

Response to Comment CC2

Title: Long-term measurement of ozone concentrations in semi-natural African ecosystems

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MS No.: acp-2024-284

The authors would like to thank Owen COOPER for its relevant and helpful comments to improve the manuscript.

Comment 1 : The expression “statistically significant” is used throughout the submitted manuscript, however this expression is now recognized as being problematic and it should be abandoned and replaced by the more useful method of reporting all trends (with uncertainty, e.g. 95% confidence intervals) and all p- values, followed by a discussion of the trends and the author’s opinion regarding their confidence in the trend values. This advice comes from a highly influential paper by Wasserstein et al. (2019), published in the journal, The American Statistician, that has already been cited over 1800 times (according to Web of Science). This advice was adopted by the first phase of TOAR (Tarasick et al., 2019) and is also used by TOAR-II. Some other recent papers on ozone trends that have taken this advice are: Chang et al., 2020; Cooper et al., 2020; Gaudel et al., 2020; Chang et al., 2022; Wang et al., 2022. Because these papers report all trend values, uncertainties, and all p-values, and also discuss the trend results, there is no confusion regarding the findings, and one does not even notice that the term “statistically significant” is not used at all. Table 3 of the TOAR-II statistical guidelines provides calibrated language for describing trends and uncertainty, similar to the approach of IPCC.

Considering Wassertein et al. (2019) and recent ozone trends publications, we will propose in the revision process to include in the manuscript:

- Trends calculation per decade
- Modifications in the trend’s discussion section taking into account the TOAR-II statistical guideline and presenting all calculated trends.

Comment 2 : In particular, Figure 16 only shows trend values that were deemed “significant” based on the p-value; this approach is inconsistent with the TOAR guidelines and the figure needs to report trend values from all sites, with 95% confidence intervals and p-values. Another TOAR guideline is that trends be reported in units of ppbv per decade so that trends can be compared between different studies. It’s fine if you want to report your trend s in units of % yr⁻¹, but please also report the trends in ppbv decade⁻¹

We will propose in the review process to include in the manuscript modified figures 15 and 16 as follow:

