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Discussions

Interactive comment on "Semiannual variation of Pc5 ULF waves and relativistic electrons over two solar cycles of observations: comparison with predictions of the classical hypotheses" *by* Facundo L. Poblet et al.

Anonymous Referee #2

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In this study the authors aim at presenting a detailed study of the correlation between PC5 ULF waves and enhancements of MeV electrons at GEO orbit. The follow the first study from Lam et al. (2017), and provide evidences of annual and semi-annual variability over two consecutive solar cycles. Moreover, they present insights to identify the major origins of these variabilities. The study is well detailed and numerous aspects are discussed. However, even if the authors rely on the previous study from Lam et al. (2017), the new findings are not enough highlighted, and conclusions do not provide fully new assets. I would recommend this work for publication after a few major

revisions. I detail in the following these points. Major remarks: 1- In Lam et al. (2017) the correlation is computed between electron fluxes and PC5 pulsations. Even if it is not the point in this study, I am thinking if the authors could discuss more these correlations, in particular in section 4.1. Figure 9 could benefit from more detailed cross-correlation between fluence and PC5 waves. As mentioned in the title of the manuscript, the reader is waiting for more details on such correlation in my mind. 2- Moreover, it is compared here with only > 2Mev electrons fluences. Do the authors tried to use the lower energy channel (>650keV electrons)? This may also add some discussion on the energization induced by these waves as well as radial diffusion, as a function of energy, as it has been discussed in some previous studies (see for example Lejosne et al., 2013). 3- One last major remark is (maybe naïve), why do the authors only discuss the power of the PC5 waves? Wouldn't it be interesting to discuss the correlation with fluence and solar cycle according to their modes (toroidal or poloidal as they tend to induce different effects on electrons trapped at GEO orbit, and as their sources may differ)? Minor remarks: 1- Page 3, line 9 : I think yGSEq should be changed into zGSEq, isn't it? 2- In section 4.1, there is only a sub-paragraph 4.1.1, but no 4.1.2. Please clarify.

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