

Interactive comment on “A Comparison of Long-term Trends in Observations and Emission Inventories of NO_x” by Elena Macdonald et al.

Anonymous Referee #2

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McDonald et al describe their work on comparing observed long-term trends with NO_x emission inventories in European cities in a well written manuscript. They use the incremental approach to assess how observations at roadsides compare to traffic emissions and how measurements in cities compare to the total city emissions over the past decade and beyond. While the urban increment aligned well with the city emissions, comparison of roadside increments and traffic emissions proved to be more difficult due to compounding factors like local influences not captured in inventories.

The overarching goal of the manuscript was to evaluate the feasibility of using available observations and inventories to come up with a consistent European wide method of assessing trends in NO_x emissions and compliance with NO₂ air quality standards. The authors have done an excellent job in gathering available information, treating

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the data with great care and suitable techniques and highlighting the strength and shortcomings of the approach.

After addressing my minor comments below, I recommend publication in ACP.

General Comments:

The authors have done a very nice job in presenting their findings in detail and concluding on the pros and cons of their method. Since a major motivation for looking at NO_x is its adverse health effects and the regular exceedances of air quality standards across Europe, this manuscript would benefit from a concluding paragraph on what has been learned from this study that can be useful to mitigate air quality exceedances.

Specific Comments:

p. 1, l1ff: please add one sentence to the abstract explaining what an increment is, otherwise your summary is hard to follow for readers not familiar with the method.

p.4, l115: Please state already here where the reader can find this final selection of cities, e.g. see section 3.1.

p.9, l208: Vienna shows a very distinct “bump” in its emissions in the mid-2000s. Can the authors comment on the cause of this? ... - I see, just say see Section 3.3 :-)

p.11, l 285 Please add an explanation on how the “common baseline year” was chosen/calculated.

Technical Comments:

p.2, l33: “since in”, delete “in”

p.12 Figure4: the legend is missing

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