



EGUsphere, referee comment RC1
<https://doi.org/10.5194/egusphere-2022-1412-RC1>, 2023
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Comment on egusphere-2022-1412

Anonymous Referee #2

Referee comment on "Global impact of the COVID-19 lockdown on surface concentration and health risk of atmospheric benzene" by Chaohao Ling et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-1412-RC1>, 2023

The authors used CTMs and ensemble machine-learning models to assess the impact of COVID-19 lockdown on ambient benzene. Overall, the manuscript is well-written and many useful information has been obtained. I think the manuscript falls into the scope of ACP. However, the manuscript still shows some minor flaws. I recommend the manuscript for publication on ACP when these issues have been adequately addressed.

- The sampling sites of ambient benzene focused on the United States, India, and Europe, while other regions lack of monitoring sites. How could you ensure the reliability of simulation results?
- To the best of my knowledge, many other decision tree models and deep learning models except RF, XGBoost, and LightGBM have been developed in recent years. Why do not you use other state-of-art models?
- Line 188-189: Why do you use some date variables such as month of year (MOY), and day of year (DOY) to remove the impact of meteorology?
- Line 200-218: The health risk assessment method suffers from many disadvantages. The ambient benzene derived from different sources generally showed distinct toxicity weights. I recommend the authors consider the difference in the model, which might be more valuable.
- Line 305-307: What is the difference of P and P*?
- Line 323-352: This part was too superficial and the authors should add more discussion in this paragraph.
- The conclusion seems to be the repeat of abstract and the authors should rewrite this part.

The reference format is not standard and the authors should revise carefully.