

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-581

Anonymous Referee #1

Referee comment on "Advances in air quality research – current and emerging challenges"
by Ranjeet S. Sokhi et al., Atmos. Chem. Phys. Discuss.,
<https://doi.org/10.5194/acp-2021-581-RC1>, 2021

This manuscript presents a deep and extensive review of the research and developments that have emerged during approximately the last decade with respect to 'Advances in Air Quality Research'.

All topics considered are appropriate, timely and well targeted.

The document addresses relevant scientific questions, its content represents a successful review of the key elements of the subject under consideration.

The manuscript correctly presents the review of ideas, tools and data.

The conclusions are timely and substantial.

The analysis carried out clearly supports supporting the interpretations and conclusions.

The authors give appropriate credit to the related work.

The title clearly reflects the content of the article.

The abstract presented is a concise and complete summary.

The language is precise and correct, although there are sections that are difficult to read.

The number and quality of the references, in general, are adequate and reflect well the review carried out.

The document really represents an in-depth review of the state of the art, especially those developed in Europe. But it is too long, there are certain topics that are treated, and this is indicated in the text, several times. It is considered that a revision of the text would be necessary to make it more compact. Despite its interest and the good structure of the different sections, its length makes its reading really hard and heavy, resulting in its loss of interest.

line 80. The manuscript should be updated in reference to the new WHO '2021 guideline values.

line 225, what is indicated is totally opportune, it could be complemented by the following references.

- WHO, 2006. Health risks of particulate matter from long-range transboundary air pollution. 113 pp. World Health Organization http://www.euro.who.int/__data/assets/pdf_file/0006/78657/E88189.pdf.
- Lenschow, P., Abraham, H.-J., Kutzner, K., Lutz, M., PreuB, J.-D., Reichenbfigher, W., 2001. Some ideas about the sources of PM10. *Atmos. Environ.* 35 (1), S23-S33. [doi.org/10.1016/S1352-2310\(01\)00122-4](https://doi.org/10.1016/S1352-2310(01)00122-4) (2001).
- Baldasano J.M. (2020) COVID-19 lockdown effects on air quality by NO2 in the cities of Barcelona and Madrid (Spain). *Science of the Total Environment*, STOTEN-140353 doi.org/10.1016/j.scitotenv.2020.140353

Line 595. The reference on HERMES should be complemented with:

- Baldasano JM, LP Güereca, E. López, S. Gassó, P. Jiménez-Guerrero (2008) Development of a high resolution (1 km x 1 km, 1 h) emission model for Spain: the High-Selective Resolution Modeling Emission System (HERMES). *Atmospheric Environment*, 42: 7215-7233 [doi: 10.1016/j.atmosenv.2008.07.026](https://doi.org/10.1016/j.atmosenv.2008.07.026)
- Guevara M., F. Martínez, G. Arévalo, S. Gassó, J.M. Baldasano (2013) Improved system for modeling Spanish emissions: HERMESv2.0. *Atmospheric Environment* 81: 209-221 [doi: 10.1016/j.atmosenv.2013.08.053](https://doi.org/10.1016/j.atmosenv.2013.08.053)

Subfigures a) and b) of figure 1 should be in the absolute values of the pollutants emitted, not in relative%, since this would more clearly show the reduction effort made. Subfigure c) already relativizes the contribution of the different emission sources.

The entire References section and the corresponding citations in the text should be reviewed in detail. There are citations that are not included (eg Niemeyer 1960), others are not ordered correctly.