

***Interactive comment on “The effect of climate change and emission scenarios on ozone concentrations over Belgium: a high resolution model study for policy support” by D. Lauwaet et al.***

**Anonymous Referee #1**

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The paper reports about simulations with one-way coupled regional air quality model with a climate model addressing two emission cases for Belgium during a 10yr mean period around 2030 and using the RCP4.5 climate scenario. The reference is a 10yr period 2000–2009 and emission changes have been only considered for Europe at 25 and 3 km resolution, but still 34 layers only in the vertical direction. Even though 3km resolution is detailed (a similar resolution was used by e.g. An et al. ACP (2007) for simulations over Beijing), it can not really include urban details, but it is sensitive to point source emissions. No breakdown of the emissions at sector-specific level, no

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info on proxy data for geospatial and temporal distribution was given, which is crucial especially when going to higher resolution. Therefore an extra section describing the emission input is needed. Sensitivity of the simulations on variation in emissions would be interesting, but would need to be assessed with more than just two runs of emission cases. The 10 yr period around 2030 is not reported to be coupled back with the reference period via a transient run, but the climate change signal from the ERA-Interim analysis over 2000–2009 was claimed similar to the RCP4.5 climate signal (including cfr to Table 2). A stronger justification would be welcomed. Finally, it is not clear how the land-use change assumed in RCP4.5 fits with the use of GLC2000 and the land-use/vegetation input of SPOT and CORINE (1994) to the regional climate model AURORA. It is highly desirable that this is also addressed in the paper.

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