

## ***Interactive comment on “Spread F occurrence features at different longitudinal regions during low and moderate solar activity” by Abimbola O. Afolayan et al.***

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Good day Dr,

Thank you very much for your insightful comment and time taken to contribute meaningfully to the improvement of this manuscript.

This is a comparative study of the RSF occurrence at different longitudinal regions using digisonde data taken during the low and moderate solar activity. We have analyzed the different RSF features observed at these longitudes during the equinox and solstice seasons. These include the longitudinal difference in the equinoctial asymmetry dur-

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ing the LSA and MSA. Which highlights the inter-dependent relationship between the factors controlling the asymmetry pattern and its peak. Furthermore, a clear inverse correlation was observed between the solar flux and the ESF occurrence during the September equinox at the South American region. We will also like to point out that the cited reference (su et al., 2008) with regards to the anti-solar dependence during the equinox in the South American region was inferred from Figure 1 of their paper. Their discussion was rather focused on similar observation at some of the longitudes during solstice season, referencing an earlier study by su et al.,2007.

The complementary role of the gravity wave (GW) in the solstitial asymmetry observed at the low declination angle region was also discussed using OLR measurement as a proxy for the seasonal distribution of the GW activities at each region. Likewise, the large RSF occurrence percentage across all the seasons at the ILR station could be attributed to the influence of the relatively large OLR frequency within 15 deg of the dip latitude as shown in figure 8. Su et al., (2014) have demonstrated the strong correlation between the OLR frequency and irregularity occurrence in the African region but weak at some other region. This suggests a high rate of locally generated ESF in this region with vertical growth restricted to low altitude range, especially during the LSA characterized by weak background ionospheric condition. We have also discussed the major factors that could have contributed to the small ESF occurrence percentage at some of the regions in spite of the large OLR frequency.

Thanks. We will make the necessary correction to the figure caption (Figure 7b should represent the LSA).

We hope that we have provided a satisfactory response to your comments but we are open to further suggestions in order to ensure that our little contribution to the study of ESF is accepted by the journal.

Thanks for your time and willingness to share your expert opinion with us.

2019.

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