Solid Earth Discuss.,
doi:10.5194/se-2016-72-RC1, 2016

Solid Earth Discussions
Open Access
EGU

Interactive comment on "The Pollino 2012 seismic sequence: clues from continuous radon monitoring" *by* Antonio Piersanti et al.

R. C. Tiwari (Referee)

ramesh_mzu@rediffmail.com

Received and published: 13 June 2016

General Remarks:
This research paper reports a significant contribution towards the area of seismic precursory studies, which is one of the most complex phenomenon and a challenge to Science in general and to Geoscience, in particular. One of the reasons being, the site dependent behavior of Geo-chemical parameters. This study assumes significance in view of the fact that clear experimental evidence of relation between the rock state of stress and variations in radon emanation behavior have been reported in the literature, however, it lacks to provide a clear cut understanding about inside soil behavior of radon.

Reviewer Comments:

Printer-friendly version

Discussion paper

Comment 1:
This paper is well organized and presents in-depth analysis of 2 selected seismic events out of about 5000 events. The analysis of the experimental data has been done using two approaches namely phenomenological and a purely numerical analysis. The authors have successfully arrived at same or similar conclusions, however, micro-seismic events of magnitude less than 3 and radon emanation have not been considered. It cannot be ruled out that radon anomalies for such events may be indicators of impending massive earthquakes.

Comment 2:
Authors have considered daily average and 14 days moving average data to analyze the radon behavior for 2 stations by different methods, indicates the efforts that have been put by authors to generate the data to understand the phenomenon. It is interesting to see a non accidental correlation between Radon concentrations and seismic moment release. I wish to appreciate the authors for their commendable job.

Comment 3:
In general, the radon peaks showing variations in concentrations for 2 SD (standard deviation) or more that 2 SD are considered to be anomaly due to seismic events, provided that the data is rectified for the false anomaly that may be due to influence of meteorological parameters (Pressure, Temperature, Rainfall etc). I do hope authors have taken care of this aspect. Radon anomalies of both types (rise/fall in radon concentration) are equally important.

Comment 4: I am in full agreement with the authors that a long term data recording/analysis is necessary to be able to arrive at definite trends of behavior of geo-physical/geo-chemical parameters and conclusions that may be worthy to be applied to develop seismic prediction models in future.

Comment 5:
Western side of study area has recorded more number of seismic events and of higher magnitude as compared to eastern side. Explain reasons?

Comment 6:
Whether the meteorological observatory is located on site, or far from the radon monitoring site, if so how far from the site? Please clarify the situation for both monitors.

Comment 7:
Authors are requested to explain reasons for the following:
a) During summer season, Radon concentration is more pronounced. Why?
b) Radon concentration decreases with increase in rainfall. Why?
c) Can you elaborate further on your claim with explanation that 'the discontinuity in the radon increase is likely to be associated with a major rainfall that occurred just after the 5.2 magnitude earthquake'?

Comment 8:
It is very interesting observation recorded by authors that:
For the seismic event of magnitude 4.3, radon concentration gets restored to normal value after 7 days of the event.
For the seismic event of magnitude 5.2, radon concentrations continue to increase for more than 30 days after the event.
Can you explain the possible reasons?

Comment 9:
Typo-graphical suggestions:
Page 1, Line-15: observable may be replaced by observations
Page 1, Line-17: last years may be replaced by recent past

Printer-friendly version

Discussion paper

Page 4, Line-25: few may be added between first and days
As far as possible, the curves in Figs. 2,3,4,5 and 8 may be bolded for better clarity in print copy.

Comment 10:
I strongly recommend the publication of this paper in the journal Solid Earth, subject to minor modifications/clarifications as described above, to be incorporated before re-submission.

Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-72, 2016.

Printer-friendly version

Discussion paper