

Dear Editor,

We are thankful to the anonymous referee and the editor for reviewing and helping us to improve this paper. The manuscript has been improved according to the suggestions of the Referee. In the revised manuscript, the modifications are in the bold letters.

Thank You!

Best regards,

Nadia Imtiaz.

Reply to Anonymous Referee:-

P.1 L.20: Change "well-known fact" to "well known"

Response: In the revised manuscript, on P.1 L.20: "well-known" has been replaced with "well known".

P.11 L.5: Change "oxygen atom ionized" to "oxygen atoms are ionized".

Response: In the revised manuscript, on P.11 L.5: "oxygen atom ionized" has been replaced with "oxygen atoms are ionized".

P.11 L.6: Change "affect" to "affects"

Response: In the revised manuscript, on P.11 L.6: "affect" has been replaced with "affects".

P.11 L.4-6: The statement is either incorrect or formulated purely. It has to be modified "a large number of oxygen atoms are ionized that leads to ... along with the high O/N₂ ratio". O/N₂ ratio is mainly controlled by the thermospheric neutral winds that are, in turn, related to the Joule heating in high latitudes.

Response: In the revised manuscript, on P.11 L.4-6 the following modification has been done: a large number of oxygen atoms are ionized that leads to an increase in the ionospheric electron density along with the high O/N₂ density ratio.

P.11 L.8 Replace "with a" with "while a"

Response: In the revised manuscript, on P.11 L.9: "with a" has been replaced with "while a".

P.11 L.18: Change “different longitudes” to “different hemispheres”

Response: In the revised manuscript, on P.11 L.18: “different longitudes” has been replaced with “different hemispheres”.

P.12 L.4-5: Please clarify the statement “the O/N₂ density ratio is larger in the eastern side than that is observed in the western side”. What are the parts of the globe you are referring too: low/mid or high latitudes? It would be better to use sectors in the description, as it is done throughout the manuscript.

Response:In the revised manuscript, on P.12 L.4-5 following modification has been done: The storm time longitudinal asymmetric behavior of the thermosphere can also be observed in the lower and middle latitudes over the four sectors. It is found that the thermospheric O/N₂ density ratio in the lower and middle latitudes over the African, Asian and eastern Pacific sectors is larger than that it is observed over the American and western Pacific sectors.