Solid Earth Discuss.,
https://doi.org/10.5194/se-2018-40-RC1, 2018

Solid Earth Discussions
Open Access
EGU

Interactive comment on "The impact of earthquake cycle variability on neotectonic and paleoseismic slip rate estimates" *by* Richard Styron

Anonymous Referee #1

Received and published: 28 June 2018

A well written short and concise paper. Not much to change before it is ready for publication. Below are a few comments by page/line. hope it helps.

P1L1: I suggest to use "aleatoric variability" and "epistemic uncertainty". That way there is only one "variability" and one "uncertainty", which makes the language more clear. Please modify throughout the manuscript.

P1L9: I believe the mathematicians call it just CV and not COV. Maybe a good idea to stick to the prior naming convention.

P1L10: This statement "... is quite high"... is a bit too vague. Better add numbers (COV values) here as well.

P1L23: Putting the "e.g." at the end of a list of references seems unusual. Is this an

Printer-friendly version

Discussion paper

accepted format for this journal? Please check and modify in necessary.

P1L1: The connection to locking depth should be explained a bit more. Good to also provide a reference here.

P3L29: I find it troublesome to talk about periodic/regular occurrence just because CV is smaller than 1. That would be correct for CV = 0, as you also pointed out. Depending on CV value between 0 and 1, it might be better to talk about quasi-periodic, or quasi-random behavior.

P4L26: Using this distribution seems plausible. It would however be really interesting to see other distributions explored –if possible, that would be a great addition to make the manuscript more complete.

P5L17: Here you describe qualitatively how more or less closely the different distributions align with the mean slip rate. While doing this qualitatively is ok to first order, I suggest that you go one step further and compute some form of misfit function i.e., residual (simplest a L1 or L2 norm).

P6L2: stress drop doesn't need to be "complete" –just has to be "the same" each time to get to the outcome you describe here. Maybe better rephrase accordingly.

Interactive comment on Solid Earth Discuss., https://doi.org/10.5194/se-2018-40, 2018.