

To the Editor:

Dear Dr. Roussos,

We are submitting herewith the revised manuscript (angeo-2021-27): “Seasonal features of geomagnetic activity: a study on the solar activity dependence”. We have now incorporated all minor comments by Referee #1 in the revised manuscript.

Kind regards,

Adriane Marques de Souza Franco

Reply to the comments by Referee #1:

Thank you again for carefully reading the revised manuscript and giving valuable suggestions. The manuscript is now corrected based on all your minor comments/corrections. The modifications are clearly marked the revised manuscript with “track changes”.

I have read the revised manuscript “angeo-2021-27” and I have to say that the authors have adequately responded to all my comments and, moreover, have successfully modified the manuscript. Even though the manuscript has been substantially improved I have 3 more minor comments/corrections which should be implemented.

- Thank you.

1) In lines 175-176 of the revised manuscript, the authors state: “may indicate that AE is dominated by the eastward ionospheric current (AU) rather than the substorm related westward current (AL)”. At first sight this is wrong. Since the westward current is much more intense (AL values are usually much greater than the ones of AU) the AE index is definitely dominated by the AL index. Nevertheless, when it comes to certain frequency components, the contribution is relative. The authors should discuss about the semi-annual component only and not about the general contribution to AE.

- Thank you for the suggestion. The misleading statement is now removed.

2) In line 181, the authors state: “No clear seasonal features can be inferred from the variations of the monthly mean V_{sw} (Figure 2k, legend on the left), D500 (Figure 2k, legend on the right) ...”. I strongly disagree. There are clear peaks on March and September in D500. Please modify accordingly.

- Thank you for pointing out the error. The statement is now corrected (lines 169 – 171 in the revised manuscript with “track changes”).

3) In lines 201-202, the authors state: “HILDCAAs (Figure 3d), on the other hand, exhibit a ~4.1-year periodicity, while no annual or lower-scale variation was recorded”. There is still the issue of HILDCAAs values as I mentioned in my previous review. Since the values are mostly 0, 1 and 2, the variation of the specific time-series is negligible. This may introduce several artifacts to the spectral analysis. Thus, I would strongly suggest that the authors discuss this issue at this point, indicating that the results of the LS periodogram for

HILDCAAs cannot be fully trusted due to the aforementioned limitation. The same applies for superstorms as well.

- Thank you. We now discussed the issues of HILDCAAs and superstorms, as suggested (lines 190 – 193).