Answer to Reviewer #1:

We are thankful for the reviewer's comments and suggestions which help us to improve the quality of the manuscript. We will address all the raised points in the revised version of the manuscript.

General comments about the manuscript

In Figure 1b and Figure 4 parameters do not separated easily, please use different colors as much as possible for each parameter. In the current version especially red and pink colors are mixing.
Response: The Figures will be modified in the revised version of the manuscript.

All abbreviations should be described clearly in the first place that they appear in the manuscript. In the current version of the manuscript some of them are not given with full name. Also, for the daily sunspot area the abbreviation is given as DSA. Please replace it as daily SSA
Response: We will add the descriptions of abbreviation and replace DSA with SSA in the revised version.

In Figure 4 the significance levels of obtained periodicities are not given. I suggest that authors should add at least 95 % confidence level line to each periodogram.
Response: We will add this in the revised version.

Please add some information about the appendix figures inside the manuscript.
Response: We will add the description of appendix figures in the revised version.

Page 1 line 21, authors mentioned that "Wavelet variance estimation suggests that GTEC variance is highest for the seasonal timescale followed by the 16-32 days period, similar to the F10.7 index highest variance for the 16-32 days period." Please replace as "Wavelet variance estimation suggests that GTEC variance is highest for the seasonal timescale followed by the 16-32 days period, similar to the F10.7 index.
Response: We will replace this sentence as suggested.

Line 25 "DSA" – "Daily SSA"
Response: We will replace the word in the revised version.

Line 34 “(e.g. Schmölter et al., 2018)”, please add a few more reference.
Response: We will add more references in the revised version.

Page 2 line 55, “: : :at different time scales.” – “at different time scales such as (: : :).” Please clarify
Response: We apologize for the typo error. We will correct this in the revised manuscript.
“Hocke (2008) studied oscillations in the global mean TEC (GTEC) and solar EUV (MG-II index) and reported dominant periods of solar rotation, annual, semi-annual, and solar cycle. These oscillations observed in GTEC could be related to the ionising radiation changes.”

Page 4 line 136 “: : :GTEC with four selected solar proxies: : :” please give these solar proxies inside a parenthesis.
Response: We will add these proxies as suggested.

In page 5 line 157, authors mentioned that they used 7 days smoothed data and they mentioned 6.7 days periodicity. From 7 days smoothed data it is not possible to get 6.7 days periodicity. This part should be removed.
Response: We will remove this part of the sentence in the revised version.

Authors mentioned 128 – 256 days periodicity from GTEC and solar parameters. Source of this periodicity should be given more clearly (see Lou et al. 2003, Kilcik et al, 2018). For the 45 days periodicity, it is also one of the fundamental periodicity of solar activity and it detected in many solar activity indices (Lou et al. 2003, Chowdhury et al. 2015, Kilcik et al, 2018).
Please explain this periodicity a bit more detail.
(Lou, Y.Q., Wang, Y.M., Fan, Z., Wang, J.X., Wang, S.: 2003, Mon. Not. Roy. Astron. Soc. 345, 809.
Chowdhury, P., Choudhary, D.P., Gosain, S., Moon, Y.J.: 2015, Astrophys. Space Sci. 356, 7.
Kilcik, A., Yurchyshyn, V., Donmez, B., Obridko, V.N., Ozguc, A., Rozelot, J.P.: 2018, Solar Phys. 293, 63.)
Response: Thank you for the suggestion. We will add a description of the sources of periodicities in the revised manuscript.

In page 6 line 179, authors mentioned that “: : :solar rotation period of 27 days is only a mean value and different solar regions rotate with a different velocity which can be up to 35 days.” Please replace this sentence as “: : :the 27 days periodicity is only a mean value of solar differential rotation. It also strongly depends on the life time and proper motion of observed active regions.”
Response: Thank you for the suggestion. We will replace this sentence in the revised version.

Page 6 line 204, “The correlation coefficient is also decreasing during high solar activity years such as 2002 and 2014 but increases during the recovery phase of solar activity.” This sentence is not correct, it should be clarified.
Response: We agree with the reviewer’s point of view, and we will improve the description in the revised manuscript and add modified figures for short, interannual and longer time scales to explain the behaviour at different time scales.

Page 8 line 246, authors mention that “The F1.8 and DSA cannot adequately represent the solar activity at the solar rotation (16-32 days) time scale.” SSA is one of the best solar indicator in solar physics literature, so please clarify this sentence with more detail.
Response: We agree with the reviewer concern. Most of the solar proxies (e.g., SSN, CaK, F10.7, Mg-II index) are the best solar indicator at longer time scales (e.g. solar cycle) but poorly correlated at short time scales (e.g., daily, solar rotation period). At longer time scale solar EUV and solar proxies are mainly controlled by solar magnetic activity. However, at short time scale, it varies differently as they originate from different excitations mechanism. Hence at the 16-32 days time scale, most of the solar proxies are weakly correlated with the solar EUV and as a result there is less correlation with GTEC. Hence in comparison to other solar proxies, F1.8 and SSA are poorly correlated with the GTEC. We will add short, longer and interannual time scales in figure 7 for a detailed explanation of solar proxies behaviour at different time scale. We will add a detailed description in the revised manuscript.

In line 264, “: : :several other physical processes.” Please clarify these processes

Response: Ionospheric variability is strongly depending on the solar activity as well as geomagnetic and meteorological activity. So, the variability in the ionosphere is not only controlled by solar activity. During the low solar activity period, lower atmospheric forcing is more dominant. We will add these processes in the revised version.

In general, please use wavelet scalogram instead of wavelet transforms for wavelet plots. Also in the wavelet plots, what is the meaning of negative power it should be explained clearly or wavelet scalograms should be modified.
Response: Thank you for this suggestion. We will add the description of negative power in the revised version of the manuscript. To get clear periodicity from the wavelet, we have used log2 of (power). The negative (positive) values indicate the low(high) power. As there is no difference in periodicity estimation either we use transform or scalogram, so we will keep it the same in the revised version.

I think current version of the manuscript is not appropriate for the publication in the journal. It needs some corrections.

Response: Thank you for reviewing our manuscript. We will address all the comments in the revised version of the manuscript.