



EGUsphere, referee comment RC2
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Comment on egusphere-2022-903

Anonymous Referee #2

Referee comment on "Mercury in the free troposphere and bidirectional atmosphere–vegetation exchanges – insights from Maïdo mountain observatory in the Southern Hemisphere tropics" by Alkuin M. Koenig et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-903-RC2>, 2022

This paper describes measurements of gaseous elemental mercury (GEM) and reactive mercury (RM) at an island location in the Indian Ocean in the Southern Hemisphere. The most significant findings in this paper are the large magnitude of the seasonal cycle of GEM at Maïdo Observatory, compared to other sites in the Southern Hemisphere and also model predictions. The seasonality was especially pronounced for measurements that were filtered to reflect predominantly conditions of the lower free troposphere, which occur mainly at night when the air is dry. The data suggest that seasonally dependent oxidation mechanisms in the atmosphere may be controlling the seasonality of GEM concentrations, as opposed to seasonally-varying sources such as biomass burning, which may be less important in modulating GEM concentrations. These results make a strong case for continuing measurements at LFT locations in the SH to gain insight into globally important chemical oxidation mechanisms. These GEM concentrations also displayed a strong diel cycle which indicates emissions from local vegetated surfaces balanced by deposition to those surfaces. The methods employed are rigorous and the writing and the figures are clear. A very nice paper.