


AGU Fall Meeting 2009

You may print by clicking on this  button. To return to the previous page, close this browser window or click the 'X' button in the top right corner of the page.

ID# U14A-03

Location: 103 (Moscone South)

Time of Presentation: Dec 14 4:30 PM - 4:45 PM

Radon observations by Gamma Detectors "PM-4 and PM-2" during the seismic period (January – April 2009) in L'Aquila Basin. (Invited)

G. G. Giuliani¹; R. Giuliani²; G. Totani³; G. Eusani³; F. Totani³

1. S.C.S. sas, L'Aquila, Italy.

2. I.N.F.N-L.N.G.S.S., Assergi, Italy.

3. University of L'Aquila, L'Aquila, Italy.

Abstract

The measures of 222Radon from gamma detectors PM-4 and PM-2 in L'Aquila Basin have been analysed during the whole period of major seismic activities in January to April 2009. The primary scope of our observations was to study in systematic fashion the Radon variability related to the earthquakes occurrence. One of the outcome is to evaluate the possibility of using the "PM-4 and PM-2" methodology in Rn observation to study the cycles in the earthquake occurrences in the L'Aquila region.

Three stations have been in operation during the period of December 2008 - April 2009: Coppito (Lat. +42° 22'N Long. +13° 20'E); Gran Sasso (Lat. 42° 25'N Long. +13° 30'E); and De Amicis (Lat. +42° 21'N Long. +13° 24'E). The distance between Coppito and Gran Sasso it's 20Km; Gran Sasso and De Amicis it's 15Km; Coppito and De Amicis it's 8Km. All of the stations are equipped with gamma detectors (PM-4 and PM-2) continuously measure the Radon coming vertically from subsoil. They consists of an NE110 or NE102 Plastic Scintillator of 800/600 cm³ seen by 4 or 2 photomultiplier Photonis xp3462b with a gain of $\approx 2 \cdot 10^6$, inserted into an airtight container of lead. The lead container is 7 cm thick. All of the detectors are installed 3 metres under the ground surface. At the detector is fixed in a window energy of 351 KeV and 609 KeV, which allows to counts gamma rays of 214Pb and 214Bi. The analogue signal, converted into digital signal, is sent to a counter that returns the value in counting rate, in an acquisition time of 600 sec and 7200 sec (2 hours).

We are presenting a comprehensive overview of our observations and the statistical trend during the seismic period of January – April 2009 in L'Aquila Basin,. Our findings suggest that Rn counts significantly increases in several hours up to two days, in advance to the major earthquakes occurrence in the region. Based on our experimental results, we argue that rapid changes in the concentration of radon, measured from gamma detectors, could be considered as a potential earthquake precursor for the L'Aquila region. We are recommending similar measurements to be performed and in other seismogenetic areas in order to crosscheck and validate our findings and to enable this methodology for the future multi disciplinary early warning systems.

Contact Information

Giocchino G. Giuliani, L'Aquila, Italy, 67010, [click here](#) to send an email

ScholarOne Abstracts® (patent #7,257,767 and #7,263,655). © [ScholarOne](#), Inc., 2010. All Rights Reserved.

ScholarOne Abstracts and ScholarOne are registered trademarks of ScholarOne, Inc.
[Terms and Conditions of Use](#)