Major

1. What is the objective of this paper? Testing the meteorological forcing or the air quality simulation? This is not very clear and should be specified

We configure the coupling of new meteorology with high resolution (HARMONIE WINS50) to serve as an input information for the Chemical Transport Model (CTM) LOTOS-EUROS model. The meteorology fields generated from a Numerical Weather Model tend to come in a variety of data structures, shapes and variables that needs an effort having it ready to be used to drive a CTM. We describe the methodology we took for use this new available meteorology which has benefits compared to the used by default, as well points on the table new points to discuss to probably get the best impact possible such as the need of a vertical diffusion routine in the LOTOS-EUROS which uses explicitly the velocity in the vertical direction.

2. Section 2.1, what drives the model, ECMWF, or NWP fields from the other model? In the Introduction, you stated the latter, but here you describe ECMWF!

We describe both sources of meteorology because we wanted to present the effects of upgrading in resolution and in a meteorology of other nature (non -hydrostatic). The ECMWF was described as the default meteorology, which was used as the default standard to configure the data from the HARMONIE meteorology in the same way to have comparable scenarios.

3. Table 2: why there are two meteorological fields in LOTUS –EUROS?

Because the purpose of this paper is the comparison between LOTOS-EUROS output simulations with inputs from different meteorologies.

4. Why there are large differences between measurements and model results (Figure 7)?

We saw differences between measurements and model results more comparable in the first levels than in the higher levels. The big differences here are due to the emission inventories used for this simulations which leads the underestimation of the models for example in Figure _7.

5. There are some language problems. Some are listed below, Please correct them.

Minor

Reviewer comment	Action performed by the authors
L25-28: The same lines are in the abstract. Rephrase them	Rephrase the lines in the paragraph with "Numerical Weather Prediction Models (NWP) supply the data required by Chemical Transport Models (CTM) to resolve the emission, transportation, chemical reactions and other atmospheric interactions of pollutants throughout the spatio-temporal field of interest"
L30: Which CTM?	In this part I talked about a CTM generally
L36. Delete "representation"	Word deleted
L38: delete "the simulated"	Word deleted
L43: by van Stratum et al. (2022)	Modified as suggested
L46: CTM, it's already abbreviated	Modified as suggested
L53: space after the bracket	Modified as suggested
L53: what do you mean by frequent coupling; there must be a time step for this	Modified with two-way coupling, which is the kind of coupling which the chemical fields also have effects on the meteorological fields. The RACMO-LOTOSEUROS system had this bidirectional coupling opposite to the other systems
L56: by Ding (2013)	Modified as suggested
L61: ", respectively"	Modified as suggested

L100: similar to	**Modified as suggested**
L104: for this study comes from the	**Modified as suggested**
L109: observations or measurements	**All the document was homogenized to obsertvations**
L111: What is SNELLIUS?	**The information of what is SNELLIUS, , The Dutch National Supercomputer accessible at (snellius.surf.nl)**
L124: emulate?	**We consider the term emulate for this coupling because we took the ECMWF-LOTOSEUROS as the default system for which we wanted to mimic the fields needed in the same structure, variable names and other characteristics. The HARMONIE fields were treated in the same way, configuring all the needed variables from this meteorology in the same way**
Figure 2: The sensor and model levels are different. But can't you interpolate the model results to the sensor levels?	**We compared in the paper with the nearest level for each vertical measurement because we were interested to see the performance against the same model level in the two systems**
L211: ", specifically"	**Modified as suggested**
L234-237: agree, but which model results are close to measurements or reasonable?	**Both have good performance in the surface layers in different regions of the country**
L244-245: "that must prevail in the impact of …" I do not understand this. Are you talking about the uncertainty of the model results? A bias in the model simulations?	**Changed this paragraph for:"Overall, comparing the two system configurations highlights the importance of carefully selecting appropriate model configurations when evaluating NO$_{2}$ concentrations in a given region with a given simulation**

	resolution. More research is needed to investigate the specific factors that contribute to the differences between the two configurations and determine which configuration is more accurate for modeling NO$_{2}$ concentration in the Netherlands.
Figure 6: Something is written on the maps, but is too small to read	**The name labels on the map where changed for numbers and an extra table was incorporated with names and the number labels to improve readability**
L274-275: So what were the concluding results from the CHIMERE comparison?	**The results are qualitatively comparable in the sense of reduction of excess vertical diffusion. We did not compare with this model but pinpoint that manage explicitly the vertical diffusion is a good step to consider in a Chemical Transport Model. LOTOS-EUROS for this use an scheme wich use the horizontal fields from the meteorology to implicitly use its to calculate the vertical wind directions.**
L276: so the ECMWF wind data are not good?	**We were not conclusive to say this. Both wind fields have different nature. One is hydrostatic the other not and this has an impact of how to treat lower scales phenomena.**