

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Comment on hess-2022-326

Anonymous Referee #2

Referee comment on "The origin of hydrological responses following earthquakes in a confined aquifer: insight from water level, flow rate, and temperature observations" by Shouchuan Zhang et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-326-RC2>, 2022

Comments on HESS-2002-326:

The paper by Zhang and others was trying to investigate the origin of hydrological responses following earthquakes in confined aquifer by monitoring the variations in groundwater levels, flow rate, and temperature. The topic of this paper is novel, interesting, and suitable for this journal. It was well written with good organized structure. There are still some issues that need to be modified.

Specific remarks:

- Line 16: "the post-seismic discharge of 85~273 m³." Is this daily or hourly discharge?

2.The authors state that there is no barometric pressure record in the well, but could it be possible to get the barometric pressure from nearby place? Sometime the barometric pressure may have large impact on the water level fluctuation.

3.Temperature fluctuations seem to be affected by air temperature (Figure 3). Thus, I think that the effect of seismic activities on temperature may be more remarkable by removing the interference of air temperature with water temperature.

4.What is the different effect of static and dynamic water level observation on the tidal signal? Why dynamic water level observation would show more sensitive to earthquake?

Please give a detailed explanation

5. Line 112 the authors mentioned that there is stable isotope result from this well, could this result be used to estimate the recharge elevation? If this is feasible, this may provide additional support of the concept model proposed in the manuscript.

6. The authors selected 14 earthquakes that cause co-seismic response, and discussed the relationship between seismic energy density limits and the response, here I am wondering whether the authors could also plot those earthquakes that showed no response, and see if there is any limits exist between the response and non-response earthquakes?

- As for the static strain mechanism, there are many parameters such as W , L , D_j ..., how these values are determined? If these are empirical, then citation should be added.
- Have the authors sampled the water samples from the shallow and deep aquifers? Is there any difference in hydrochemical components of groundwater from the two aquifers?
- Line 136: What does 'Mk' mean?