

Solid Earth Discuss., referee comment RC2
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Comment on se-2021-74

Anonymous Referee #2

Referee comment on "The damaging character of shallow 20th century earthquakes in the Hainaut coal area (Belgium)" by Thierry Camelbeeck et al., Solid Earth Discuss., <https://doi.org/10.5194/se-2021-74-RC2>, 2021

Summary

This paper presents an exhaustive reevaluation of 28 small earthquakes in Belgium between 1887 and 1983 in the Hainaut province of SW Belgium. Macroseismic data are presented in detail and used to refine parameters.

Comments

Technically, this paper is of high quality, with only one error, which is to refer to "attenuation laws" for things that are not laws. The problem with this paper is that it calls to mind the apocryphal most boring headline ever – "Small earthquake in Belgium: No-one hurt". This paper is 40 pages long in the preprint version, and it is questionable what interest it has for an international audience such as the readership of Solid Earth. There is no doubting the quality of the research, but one would normally expect it to appear as a published report of the sponsoring institute rather than a paper in an international journal.

The significance is given in the inset to Figure 1, showing the Hainaut area being depicted as of high seismic hazard in the recent SHARE European hazard map. From the authors' work this is clearly incorrect. Most of the earthquakes in this region are too small to be hazard-relevant, and probably all of them are mining-related, in which case they should be deleted from the earthquake catalogue prior to PSHA. It is significant that despite the frequency for events in the period under consideration, there is a complete lack of earthquakes prior to 1887, which is a clear sign that there is no natural tectonic seismicity.

To make this paper of interest, the focus should be shifted away from the detailed data on these earthquakes (all of which can be moved to an ROB report) and to the more general topics of mining seismicity and hazard. There is at present no examination of what was done for Hainaut in the SHARE project – for instance, how were these events depicted in the SHARE earthquake catalogue, compared to the authors' final versions? This seems like an obvious topic to cover. Also, it would be useful to have a history of coal mining in the region to compare to the progress of the Hainaut earthquakes. What is the likely effect on the PGA hazard to be expected from deleting all these non-tectonic events? These are the

sorts of questions that ought to be covered in a paper for Solid Earth.