Ocean Science
Discussions

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Interactive comment on "Do sun spots influence the onset of ENSO and PDO events in the Pacific Ocean?" *by* Franklin Isaac Ormaza-González and María Esther Espinoza-Celi

Anonymous Referee #2

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In this paper the authors are exploring the relationship between sunspots and their impact on ENSO and PDO in the Pacific Ocean. It was difficult for me to find an answer to the title's question, "Do sun spots influence the onset of ENSO and PDO events in the Pacific Ocean?" It is difficult for me to tease out the main points of the paper because I find the structure unclear and the figures don't effectively summarize the main points either. Annotation of the figures could help address this. There was clearly a lot of work done but I do not feel like it is presented in a way that effectively supports their arguments and that correlations are insufficient for their claims, which remain a bit unclear. I recommend that this article be rejected as its structure is unclear and hard to read, main questions are not outlined clearly, and the presented statistics

don't support the conclusions being made.

The paper reads like a list of r^2 values and Pearson correlation coefficients and is lacking a coherent narrative. Not every correlation needs to be typed out, they can be in a table or figure and referred to. In these long lists it is hard to identify the most important ones. Their argument hinges on these statistics but I do not believe that they can sufficiently support their claim that ENSO and PDO are driven by sun spots. This is because correlation does not imply causation, slightly misleading from their title, and correlations can be artificially high due to a brief periods of in-phase activity. These caveats should be mentioned and can be remedied with longer time series. I do not think that the methods used can answer the titular question. There needs to be more interpretation and context with the r^2 values, rather than listing them. More error and uncertainty discussion would also improve the paper. Therefore, as is I do not think these statistics can be used as a predictor for ENSO.

This paper would require structural overhaul with clearly defined sections and goals. The figures should be annotated and streamlined to be more easily interpreted and more clearly support the main arguments.Additionally, the paper requires editing by a native English speaker, much of the science gets lost in the presentation.