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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Airborne mercury species at the Råö background monitoring site in Sweden: Distribution of mercury as an effect of long range transport" *by* Ingvar Wängberg et al.

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Answer to Referee #2

Airborne mercury species at the Råö background monitoring site in Sweden: Distribution of mercury as an effect of long range transport Author(s): I. Wängberg , M. G. Nerentorp Mastromonaco, J. Munthe, and K. Gårdfeldt

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The authors thank the referee for the help with improving the manuscript. Best regards, Ingvar Wängberg

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Discussion paper

Comments from referee #2

Excellent paper. Could be published with minor corrections suggested below.

A: -requests for improvements:

Draw a figure (simple box model) to illustrate your argument that the free tropospheric GOM is a likely source of “excess” GOM observed at Rao. (line 10-15, p7)

Answer: The arguments regarding tropospheric GOM has been updated and includes now a lot of more information than previously.

Attempt to compare with the La Seyne sur Mer data presented in Marusczak et al. (2014) Answer: The TGM measurements at La Seyne-sur-Mer covers partly the same time periods as the measurements in Northern Europe (Table 1), but the values are influenced by local mercury sources and therefore not directly comparable.

B: - suggestions for improvement Page 1 Title : Airborne mercury species at the Swedish Rao monitoring site : their distributions are affected by long-range transport.

Abstract : Within the EU-funded GMOS project, . . .mid-May

line 11 : remote location south-east background, free tropospheric air

Introduction Line 26 : particulate-bound mercury Page2 Line1 : chain, which occurs frequently in marine and freshwater ecosystems Line 10: bedrock, and their contributions to. . . are estimated. . . Line 15: Tekran speciation unit was used. . . Line 24: the detail and amount of comparison given in the text does not warrant the amout of “teasing” performed in the introduction. Line 30 GMOS master Line 31: considered a real background site: please provide references or additional information.

Page 3 Line 1: give percentiles/extrema/ standard deviations associated with average meteorological parameters. Line 15: were obtained Line 17: every four hours, three-hour average PBM and GOM values are obtained, together. . .. Line 27: to ensure that all oxidized Line 30: quantified by the . . .

Page4 Line 1: laboratory-built Line 6: Once the blanks are at the appropriate level, PBM and GOM were always detected. . . Line 11: do reference the GMOS SOP or link to the web-site.

Page 5 Line 5: could be associated with each. Line 24: probably because the Waldhof Line 30 : or GOM. Close to. . .

Page 6 Line4: simplify sentence Line 11: mercury sources in Poland, Romania, .. Line 12: electricity and domestic heating, but also Line 25: and 5.71 ng mˆ-3 Line 31: influenced by . . .

Page 7 Line 7: bromine-driven photolytic oxidation (Donohoue et al., 2006) Line 8: formed at a slow rate Line 17: south-east. . . the air sampled at Rao has . . . Line 19: domestic heating Line 24 At Rao, the airborne. . . Line 29: normally short atmospheric. . . of GOM, one . . . Line 31, GOM are not likely. . .

Page 11: Table 1: do separate better the upper table (Median) and lower part (Average)

Page 14 Fig 4: use segmented line plots rather than bars. It would allow to plot means and medians on the same figure. If bars MUST be used, avoid gradient fills. January and February are misspelled.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/acp-2016-526/acp-2016-526-AC2-supplement.pdf

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