

Response to RC1: 'Comment on egusphere-2022-926', Angelo De Santis

Dear Prof. Angelo De Santis,

Thank you very much for your cognitive review of this manuscript and your insightful comments. We are very grateful for your recognition of our manuscript, and we are also willing to accept your suggestions and further improve the manuscript. Your comments are marked in *blue italics* and follow with our response

The title: I would avoid acronyms in the title. In addition, perhaps “Scrutinizing” could replace “Screening and rooting”. So better: “Scrutinizing the multiple anomalies of Nepal earthquake sequence in 2015 with Deviation-Time-Space criterion and homologous Lithosphere-Coversphere-Atmosphere-Ionosphere coupling physics”?

Response: We agree with you that the full names of key terms should be written in the title. Thanks very much. On the gerunds used in the beginning of the title, we would like to discuss with you as in the following:

“Scrutinizing” is really a nice and professional word, which embodies a scientific attitude towards things and contains the meaning of scrutiny. In the study of seismic multi-parameter anomalies, we really need a scientific attitude to examine possible anomalies in the face of complex information, and then judge their authenticity and reliability. However, in this manuscript, in addition to the sorting out and preliminary judgment of the existing research results, we aim to establish the relationship between the multi-parameter anomalies in view of geophysics and mechanism, so that a variety of anomalies occurred in coversphere, atmosphere and ionosphere could be rooted to the lithosphere. In other words, after obtaining the multi-parameter anomalies in these geospheres, we use the DTS criterion and homologous physics to do further rigorous screening. This process is top-down, which is different from the previous bottom-up LCAI coupling analysis.

In this way, the abnormal parameters of the geospheres above and far from the hypocenter could be traced downward step by step to the potential seismogenic area or the crust stress lock-in area. This particular logic in geophysics is the main contribution of this manuscript, which is expected to serve for earthquake prediction in the future. Actually, the scrutinizing of the series of anomalies in this manuscript contains two parts. One is the preliminary screening and judgment of the existing multi-parameter results, the other is the further analysis and verification of the sources of these anomalies based on the screened results, that is, to find their downward correlations and even the common root in the zone of crust stress lock-in. Therefore, we would think that the ‘Scrutinizing and rooting’ could be better than ‘Screening and rooting’ and ‘Scrutinizing’ to reflect the logic and procedure of this manuscript.

Accordingly, we are willing to change the title as follows: Scrutinizing and rooting the multiple anomalies of Nepal earthquake sequence in 2015 with Deviation-Time-Space criterion and homologous Lithosphere-Coversphere-Atmosphere-Ionosphere coupling physics.

Figure 1. It is not clear from which catalogue the earthquake data depicted in the figure have been downloaded. USGS (as indicated in Figure 6; but see also my associated question to that figure)?

Figure 6. In the caption you mention that the seismic activities is taken from USGS with earthquakes Mw equal to or larger than 2.5. The latter fact is dubious since USGS has, outside USA, a typical magnitude of completeness of 4-4.5. Could you please check is it is true that there are earthquakes with magnitude from 2.5 to 4?

Response: Thanks for your careful work. We have checked the earthquake catalog used, which were downloaded from the USGS website (<https://earthquake.usgs.gov/earthquakes/search/>). The website is supposed to search and download data for earthquakes with magnitude-2.5 or greater, but the smallest magnitude retrieved was 3.0. So, we have indicated in the article that the minimum magnitude of earthquakes taken from USGS is 3.0.

Line 14. Please replace “alternation” with “alteration” (as correctly CSFA defined after in the main text)

Line 78. I would insert “(Nepal)” after “Gorkha”, in order to be clear that you are speaking about the same Nepal earthquake, i.e. the mainshock that will be dealt with this paper.

Line 85. I would insert “with a” after “behaved”.

Figure 3. A referring table with each abbreviation together with its corresponding literature would be welcome. By the way, the abbreviation “Santis 2017” should be replaced by the complete surname of the first author, i.e. “De Santis 2017”. (see also Figure 7 and Line 741)

Line 250. Please replace “LACI” with “LCAI”

Line 386. Please replace “attribute” with “attributed”.

Figure 7. Please replace “Santis 2017” with “De Santis 2017”.

Line 404. “eruption”? Probably you meant “rupture”.

Line 467. Please replace “LACI” with “LCAI”

Line 529. In the list of references, there are two citations with the journal “Techno” that I think are actually “Tectonophysics”. (see also in Line 630)

Line 611. Please write correctly “Lavé”.

Line 619. Please replace “teh ionosphere” with “the ionosphere”.

Line 707. Please replace “Modication” with “Modification”.

Line 741. Please replace “Santis, and A.D.” with “De Santis A.”

Line 745. Please replace “2009Mw 7.3” with “2009 Mw 7.3”

Lines 746-757. Please remove the “ before and after the title of the paper.

Response: We are very grateful for your careful review of our manuscript, and we are very sorry for our negligence and typographical errors. We have corrected all these errors and checked the whole text carefully to avoid any omissions. Your comments make this draft more rigorous. Thank you very much.