

Geosci. Model Dev. Discuss., community comment CC1
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Comment on gmd-2020-433

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Community comment on "Air Control Toolbox (ACT_v1.0): a machine learning flexible surrogate model to explore mitigation scenarios in air quality forecasts" by Augustin Colette et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2020-433-CC1>, 2021

I think the paper is interesting and well written.
Below some suggestions for improvement.

ABSTRACT

In the abstract, the authors should better explain the limitations of their approach. Mainly, the fact that, in my understanding, scenarios are related to EU emission reductions, applying constant sectoral reductions everywhere over the domain. These are quite important assumptions, that limit the applicability of the tool to specific type of studies. Authors should better stress this points.

INTRODUCTION

The sentence "The two most widespread applications of atmospheric chemistry modelling are (i) short term air quality forecasting, and (ii) long term analysis of mitigation strategies. We introduce here the first toolbox able to address both issues at once," is for me misleading.

As long-term mitigation strategies is more for structural measures for which a forecasting model is not useful. Or better, you can use a forecasting model, but it is more useful to check the change of concentrations in the long-term, more than the day to day change. Furthermore, when designing mitigation scenarios, is quite uncommon to have constant reductions over the whole domain. Please better specify these limitation.

SECTION 3

The paper in section 3 is much too long and full of details. I would propose to restructure the work, moving to Supplementary Material the technicalities of the work, and keeping only the most relevant parts of the paper in the 'Main' part.