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***Interactive comment on* “The transient variation of the complexes of the low latitude ionosphere within the equatorial ionization anomaly region of Nigeria” by A. B. Rabiou et al.**

Anonymous Referee #3

Received and published: 13 January 2015

Dear Editor,

I have reviewed the discussion paper “The transient variation of the complexes of the low latitude ionosphere within the equatorial ionization anomaly region of Nigeria” by Rabiou et al. submitted for possible publication in Nonlinear Processes in Geophysics (NPG) and found it unacceptable for publication in NPG. The paper studies using Lyapunov exponents and Tsallis entropy the day to day variations in 2011 of the chaoticity and dynamical complexity of the ionosphere over Nigeria.

My major concern is that there is a very high degree of similarity with their previous work recently published in NPG (Ogunsua et al., 2014) that studied using the same

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methodology and techniques the chaoticity and dynamical complexity (as before) of the ionosphere over the same region during quiet and disturbed days of the same year (the similarity report of the present paper resulted in a similarity index of 52% with just one source, i.e., their previous NPG work!).

There is nowhere apparent in the paper (abstract, discussion, conclusions) the differences or the improvements from their previous publication in the same journal (apart the fact that in 2011 they used 3 stations and now 5 and they now deal with the day to day variation instead of quiet and disturbed days that they considered before).

For instance, I have found around 10 references in the text to be missing from the References' list that I was able to find in the paper by Ogunsua et al. (2014)!

Another major issue to me concerns their time series analysis using the Tsallis entropy. I was unable to find the Tsallis q index value they used to calculate the corresponding entropy. My guess is that they have used the q value of 2 indicated by Anastasiadis et al. (2005). However, in the references they have cited there is a methodology to infer an optimum q value for the problem in hand. Even that would have been some improvement from their previous published work but it is missing.

I can provide you with more detailed comments if it would be required.

Sincerely,

Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 1855, 2014.

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