Interactive comment on "Multi-model study of mercury dispersion in the atmosphere: Vertical distribution of mercury species" by Johannes Bieser et al.

Summary: The study by Bieser et el. reports multi-model study of mercury dispersion in the atmosphere: Vertical distribution of mercury species. Honestly speaking, this is a very important topic in global mercury studies as well as this study shares light on assessing the global/regional mercury transport or mass balance study by different models. In addition, this study is well structured and also in a good English writing. I recommend that this manuscript be published in ACP GMOS Special Issue after the authors address these comment.

General comment

Only the CCLM-CMAQ model considered the natural emission inventory. I would like to ask the authors to discuss the influence without the natural emission for these model simulation when compared to CCLM-CMAQ, and observed vertical atmospheric Hg profiles in more details.

specific comments

Line 513 " Figure 1 depicts idealized seasonal vertical profiles for the northern mid-latitudes." Please specify the sources.

Line 539-541 "This is in line with many previous model studies which found that models tend to underestimate current TM concentrations in Europe" , can be caused by the inventory or modeling setup ? Please give more detailed discussion for this.

Line 657-660 "Apart from GEM no individual mercury compound has been identified so far. The speciation of mercury is thus operationally defined as GEM, GOM, and PBM (Gustin et al., 2015)." In my opinion, this sentence should be removed into introduction section.

Line 680 "Five of the seven models", please specify these five models.

Line 690-695, please discussed the uncertainties of the GOM and PBM measured by Tekran and site the paper from Gustine's group recently before comparing the observation and simulated results.