

***Interactive comment on “Fluxes of gaseous elemental mercury (GEM) in the High Arctic during atmospheric mercury depletion events (AMDEs)” by Jesper Kamp et al.***

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The average GEM re-emission fluxes measured by Kamp and co-authors are a factor of 10 to 1000 higher than fluxes measured by other studies (Table 1). Maximum fluxes of 190 ng m<sup>-2</sup> min<sup>-1</sup> were reported. On April 30 GEM re-emission fluxes were larger than 40 ng m<sup>-2</sup> min<sup>-1</sup> for a period of at least 4 hours, resulting in a conservative estimated re-emission of 10 µg Hg. At a comparable Arctic coastline site affected by AMDE's total Hg Pools of a maximum of 0.5 µg m<sup>-2</sup> were reported for barrow in Barrow, Ak which is a factor of 20 lower than the re-emitted Hg reported by Kamp et al. (Johnson, K. P., et al. (2008), J. Geophys. Res., 113, D17304, doi:10.1029/2008JD009893) |

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would like to suggest to the authors to perform a feasibility study and integrate the total amount of Hg that was re-emitted during the strong re-emission event on April 30 and compare it to 1) typical snow Hg pools measured at the study site and 2) the height of the atmospheric column that would need to be depleted of Hg during an AMDE to achieve such high Hg snow pools.

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