

# ***Interactive comment on “Seasonal patterns of atmospheric mercury in tropical South America as inferred by a TGM continuous record at the Chacaltaya Station (5240 m) in Bolivia” by Alkuin Maximilian Koenig et al.***

**Anonymous Referee #2**

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Mercury measurements in the southern hemisphere are sparse and almost none existent in South America, which poses a significant knowledge gap in the global cycling of this important pollutant. Especially with the upcoming effectiveness evaluation of the Minamata Convention it will be important to understand the Hg cycling in the region which is a relevant global emitter in order to evaluate the efforts to reduce Hg levels in the environment. This paper closes an important knowledge gap by publishing 18 months of continuous Hg measurements in South America. Moreover, it contains a solid analysis and interpretation of the observed Hg concentrations, their seasonal

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pattern, and attributed sources and sinks.

The paper, albeit quite long, is clear and concise. Both the analytical measurements and the modeling work fulfill the highest standards and, frankly, it's been a pleasure reading it.

I want to remark that it has become fashionable to use backward trajectories and atmospheric models to interpret observations. Unfortunately, these modeling efforts are often performed on a sub-par standard. I would encourage everyone working on similar comparisons to look at this paper as an example of how to properly do this. From the downscaling of the meteorological reanalysis data to the ensemble modeling and cluster analysis of the trajectories this is how such a study should be performed.

Finally, some minor remarks:

lines 77-78: There are also CARIBIC flights to northern South America (Bogota and Caracas)

Section 2.2.1: Given the low pressure at this high altitude site: Did you use the standard Tekran pump? What was the air flow in the Tekran instrument?

line 185: Please give abbreviation MAC

Section 4.5 Could it be that a significant part of the volcanic Hg is in the form of PBM and thus not detected by your setup?

lines 753-753 I would suggest to add the actual best guess emission factors here once more.

Do you plan to continue measurements at CHC? As the only downside of this work is the still short data set.

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