

Atmos. Chem. Phys. Discuss., referee comment RC1  
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## Comment on acp-2021-296

Anonymous Referee #1

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Referee comment on "Impact of Athabasca oil sands operations on mercury levels in air and deposition" by Ashu Dastoor et al., Atmos. Chem. Phys. Discuss.,  
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The authors present a detailed study of the impact of Hg emissions in 2012 – 2015 from oil sand processing in the Athabasca Oil Sands Region in Alberta on the mercury deposition in the region and the larger surroundings. After a validation of the model by a comparison with available measurements, the authors analyse the impact of the decreasing emissions, the role of biomass burning and meteorological conditions, as well as the contributions of regional and global Hg sources.

The paper is generally well ordered and written. It reads well despite its length. The abstract is too detailed and long for an abstract and I recommend to shorten it by presenting the crucial results only qualitatively. After that I recommend the publication of the manuscript after removing some spelling problems.

Line 318: Possibility

Line 341: (all in kg yr<sup>-1</sup>)

Lines 423-425: Higher GEM oxidation rate in summer and the resulting maximum of Hg wet deposition in summer is probably the more important process.

Line 454: "pet coke piles"?

Line 887: "emissions"