

Interactive comment on “2005–2017 ozone trends and potential benefits of local measures as deduced from air quality measurements in the north of the Barcelona Metropolitan Area” by Jordi Massagué et al.

Anonymous Referee #1

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General Comments

This manuscript contains an interesting evaluation and interpretation of photochemical air pollution processes in the Catalonia region in what concerns ozone pollution episodes. The article uses several years of the regional pollution monitoring network measurements to estimate daily, weekly, seasonally and yearly profiles and trends. Spatial variability within the region is also presented and discussed in terms of transport and transformation processes under the effect of sea breezes, sunlight and temperature. This treatment and interpretation of data is well organized, presented and

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discussed and I have no corrections or improvements to propose.

There is a phenomenological interpretation of the regional ozone formation and ozone episodes occurrence, designated as a conceptual model. The model construction is based in previous studies of the subject in the region, being well organized and logical. It is a pity that no discussion is introduced about the application of executable models to the ozone pollution phenomenology in the region, or the Iberian Peninsula, in order to test, now or in the future, the proposed conceptual model. It is known that local and regional atmospheric pollution processes happening in the south eastern coast of Spain are quite complex and at the moment probably not possible of reasonably accurate quantification modelling but in my opinion this should be introduced and discussed more clearly in the paper.

In the manuscript only the section 3.5 “Sensitivity analysis for Ox using experimental data” is less well presented and clear (to me). In the section presentation there is a mixture between quantitative and qualitative information (see lines 477-479 – which is the meaning of “equivalent to 1-2 days of emissions reductions”?). On line 480-481- what is the meaning of “mitigation measures of precursors...”? The concept used in the sensitivity analysis is well-thought but its application is not clear for the reader. The results for TON are similar to the other two stations in the Vic Plain? Couldn't the ozone profiles be compared with NOx emissions reduction estimates (quantitatively) during the weekend and along the decade? Why to use P75-P25 in lines 477-479 to compare with emission reductions?

Specific comments

Abstract- Too long and descriptive. Please condense.

Lines 265-267 – What is the effect of NO₂/NO emission ratio changes by diesel cars along the last years?

Lines 278-283 and 307-308 - Clarify that during BMA plume transport there are photo-

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chemical processes that originate new ozone

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