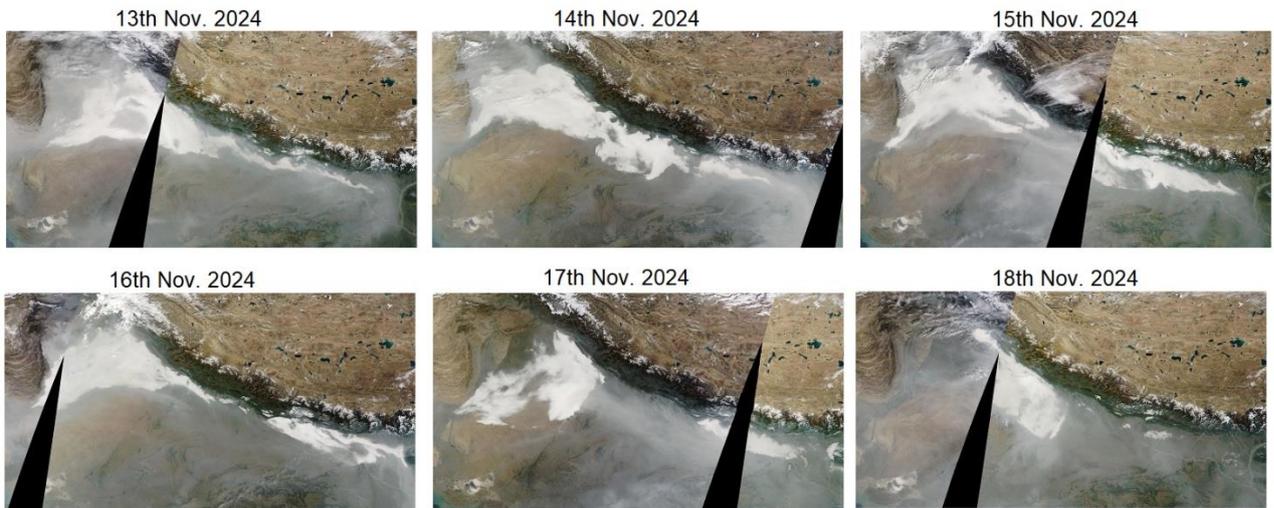
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21 Figure S1: Box whisker plot of simulated total SOA and contributions from different  
22 source sectors in Delhi during November 2024.

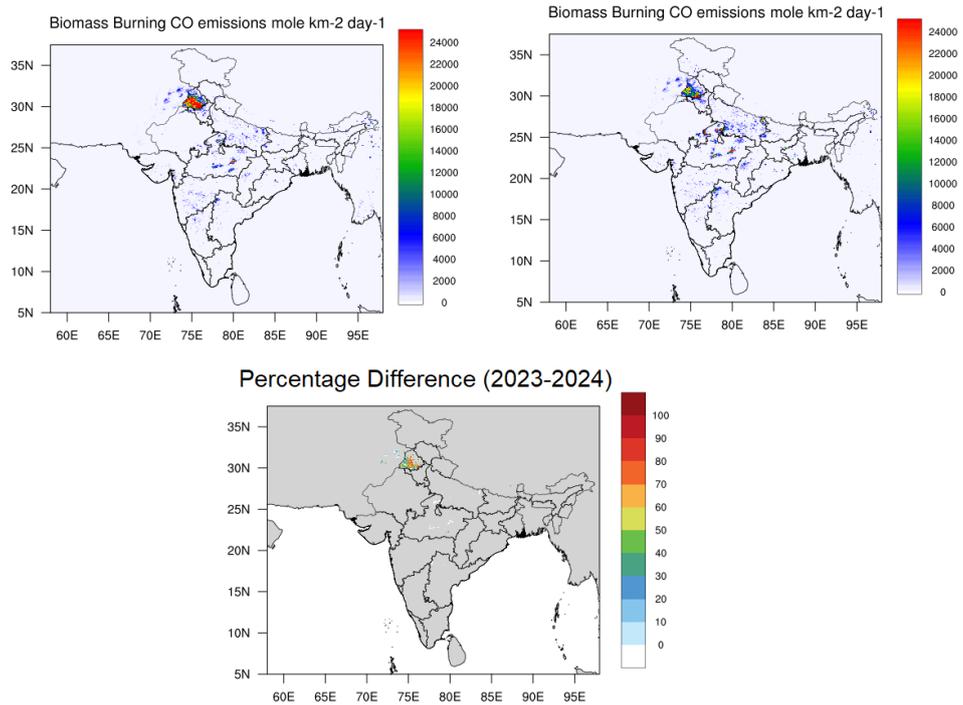
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25 Figure S2: Natural Colour Images from NASA World View during 13<sup>th</sup> -18<sup>th</sup> November  
26 2024.

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29 Figure S3: Mean fire count difference between November 2023 and November 2024.