

Interactive comment on “Evaluation of the LOTOS-EUROS NO₂ simulations using ground-based measurements and S5P/TROPOMI observations over Greece” by Ioanna Skoulidou et al.

Anonymous Referee #3

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The authors compare the LOTOS-EUROS simulations of NO₂ over Greece against surface measurements, DOAS profiles and sentinel maps during the second half of 2018. The comparison is also performed at different seasons, sites and hour of the day, and the authors provided reasoning for the differences. The paper is within the scope of the journal and it is scientifically sound. My main concern is on the significance of some results, which affects its emphasis and extent. I trust it should be published, following the recommendations hereafter.

Specific Comments 1. The validation approach relies mainly on correlation and RMSE.

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The linear correlations should be tested for their significance. The same applies also for the spatial correlations, for which, the estimation algorithm is missing. Use of NRMSE is more informative when comparing the simulations at different stations. 2. Can the authors comment on the impact of the 24h periodicity to the temporal correlations? 3. The way and reason some stations have been excluded should be re-framed to be less qualitative. 4. The comparison of the gridded LOTOS-EUROS simulations against point measurements needs some clarifications. Ideally, one should either compare the observations with the simulations pin-pointed at the station location or the model grid values with the cluster of observations falling inside. 5. Uncertainty estimates require a more rigorous framework, with a better description. 6. The comparison of the gridded LOTOS-EUROS simulations against satellite data needs some clarifications on the TROPOMI data regridding and the application of the averaging kernel in LOTOS-EUROS.

Technical Comments Tables: Please specify which correlations are significant. Figures: The information in some figures is not easily seen (e.g. Figure 4, 5).

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