

Egusphere-2023-855 Response to Editor

Editor comments:

[Suggest rewording paragraph on lines 66-78 \(tracked changes version\) as indicated below. It was confusing with the edits in response to reviews. Also note that this is the first time ROC is introduced, and it may need to be further defined since it is a relatively new term, as is done on lines 81-83.](#)

Some air quality models (AQMs) have incorporated SVOCs and IVOCs by scaling these emissions to sector-wide POA or NMOG inputs either during a data pre-processing step or the AQM runtime (Murphy and Pandis, 2009; Shrivastava et al., 2011; Ahmadov et al., 2012; Bergström et al., 2012; Koo et al., 2014; Woody et al., 2015; Zhao et al., 2016a; Woody et al., 2016; Jathar et al., 2017b; Murphy et al., 2017). However, these approaches rely on broad application of assumptions that may not be appropriate for specific source types since sampling artifacts will bias low-emitting and high-emitting sources differently (Robinson et al., 2010). As emissions from individual combustion sources are continually reduced in response to tightening regulations, accounting for the potential biases becomes important. Manavi and Pandis (2022) and Sarica et al. (2023) implemented emission factors and speciation of SVOCs and IVOCs specific for mobile sources in Europe, while Morino et al. (2022) explored revisions to stationary source reactive organic carbon (ROC) emissions in Japan. Chang et al. (2022) implemented a more detailed bottom-up inventory of ROC emissions across all sectors in China with emission factors specified at the volatility bin level rather than for bulk PM and NMOG. Additional bottom-up approaches are needed that revise emission factors and speciation profiles for all relevant individual source types and regions.

[Minor editorial comments:](#)

[A mix of past and present tense is used in the methods section. Suggest using past, or at least being consistent.](#)

[Check line 216-typo in edit.](#)

[Figure 2 is not called in the text.](#)

[Line 301: remove "are" before represent.](#)

Deleted: semivolatile organic compounds (

Moved down [1]: Bottom-up approaches thus are needed that revise emission factors and speciation profiles for individual source types.

Deleted: explores

Deleted: implements

Moved (insertion) [1]

Deleted: B

Deleted: Bottom-up approaches are needed that revise emission factors and speciation profiles for individual source types.

Response:

We thank the Editor for excellent suggestions to the paragraph above. We have rewritten it as follows and submit both the track changes and clean manuscript version.

Some air quality models (AQMs) have incorporated SVOCs and IVOCs by scaling these emissions to sector-wide POA or NMOG inputs during a data pre-processing step or the AQM runtime (Murphy and Pandis, 2009; Shrivastava et al., 2011; Ahmadov et al., 2012; Bergström et al., 2012; Koo et al., 2014; Woody et al., 2015; Zhao et al., 2016a; Woody et al., 2016; Jathar et al., 2017b; Murphy et al., 2017). However, these approaches rely on broad application of assumptions that may not be appropriate for specific source types since sampling artifacts will bias low-emitting and high-emitting sources differently (Robinson et al., 2010). As emissions from individual combustion sources are continually reduced in response to tightening regulations, accounting for these potential biases becomes important. Manavi and Pandis (2022) and Sarica et al. (2023) implemented emission factors and speciation of SVOCs and IVOCs specific for mobile sources in Europe, while Morino et al. (2022) explored revisions to stationary source organic emissions in Japan. Chang et al. (2022)

implemented a more detailed bottom-up inventory of organic emissions across all sectors in China with emission factors specified at the volatility bin level rather than for bulk PM and NMOG. Additional bottom-up approaches are needed that revise emission factors and speciation profiles for all relevant individual source types and regions.

We have revised the use of tense in the Methods section and converted verbs to past tense, except where it was appropriate to use present (e.g., when explaining a known theory or principle).

Corrected line 216.

We did find several places where Figure 2 was referenced in the text, but as Fig. 2. We are willing to make additional revisions if we are misunderstanding this issue.

Removed 'are' in line 301.