Ariane Ducellier

Dept. of Earth and Space Sciences

University of Washington

Johnson Hall Rm-070, Box 351310

4000 15th Avenue NE

Seattle, WA 98195-1310

Editor, *Journal of Geophysical Research: Solid Earth*

August 7, 2021

Dear Editor,

Enclosed is the manuscript titled “An eight-year-long low-frequency earthquake catalog for Southern Cascadia” that we wish to be considered for publication in the *Journal of Geophysical Research: Solid Earth*. This paper was co-authored with Kenneth Creager and is composed of entirely unpublished work. The submission contains a PDF file of the manuscript with text, tables, and figures and a PDF of supplementary materials, which contains an additional two tables.

We extended the low-frequency earthquake catalog obtained by Plourde et al. (2015, GRL) during an episode of high tremor activity in April 2008, to the 8-year period 2004-2011. All of the tremor in the Boyarko et al. (2015, EPSL) catalog south of 42 degrees North has associated LFE activity, but we have identified several other, mostly smaller, clusters of LFEs, and extend their catalog forward and backward by a total of about 3 years. As in northern Cascadia, the down-dip LFE families have recurrence intervals several times smaller than the up-dip families. For the April 2008 Episodic Tremor and Slip event, the best recorded LFE families exhibit a strong tidal Coulomb stress sensitivity starting 1.5 days after the rupture front passes by each LFE family. The southernmost LFE family, which has been interpreted to be on the subduction plate boundary, near the up-dip limit of tremor, has a very short recurrence time. Also, these LFEs tend to occur during times when predicted tidal Coulomb stress is discouraging slip on the plate boundary. Both observations suggest this LFE family may be on a different fault.

To aid in the review process, we have compiled a list of suggested reviewers. For their previous work on tremor and low-frequency earthquakes we suggest Amanda Thomas at University of Oregon ([amt.seismo@gmail.com](mailto:amt.seismo@gmail.com)), Michael Bostock at the University of British Columbia ([bostock@eos.ebc.ca](mailto:bostock@eos.ebc.ca)), Michael Brudzinski at Miami University ([brudzimr@miamioh.edu](mailto:brudzimr@miamioh.edu) ), David Shelly at USGS ([dshelly@usgs.gov](mailto:dshelly@usgs.gov)), or Suguru Yabe at GSJ-AIST ([s.yabe@aist.go.jp](mailto:s.yabe@aist.go.jp)).

Thank you for your consideration of our submission. We look forward to hearing from you regarding the manuscript.

Sincerely,

Ariane Ducellier

ducela@uw.edu