

# ***Interactive comment on “Influence of anthropogenic emissions and boundary conditions on multi-model simulations of major air pollutants over Europe and North America in the framework of AQMEII3” by Ulas Im et al.***

## **Anonymous Referee #1**

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Im et al. present a multi-model assessment of the impacts due to reductions in domestic and global emissions on O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> over the North America and Europe in the framework of the Air Quality Model Evaluation International Initiative -phase 3 (AQMEII3). Quantitative information using results from an ensemble of models is provided and the manuscript is recommended for publication in ACP.

Few suggestions are listed below for authors to consider during the revision.

Section 3.1: Further discussions are desirable describing (and attributing) the model bi-

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ases in terms of setup, errors in model meteorology, and processes included /excluded in different simulations.

WRF simulated meteorology shows large spatial variability across Europe with lower correlations over Alps and coasts (e.g. Mar et al., GMD, 2016). It should be discussed whether the strong model biases in some of the simulations shown here (e. g. TR1\_MACC for O3 in Fig. 1) are arising from only few specific areas or that models are biased in general over the entire region.

Page 10, l. 393-395: Why does SO<sub>2</sub> enhancement in case of reduced domestic emissions in North America are pronounced in a small belt over Europe? Is it possible to substantiate the statements with model simulated OH fields?

Page 4, l.162 – “where embedded” to “were embedded”

Page 7, l.276: “SO<sub>2</sub>. . .by 35% 5”. Pl. check this sentence.

Page 7, l.279 – “effect” to “affects”

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