Dear Editor,

Please fin attached the point-by-point response to the reviews.
Thank you.

Kind regards,

Sofia Sousa

AUTHOR'S RESPONSES TO REFEREE #1:

Addition of comparisons to station data is valuable, and including comparison of exceedances helps to put results into perspective. However, from reading the text, it is not clear to me how the results were calculated:
"For PM2.5, the exceedances to the WHO guideline found with the modelled data represented more than 60% of the exceedances calculated with the data from the stations".
What does this mean? Is the number of exceedances compared or the day of exceedance, and how are the different cases of finding / not finding exceedances in model / measurement treated? I could imagine cases where the model finds an exceedance but the measurements do not and the other way round and would not know how to combine these results into one percentage. Please provide more information here.

Answer: Suggestion attended. The annual exceedances of PM2.5, PM10 and NO2 found simultaneously with the modelled S-SCN scenario and with data from the monitoring stations of the EU Member States were compared. Clarifications regarding these calculations were introduced in the text. Please see lines 165-167.

Please also add units to Table 1 where appropriate.."

Answer: Suggestion attended. Please see Table 1.

AUTHOR'S RESPONSES TO REFEREE #2:

The manuscript was considerably improved compared to the earlier version. Two remaining issues should be addressed before I can recommend publication in Atmospheric Chemistry and Physics:

1) The authors provided a detailed elaboration on the sources of uncertainties in the STEAM 3 inventory in their final response. The authors are asked to include the details on uncertainties in STEAM also in section 3.3 "Uncertainties and Limitations", so that other researchers can dedicate efforts to quantify, how the specified uncertainties of ship emissions affect modelled air pollutant concentrations.

Answer: Suggestion attended. Please see lines 344-353.

2) VOC emissions from ships were not included in the study. The chemical regime in the atmosphere along the ship tracks in the Mediterranean is known to be VOC sensitive (Beekmann and Vautard, 2010), implying that ozone production is very sensitive to emission of reactive VOC from the ships travelling there. This is an additional limitation of the present study, specifically when quantifying the SOMO35 indicator. This must be clearly stated in section 3.3 "Uncertainties and Limitations".

References:

Beekmann, M. and Vautard, R.: A modelling study of photochemical regimes over Europe: robustness and variability, Atmos. Chem. Phys., 10, 10067–10084, https://doi.org/10.5194/acp-10-10067-2010, 2010.

Answer: Suggestion attended. Please see lines 353-358.