

Interactive comment on “Man-made earthquakes prevention through monitoring and discharging their causative stress-deformed states” by Oleg Kuznetsov et al.

Anonymous Referee #1

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The manuscript deals with a very important issue, namely man-made/induced seismicity. The seismicity induced by human is connected with numerous activities (usually industrial) and, among others, includes: filling of water reservoirs, hydrocarbon excavation or open pit and underground mining. The issue is important because of several reasons. At least two are crucial: a) induced earthquake can be responsible for a strong ground shaking, even in case of weak or moderate quakes (because of their shallow foci), b) can be responsible for additional hazardous events like e.g. rockbursts or mining collapses. Some of them are followed by severe accidents and often terminate the industrial activity in the affected area. Taking into account all that facts, the studies focusing on prediction and prevention of man-made seismicity are of great

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importance to both scientific and industrial communities.

The current version of the manuscript has numerous weak points. The most important in my opinion is that the concept was never tested in real conditions. I suggest to design such kind of studies in at least several real locations, preferable including different kind of induced seismicity. Then authors would be ready to test their 4-step approach concept and provide report on such study which would be much more suitable for a publication in NHESS.

My additional questions /suggestions are:

- 1) What does ‘microseismic emission (MSE)’ mean – please explain what kind of events belong to MSE e.g. what is the magnitude of MSE, where such events are located etc.?
- 2) Considering events located 5-7km below surface with small magnitudes, is it possible to obtain realistic measurements of MSE with a surface network? What are the uncertainties in such measurements?
- 3) In my opinion point 1 from page 3 is crucial. (i.e. “Locating centers (zones) of abnormally high MSE . . .”). As I understood (section 1.2.1), the location of these zones are simply the areas affected by induced seismicity. If so, it is probably only general selection and further very careful monitoring has to be used to identify the specific MSE zones within the aforementioned regions.
- 4) According to authors, the monitoring of MSE centers has to be done preferably over one lunar month. It is not clear why (maybe one solar year could be better choice) – please explain in more details.
- 5) The statement (page 4, 25-26): “MSE waves are constantly generated in geologic formation through a grow and collapses of open fractures, driven mostly by lunar-solar solid Earth tides” is very confusing. In my opinion the induced seismicity is rather connected with human activities and has nothing to do with lunar-solar tides - please

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explain.

6) Fig 2 and 3 are very small. It is impossible to read coordinates from the axis.

7) The concept of vibration excitation by seismic vibrators may be interesting but please explain what to do in heavily populated industrial areas. In such regions these kind of field work may be very difficult to do. The same applies to areas which are located in mountain regions.

8) In my opinion conclusions are very general and not supported by any real tests. These conclusions will rather not be very useful to both scientific and industrial community.

9) References should contain more international studies. Due to lack of English written papers, it is difficult to read works which could be essential for understanding authors ideas and concepts.

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