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Interactive comment on "Atmospheric mercury in the southern hemisphere – Part 1: Trend and inter-annual variations of atmospheric mercury at Cape Point, South Africa, in 2007–2017, and on Amsterdam Island in 2012–2017" *by* Franz Slemr et al.

Anonymous Referee #1

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The manuscript addresses atmospheric mercury concentration changes and trends. No new concept, method or insight in time series/trend evaluation are presented. The authors based on the relation with 222Rn, CO, O3, and CH4, exploit the possible reasons for the trend change. A more ambitious goal could be target assessing the strength of each one of these species on mercury concentration changes applying probabilistic mass function in rotational matrix factorization. However, the paper can be relevant for mercury source assess, which maybe has potential implications for

policy abatement strategies afterward and also potential scientific contribution on the atmospheric mercury cycle (source and fade) understanding. The paper is well written, easer reading, discussed with expertise and I recommend publication in ACP especial issue. Âă Other comments: Line 36: I am afraid calling this trend, seems more annual comparison. Trend evaluation for so short period could be misleading since it can be affected by seasonality (for example, starting the time series in winter and finishing in autumn or starting summer/spring and finish in winter/autumn). It also can be affected by starting or finishing the time series in an El Niño year. Line 54-56: decrement of North Atlantic Ocean emission is rather a hypothesis than a scientific statement. Line 119-120: confidence level missed. Line 248: Anticorrelations should be replaced by negative correlation or inverse correlation. Figure 2 should be replaced for a more informative time series decomposition plot, presenting trend seasonal and random variable in an hour or daily (or at least monthly) time resolution. Such graphic can improves data exhibition, facilitate reader evaluation and can be easily calculated and plotted included by using open libraries for R and Python. Furthermore, the annual median or average is not suitable for trend evaluation since it damp variance and constrain significance.