

Review of “Comparisons between the distributions of dust and combustion aerosols in MERRA-2, FLEXPART and CALIPSO and implications for deposition freezing over wintertime Siberia” by L. M. Zamora, R. A. Kahn, N. Evangeliou and C. D. Groot Zwaaftink

In this well-written manuscript, the authors offer several interesting comparisons between models (MERRA2 and FLEXPART) and observations (CALIPSO). But because they confine themselves to “qualitative comparisons”, these comparisons are somewhat less informative than I had hoped when I first agreed to review the paper. I was particularly disappointed by the lack of a quantitative assessment of CALIPSO’s propensity to misclassify diamond dust as mineral dust. Nevertheless, I believe the authors’ results will be helpful in understanding the limits of both measurements and models in the Arctic environment. That being the case, I’m happy to recommend publication once the authors address the comments embedded in the annotated version of their manuscript appended below.