Comments to paper 2023-107 - The Latitudinal effect on True Height of the Electron Density Profile in the bottom side of the F2 layer of an equatorial region, by Olalekan David Ayokunnu et al.

The ionospheric variability in terms of Bo, hmF2, and NmF2 parameters for the equatorial regions during the quiet period at low solar activity is studied in this work based on the data collected by the Digisonde installed at Africa (Ilorin) and Southern American (Fortaleza and Jicamarca). I think that this paper needs substantial revision before being accepted for publication.

Minor comments:

1) *This is the second time in our studies that two stations from different latitude will be presented is being having similar profile.* Please, remove this part of abstract.

2) The paper as a whole is very short and poorly written. The introduction needs to be re-written including more references.

3) *Generally, the overall structure of the atmosphere-ionosphere system is influenced by both internal and external processes such as internal atmospheric waves from below and magnetospheric, solar and geomagnetic processes from above (Yigit, et. al., 2016). In between these two regions is the F2 layer in which transition from chemical to diffusion…..*Which region the authors is referring?

4) *….the equatorial ionization anomaly (EIA), possible additional stratification, F3 layer, equatorial spread F (ESF), etc are being observed…*Include references about these topics, please!

5) This work uses data from 2010, a very special period due to very low solar activity. I think that a revision in the literature about the impact of this special condition on the electron density profile could be very interesting. See, for example, Santos et al. (2023) Atmosphere (https://doi.org/10.3390/atmos14010087).

6) Please, indicate in *Data and Methodology Subsection* the relation between the local and universal time of stations used in this work. For Fortaleza, for example, LT= UT-3h

7) *The corresponding data used in the analysis for Fortaleza and Jicamarca were obtained online from the Centre for Atmospheric Research, University of Massachusetts, Lowell, United States of America…* Please, mention the website.

8) *The data was carefully chosen* ***to avoid non-scalable ionogram and edited****. The edited SAO file of same hour was copied into a separate file. The edited data is then stored in a separate file and run through a computer programme CARP (Calculated Average Representative Profile).* Does the data were edited or not?

9) What is the purpose of Fig.1 and 2? These figures are mentioned only one time in the work. Besides that, Fig 2c is presented an example of an ionogram over Jicamarca that seems not to be appropriately edited. The quality of all panels is too poor and it is not to possible to identify the numbers in the x-y axes.

10) In some figures, the hmF2 parameter is varying from 0 to 400 km and in others between 0 to 500 km. Please, choose one and standardize.

11) Please, reorganize the panels of Fig. 5 and 6. The author mentions the months (April, June….) and not the seasons. What is presented in this figure? The average of the seasons or the average for a specific month?

Major comments.

1) The authors have used only some lines to discuss their owner results. It seems that the results are not important to them. What is the novelty of this paper? What is the explanation for Bo variability in the different regions shown in this work?

2) About the "latitudinal effect"…How is it possible to study the latitudinal variation using only one station in Africa?

3) The paper is too confusing. All the sections need to be restructured. There is no discussion about the results found. The conclusion is only a copy past of the result section.

4) What is the impact of very low solar activity on the results presented here?