**Response to Anonymous Referee #3**

Dear Anonymous Referee #3,

We are grateful for your insightful review that will help us to improve the manuscript. Your *verbatim* comments are below (in bold), each followed by our response.

**The manuscript concisely elaborates on the viewpoint of "Absence of causality between seismic activity and global warming" with a very brief text. The curve in Figure 1 of the manuscript is highly persuasive.**

**Response:** We are pleased that you find our paper being concise and highly persuasive.

**However, I still have some doubts: Firstly, what was the consideration behind only counting earthquakes of magnitude M>=7 in the manuscript, and does this have any impact on the results? Secondly, how was the seismic activity index calculated in the manuscript?**

**Response:** Initially, in our preprint, the annual seismicity index was calculated simply as an annual number *N* of earthquakes with magnitude $M \geq 7$ with the aim to account for most powerful earthquakes. Per Reviewer #1 recommendation, to better account for energy of earthquakes that is proportional to $10^{1.5M}$ such that "M8 releases 32 times the energy of a M7, and a M9 releases about 1000 times more energy than a M7", and also to account for geographical location of earthquakes, we have redefined the seismicity index as expected maximum values of crustal deformation and recalculated it according to the empirical law of Okada (1995) (Okada, Y.: "Simulated empirical law of coseismic crustal deformation." Journal of Physics of the Earth 43, 6, 1995, 697-713):

$$\lg(U_{max}) = 1.5M - 2lgR - 6.0$$

Here $U_{max}$are expected maximum values of crustal deformation (cm), $M$ is earthquake magnitude, and $R$ is hypocentral distance to the region of interest.

Based on this law, we created three seismicity indexes: (a) in the first one, only the earthquake magnitude $M$ is taking into account, and the hypocentral distance $R$ is used only as a scaling constant; (b) in the second index, both earthquake magnitude $M$ and the hypocentral distance $R$ to the North Pole are accounted for, and (c) the third index accounts for both earthquake magnitude $M$ and the hypocentral distance $R$ to the South Pole.

Results of the new seismicity-indexes and corresponding causality calculations are presented in Figure 1. It can be observed that, in all three cases, our results did not change: The conditional dispersion of global temperature anomalies σ(ε) is independent of ε where ε is the distance between synchronous points of a seismicity index. In other words, there is no causal relationship between seismic activity and global warming.

**Action:** We believe that these new seismicity indexes make our results more robust and we will update our ESD Letter accordingly.

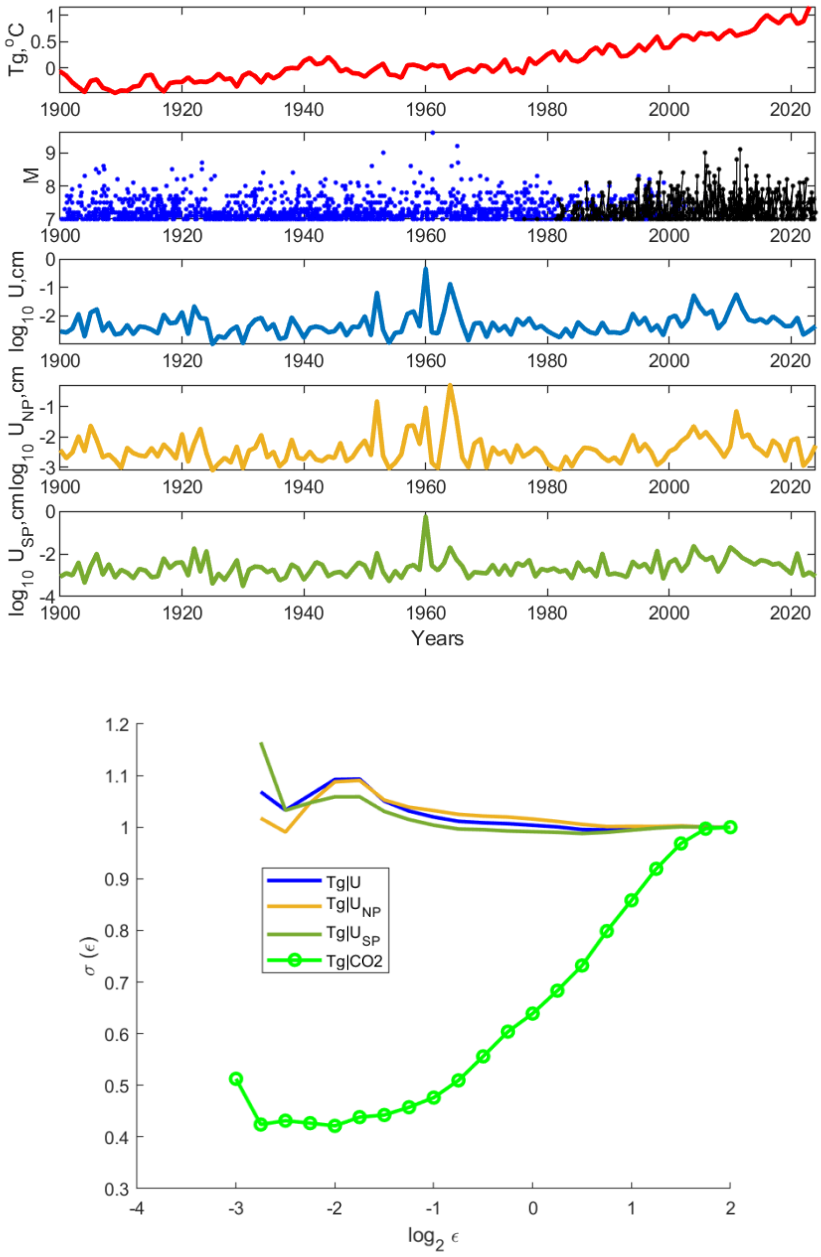


**Figure 1.** Panels from top to bottom: Global temperature anomalies data (**red**); Earthquake magnitudes (**blue and black**); The seismicity index with only earthquake magnitudes *M* taken into account (**blue**); The seismicity index where earthquake magnitudes *M* and the hypocentral distance *R* to the North Pole are accounted for (**yellow**), The seismicity index where earthquake magnitudes *M* and the hypocentral distance *R* to the South Pole are accounted for (**dark green**), Conditional dispersions of global temperature anomalies σ(ε), where ε is the distance between synchronous points of a seismicity index of a corresponding color and conditional dispersion of global temperature anomalies σ(ε), where ε is the distance between synchronous points of atmospheric $CO_2$ concentration (**green circled line**).