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# *Interactive comment on* "Measuring the seismic risk along the Nazca-Southamerican subduction front: Shannon entropy and mutability" *by* Eugenio E. Vogel et al.

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Thank you for your valuable suggestions all of which have been pondered upon writing the present version of the paper. Concerning what you call "main problem" in relation to understanding mutability we follow your concern and we have expanded the presentation of mutability to the point of including an Appendix with 4 examples which we hope help to better grasp the concept. We also quote specific aspects of previous literature which can also help the reader to better follow the discussion. Thank you for raising this point. Concerning what you call your "second suggestion" we believe that it would take us beyond the goals intended for this paper. Our main aim is to use one recently in-



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Discussion paper

troduced method to find differences and possible seismic risk for different zones in the Nazca-Southamerican trench. If we additionally include comparison among methods this would make a different, heterogeneous and much longer paper. So we have not included this suggestion in the present version although we have added a paragraph at the end of the paper, commenting on this issue. We now turn our attention to what you call “Minor points” in the order you wrote them. - Yes, Fig. 3 was missing. Sorry about that. Now is back. - We follow your suggestion and use semilog scale in Figs. 2 and 8. It does not seem to be necessary in Fig. 7. Discussions have been updated accordingly. Present Fig. 2 looks much more informative than previous one. Thank you for that. As for Fig. 8 we have included the semilog plot as an inset where the resemblance with a power law is explicitly mentioned. - We quote the reference to the scaling of interevent intervals although this alternative treatment is out of the main scope of the present paper based on information theory of the natural interevent intervals. - With respect to the double panels in Figs. 3 through 6 we believe some readers can benefit from the double presentation. This is even more so since the other referee points to the need of explaining and stressing the importance of “natural time” (what you call “intertime or inter-event”). So this panel needs to be included anyhow but losing any reference to real time to properly identify the real time scale. Since there is no strong argument to get rid of real time in the figures, we leave them in the double presentation but changing the open star to a different symbol to avoid confusions. Caption of Fig. 5 was also corrected. - The value m=50 is empirical and obtained so a flat behavior of the correlation functions is reached. This is now discussed under the equations defining the correlations. - Several lines have been added to the paragraph immediately under Eq. (2) to justify the choice $\nu=24$. The comparison among different time windows was done elsewhere and one helpful figure is now quoted. Additionally, the examples given in the Appendix all used a time window of 24 instants to better appreciate this is an appropriate choice. - Yes you are right, it takes quite some time to attain any “stationary value” for the mutability, so we can only deal with approximations to that ideal regime. - Your suggestion of evaluating the average value of $\mu$ before the

mainshock is done in Figs. 9, 10 and 12 in the case of semestral averages. It is not clear if any other information could be obtained for a different period before the main earthquakes. - Thank you for pointing to subtract the average values <H> and <mu>. This is now included in present Eqs. (4) and (5). In previous version these equation were in an incomplete form, although the plots were right.

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