- Annual trends

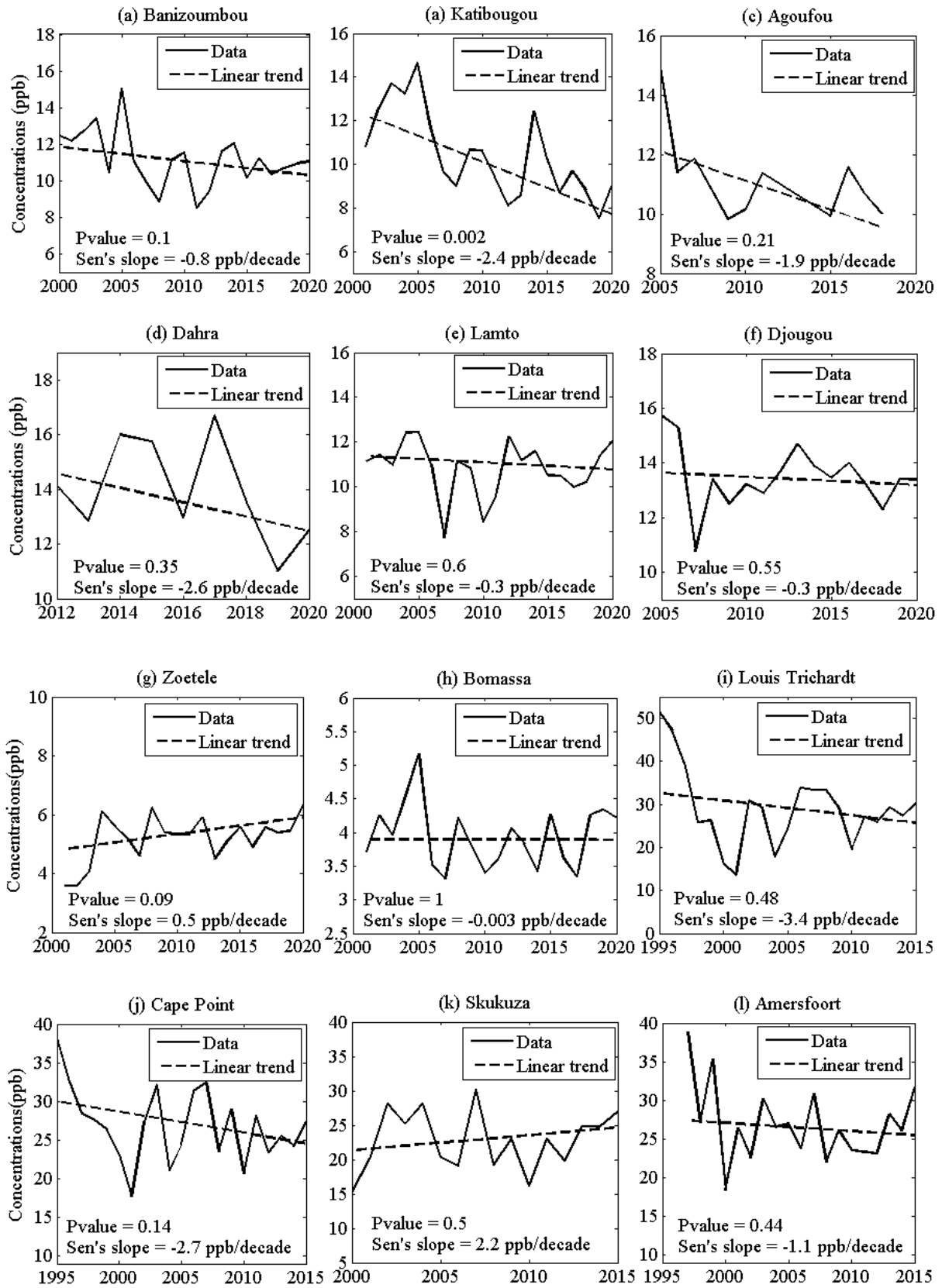


Figure 15. Long-term annual linear trend of in situ O₃ concentrations over the period 1995-2020 at 95% confidence intervals calculated for 12 measurement sites representative of African dry savannas, wet savannas, forests and agricultural/semi-arid savannas.

- Seasonal trends

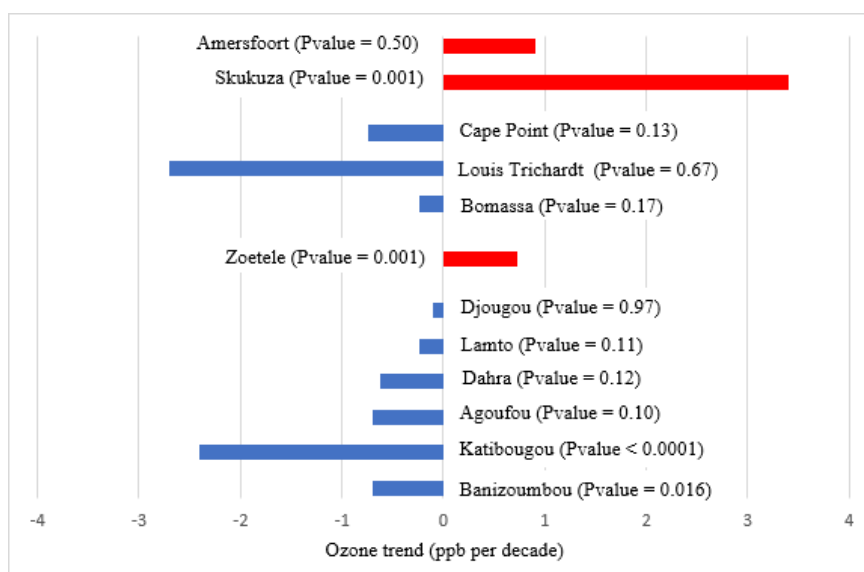


Figure 16 Kendall's seasonal trend values of in situ O₃ concentrations over the period 1995-2020 at 95% confidence intervals calculated for 12 measurement sites representative of African dry savannas, wet savannas, forests and agricultural/semi-arid savannas.

Comment 3: The “Data Availability” statement provides links for each of the monitoring stations, allowing the observations to be downloaded. However, it’s not clear which link belongs to which station. It would be helpful if the links can be listed in a table, which also provides the station name and country

We will propose in the reviewed manuscript a new table in the “Data availability” section to present sites and associated DOIs (links) (with the complete citation reference that will be included in the reference list.

Data availability. Dataset DOIs of O₃ observations for INDAAF sites (see complete citation in the reference list), available in the INDAAF database at <https://indaaf.obs-mip.fr> :

Banizoumbou (Niger)	Katibougou (Mali)	Agoufou (Mali)	Bambey (Senegal)
https://doi.org/10.25326/608 Laouali et al. (2023)	https://doi.org/10.25326/604 Galy-Lacaux et al. (2023a)	https://doi.org/10.25326/610 Galy-Lacaux et al. (2023b)	https://doi.org/10.25326/609 Galy-Lacaux et al. (2023c)
Dahra (Senegal)	Lamto (Cote d'Ivoire)	Djougou (Benin)	Zoetele (Cameroon)
https://doi.org/10.25326/606 Galy-Lacaux et al. (2023d)	https://doi.org/10.25326/275 Galy-Lacaux et al. (2023e)	https://doi.org/10.25326/605 Akpo et al. (2023)	https://doi.org/10.25326/603 Ouafo-Leumbe et al. (2023)
Bomassa (Congo)	Mbita (Kenya)	Louis Trichardt (South Africa)	Skukuza (South Africa)
https://doi.org/10.25326/607 Galy-Lacaux et al. (2023f)	https://doi.org/10.25326/642 Galy-Lacaux et al. (2023g)	https://doi.org/10.25326/646 van Zyl et al. (2023a)	https://doi.org/10.25326/645 van Zyl et al. (2023b)
Cape Point (South Africa)	Amersfoort (South Africa)		
https://doi.org/10.25326/644 van Zyl et al. (2023c)	https://doi.org/10.25326/647 van Zyl et al. (2023d)		