

REPLY TO REVIEWERS COMMENT

Anonymous Referee #2

Received and published: 24 September 2019

The paper doesn't present new results and methodologies. The correlation between radon and seismicity, that seems to be the goal of the paper, is treated in a very poor way, and the results seem to be mixed among the various earthquakes.

REPLY

First of all, we convey our sincere hearty thank you to the reviewer for the fruitful comments which has improved the present work manifold. Yes, the correlation between radon and seismicity is the goal of the paper has been revised to best of our knowledge as per your generous concern.

More specifically:

- Singular Spectrum Analysis: this chapter needs absolutely an explanation more detailed and a check about formulas.

REPLY:

The above mentioned concern has been incorporated in the revised version. We have revised the manuscript as per your generous concern which has improved the present work manifold.

COMMENT

- Results: line 179...from April to September... Add a little table instead of putting the monthly average radon values in the text. Line 204: Explain why the groups are 9.

REPLY:

Instead of putting monthly average values in the text we have incorporated a table in the revised version (Table 1 in revised version, Line No. 236-237).

We have chosen only 9 groups since the 9 groups are fairly sufficient to reproduce the prominent features of the overall variation (line No. 280-282)

COMMENT:

- Discussion: it's difficult to understand to which event is related each explanation. You write about close events, even a few hours or days of difference and that theoretically the radon anomaly is linked to the major. I think that one purpose of this article could be precisely to try to identify possible time and space windows, which make it possible to understand if radon anomalies are possibly linked to a single event or if they are the cumulative effect of several earthquakes; it is sort of declustering as it's done in the probabilistic seismic hazard computations.

REPLY:

Yes we do agree and the fundamental assumption about earthquake catalogue, which is to be utilized for data analysis, should follow a stationary Poisson process and thus occur independent of each other. The catalogue consist of main shocks, whereas fore- and aftershocks are rejected. **The earthquakes are selected from a catalogue which follow a stationary Poisson process where we have adopted declustering method by Reasenberg (Reasenberg, 1985). After declustering of the database, we have used the maximum likelihood algorithm provided by ZMAP (Wiemer, 2001) to perform a Gutenberg-Richter regression (Gutenberg and Richter, 1944). Here, the magnitude range of earthquakes catalog indicate relatively high magnitude of completeness ($MC = 4.7$) for the region.**

The above red coloured lines are incorporated in the manuscript (line No. 308-314)

COMMENT:

- References: must be re-checked: some references are missing and for some there is a difference between the text and the references (different number of authors, wrong year of publication ...)

REPLY:

We have checked for the missing references and included the same in the revised version as advised.

COMMENT:

- Figures: - 1 it would be useful to add a window showing the study area of 100 km around Tezpur, and the 9 earthquakes studied; - 3 to 14 more explanations in the captions were necessary, but I see you already add them in the corrected version; -maybe it is possible to accorparate some figures (the matrix ones...for example...).

REPLY:

Yes, we do agree and a map illustrating the window showing the study area of 100 km around Tezpur, and the 9 earthquakes studied (Figure 1 in revised version). Regarding figure 3 to 14 we have added more explanation in the revised version. We agree to your concern but kindly we wish to keep the figures separately.

Minor corrections:

100 earethquakes...correct as earthquakes 136 the common most algoritm....correct as...the most common algorithm; 202 form.....correct as....from

REPLY:

The above correction are incorporated in the revised version. (Line No. 123, 159, 256)

Once again, we convey our sincere thanks to the reviewer for meticulous effort which has no doubt helped us to improve the manuscript.

With Regards

Timangshu Chetia (Author)