

Interactive comment on “Receptor modelling of secondary particulate matter at UK sites” by A. Charron et al.

Anonymous Referee #2

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As stated in my first review, I consider the work a valuable contribution to the understanding of secondary aerosols in Western Europe, bearing in mind that source regions estimates have to be intended as potential since no emission data are implemented in the model. In this revised version of the manuscript, authors have well assessed referee's comments although some minor changes are still needed before final publication:

Please revise your title; receptor modeling was applied only at one site.

Sulfate is assumed to be entirely secondary, while sea-salt sulfate may be present, mostly from the Atlantic clusters.

Authors should assess this issue mostly when discussing the share of secondary PM

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(Fig 7 and 8).

In the Abstract authors state that for sulfate and nitrate CFMM maps correlated significantly with EMEP emission inventory of NO_x and SO₂. What about OC precursors? Was the correlation poor and was not evaluated?

Fig. 2 shows an important contribution to sulphate and OC from NE where a gas and coal-fired power plant is located. Authors refer to Jones and Harrison 2011 to conclude that low impact from the power plant, but more details would be welcome about this evaluation. At the same time authors should propose their interpretation on this wind rose/concentrations plots.

Section 2.1.2 Please define B roads

Section 2.2.3. line 24. Please revise text; I think reflectance should be replaced by transmittance

Comparison of two ECOC protocols at Harwell site. Please show plot.

Page 27264 line 6. Pollutants emitted within the endpoint cell are incorporated to the air mass, as well as emissions from all cells placed along the whole back trajectory. Please state this concept in your sentence.

Page 27266 line 17. I guess authors refer to OC and SOC separately. Please use – instead of / (it can be interpreted as ratio).

Chloride depletion with warmer temperature. Do authors exclude a negative sampling artifact?

I do not agree with the sentence in line 10-11 section 3.2. The E-NE sector is clearly related to higher concentrations of Sulphate and mostly nitrate (almost double concentrations)

Page 27273 line 14. Concentrations of what pollutant?

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Conclusions, line 11. Please add “potential” to source regions and add resolution of EMEP map (150 x 150 km)

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 27255, 2012.

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