

Interactive comment on “Tropospheric NO₂ concentrations over West Africa are influenced by climate zone and soil moisture variability” by Ajoke R. Onojeghuo et al.

Anonymous Referee #2

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This paper does not make a persuasive case that it has learned something new or that it has demonstrated any sort of useful link between soil moisture and NO₂ emissions. I recommend the paper be rejected.

If the authors choose to revise I recommend a revised manuscript have 2-3 figures and no more. The figures should more directly address the authors claim of showing a causal and mechanistic relationship between soil moisture and NO₂.

In addition, a revised manuscript should pay careful attention to time scales for rainfall and subsequent emissions, to separating seasonal cycles in transport and OH from other factors that affect NO₂ columns, to removing the effects of biomass burning on NO₂ columns, etc. Perhaps a convincing case about soil moisture could be made if

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the paper started with a single climate zone and it illustrated how the soil moisture argument affects the NO₂ column in a way that controls for these and other well known important variables. Another way to make a convincing case would be to show that the same methods of analysis applied to a 3-d model with and without soil NO_x emissions produces meaningful differences.

In addition, a revised paper should carefully summarize current understanding of soil NO_x emissions in the region so the reader has a clear understanding of what is new about the analysis and what aspects confirm prior results.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1128, 2017.

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