Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Tropospheric NO_2 concentrations over West Africa are influenced by climate zone and soil moisture variability" *by* Ajoke R. Onojeghuo et al.

Anonymous Referee #2

Received and published: 19 February 2017

This paper is 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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Discussion paper

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 NOx emissions produces meaningful differences.

In addition, a revised paper should carefully summarize current understanding of soil NOx 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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