

Interactive comment on “Measurement report: Statistical modelling of long-term atmospheric inorganic gaseous species trends within proximity of the pollution hotspot in South Africa” by Jan-Stefan Swartz et al.

Anonymous Referee #1

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Overview & Recommendation Sixteen-to nineteen-year records of three important air quality constituents, sulfur dioxide (SO₂), ozone (O₃), nitrogen dioxide (NO₂), that are important over the South African Highveld - ranging from highly populated and industrialized to savanna parkland, are presented for the mid-late 1990s through 2015. The measurements were made at three stations with varying pollution influences, with passive (time-integrated) samplers. The monthly variation and trends in the three trace gases have been identified through a standard multilinear regression model (MLRM). Analysis of the predominant forcings is carried out using terms representing “regional”

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influences, local meteorology, humidity, proxies for emissions, vs “global” (e.g., ENSO, SAM, IOD, season). A comparison of South African stations with passive sampler results from other locations concludes the paper. The three South African stations represent a contrast of ecosystem and levels of pollution. Levels of certain pollutants are similar to those in polluted Asian areas. Improvements in air quality standards and implementation made progress in reducing emissions around 2000 in the Highveld “pollution hot spot” area, but by 2005 an uptick with more economic development was observed. The results of this study are of great interest, analysis techniques are novel and they are presented with appropriate interpretation. They will be of interest to scientists and policymakers alike. Recommend publication.

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