

## ***Interactive comment on “Model simulation of ammonium and nitrate aerosols distribution in the Euro-Mediterranean region and their radiative and climatic effects over 1979–2016” by Thomas Drugé et al.***

**Dulac (Editor)**

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Thanks for correcting your initial version. I suggest that you consider the following points for further revision :

- Could you apportion ammonium between nitrate and sulphate? Did you check if the introduction of ammonium impact the sulphate content in the NIT simulation compared to the REF?
- I find that you somehow miss to relate the behaviour of the model at the surface and

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in the column. Even if times series were more limited, it could be informative to look for as close as possible places with simultaneous AERONET and EMEP data in order to check concurrently the model at the surface and in the column. If there were no such interesting possibility from the datasets, it would be worth stating it.

- The title of Section 4 (“Evaluation of the new AN aerosol scheme”) indicates that it is dedicated to evaluating the new model aerosol scheme; but it also includes analyses of the aerosol distribution and trends that I believe go well beyond the simple model evaluation; according to me, to better valorise your results regarding the distribution of these aerosols, it is worth reorganizing this section in order to make a new one following the evaluation section, that will be dedicated to the analysis of the spatio-temporal variability and trends of ammonium and nitrate aerosols, and their impact on particulate air quality (not only their direct radiative impact and related effects on climatic parameters); for instance, Figure 2 could be completed with maps of surface PM (e.g. PM<sub>1</sub> at least) for discussing the relative contributions from the A&N species.

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