

## Response

We sincerely thank the reviewers for their recommendations and comments.

### Comments:

I have made a few recommended revisions in the attached document.

Reply :revised.

I recommend adding Figure 8 from the response to reviewer document, which shows the geographic and temporal distribution of PEQ and NEQ earthquakes, to the manuscript. Particularly the geographic distribution is worth showing to the readers.

Reply :added.

The results from TCFS and  $(\Delta)TCFS$  suggest that earthquakes preferentially occur when  $(\Delta)TCFS$  is positive and TCFS is negative. So, when stress rate is positive, but stress magnitude is still negative. This is a potentially interesting result worth pondering further. I don't think you need to do a full analysis of this point, but it is worth mentioning in this manuscript.

Reply : When  $\Delta TCFS$  is positive, TCFS is negative or positive. We only suggested that earthquakes preferentially occur When  $\Delta TCFS$  is positive, but this phenomenon occurs when the focal medium is close to a critical state. If we let  $\tau_0$  denote the tectonic stress, without considering other factors the total stress at a focal fault  $\tau = \tau_0 + TCFS$ . If  $\tau_0$  does not change, when TCFS increase  $\tau$  increases, and vice versa. When  $\Delta TCFS$  is positive, though TCFS is negative, but  $\tau$  increases from the lowest.

The authors state this but perhaps should emphasize it more, that  $k_p$  and  $k_n$  both fluctuate due to seismicity rate and perhaps for other reasons, but it is the separation that may be most important. That is,  $k_p$  or  $k_n$ , are not very informative by themselves.

Reply :We made a suitable revisions for this.