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Interactive comment on "Solar-cycle, seasonal, and asymmetric dependencies of thermospheric mass density disturbances due to magnetospheric forcing" *by* Andres Calabia and Shuanggen Jin

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Dear Editor and Reviewers,

Thank you very much to Editor and Reviewers for this review where constructive comments and valuable suggestions have greatly improved the quality and content of the manuscript. In the followings, comments and suggestions of the two Reviewers, as well as our replies to them, are given. We hope that the revised version of the manuscript together with our replies, cover the Reviewers' comments appropriately and, of course, your further concerns and advice are appreciated.

Best Regards,

Andres Calabia and Shuanggen Jin

Answers to reviewer 2:

L.33 reformulated as suggested.

L.43 ". . .in thermospheric composition, temperature, density, and winds. " bibliography added.

L.65 ". . . showing density increases up to 800 % in a few hours." time scale specified.

L.120 The methods used to estimate the mass density has been briefly introduced and more references have been included.

L.124 The merging electric field Em has been introduced.

L.131 Note that the PCA components are parameterized in terms of annual, LST, and solar flux variations. We remove this "well-known" forcing to thermosphere data, and the residuals are investigated looking for new dependencies. Other techniques such as wavelets could have also been used, but we preferred to employ this two-step method (PCA fit and fit of residuals) for more robust modeling.

L.150 We arbitrarily decided to employ the 10d period. A half solar rotation period (about 12d) would have provided similar results.

L.187 We have structured Section 3 with subsections, and listed the various analyses at the beginning, including the objectives and the results.

L.249 Furrier typo has been corrected.

L.445-450 has been relocated at the end of the section as suggested.

Answers to technical corrections:

L.133 "Change done as suggested ("The purpose/aim of a PCA technique is to deter-

mine. . .”) L.137 has been reshaped to clarify the concept.

L.141/L.144 residual disturbances used for the symbol (r).

L.150 chosen latitudes specified.

L.158 changed to “residual disturbances (r)”.

L.249 Furrier typo is corrected all along the paper.

L.390 and L.406 “dip pole” is employed in these cases instead “dipole”.

Please also note the supplement to this comment:
https://www.ann-geophys-discuss.net/angeo-2019-78/angeo-2019-78-AC2-supplement.pdf

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