Reviewer's report

Title: Does the oxidative stress play a role in the associations between outdoor air pollution and persistent asthma in adults? Findings from the EGEA study.

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Reviewer: Jelle Vlaanderen

Reviewer's report:

This is a well written manuscript that describes associations observed between several modeled markers of air pollution, a biomarker of oxidative stress, and persistent asthma. The approach is interesting analyses provide some suggestive evidence, but a clear convincing signal is missing. Considering the small sample size, the authors are generally appropriately modest in the interpretation of their findings.

Major comment:

My major concern with this manuscript is the selective reporting of the (positive) results from statistical analysis in the text. More attention should be given to the results that are not in the expected direction (e.g. non-significant protective effects of PM on asthma). In the current manuscript these are included in the tables, but ignored in the text. It is important to also address these results to give the reader a balanced view of the results of this study. This also pertains to the abstract, where the conclusion section only focuses on O3.

Minor comments:

- In the discussion the authors state: "Plasma FIOPs levels might also increase with exposure to PM2.5". This statement should be further qualified as you have PM2.5 data in your own study.

- Is there a possibility to look at the relationship between the FIOPs data in this study and the 8-isoprostane biomarkers measured in EGEA before?

- How do you explain the protective effect on persistent asthma that is observed for PM2.5 and PM10?

- In table 2 and supp table 3 less individuals are included in the analyses for PM10 and PM2.5. What is the reason for this? Considering this affects a considerable proportion of your population, please state clearly in the manuscript text.
As expected due to small effect and sample size, the estimates from the mediation analyses are quite imprecise. Please add some additional considerations in the discussion for the reader to make an interpretation of these findings.

Why are participants with remittent asthma used as reference in this analysis, rather than the asthma free controls that are part of the EGEA cohort. What is the potential consequence of this for the interpretation of the results from the statistical analyses?

Level of interest
Please indicate how interesting you found the manuscript:

An article of importance in its field

Quality of written English
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Acceptable

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