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Earth System
Dynamics
Discussions

# *Interactive comment on* "Radon monitoring as a possible indicator of tectonic events" *by* V. I. Outkin et al.

**Anonymous Referee #4**

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General comments

The manuscript presents a work aimed to suggest the use of Radon as a possible indicator of tectonic events. First of all, it is difficult to stick to the point due to the poor English and probable transliteration problems from the mother tongue (e.g.: VAR and UAR). In addition, this paper shows serious flaws about the methodology and, furthermore the discussion of the data is lacking in criticism.

Specific comments

The manuscript seems to start from the considerations and results reported in a paper recently published (V.I. Utkin, A.K. Yurkov, 2010), without any substantial improvement.

Numerous are the parts of the manuscript lacking in clearness. Figure 1 of the



manuscript submitted to the ESD does not report any information about the identification of the stations selected to analyze the radon emission. Further, the text of the manuscript discusses the earthquake happened on 20 January 1980, while the legend of Figure 1 reports two different dates of the seismic event considered: 5 January 1980 and 5 August 1979. To increase the problems in understanding, the symbols reported in the legend are in contrast with the figure caption (e.g.: epicenter). Therefore, I can only argue that the authors refer to the 5 August 1979 event by drawing an analogy between the epicenter location as well as the time span considered (from March to September) in this manuscript and those considered in the work by Utkin et al. (2010).

As far as the method concerned, what criteria were adopted to select the stations? What percentage of stations showed radon anomalies? These aspects are obscure.

The authors refer that VAR change can be linked to the earthquake under investigation. Sant'Andrea Fault is a very long and complex tectonic structure. Changes in radon emission can also be related to the change of the tectonic stress along this fault.

Further, to constraint the cause-effect relationship, an overview of the seismicity of that area must be considered in quite a wide time span around the date of the considered earthquake to be sure that other seismic events have no influences in changing radon emissions.

The authors attempt to corroborate their thoughts by the "supportive evidence of remote sensing" (paragraph 3). Unfortunately, it is lacking in analysis of the state of the art about the item and the substance of the "supporting evidence" is absolutely inconsistent. No new data are analyzed. Why this paragraph?

The authors, in paragraph 4, jump to hasty general conclusions about the number of stations needed to monitor some areas of fixed extension. These conclusions are misleading as the number of monitoring stations depends both on the geological and seismotectonic features of the areas considered, and moreover just one or two earthquakes are not statistically significant at all to derive general methodological constraints.

Reference

V.I. Utkin, A.K. Yurkov (2010). Radon as a tracer of tectonic movements. Russian Geology and Geophysics, 51, 220–227.

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