

# **Investigations on radon emanation along seismic faults in the Hyblean Foreland (South East of Sicily)**

G. Alessandro(1), S. La Delfa (2,3), S. Lo Nigro (4), R. Mineo (1), D. Morelli (4), G. Patanè (3),

(1) Provincia Regionale di Ragusa – Settore di Geologia e Geognostica – Ragusa, (2) Dipartimento di Scienze Geologiche Università di Catania, Corso Italia, 64 95100 Catania, Italy (3) Istituto di Ricerca Medica e Ambientale - O.Me.G.A., Via Paolo Vasta158/c Acireale, Italy (4) Dipartimento di Fisica ed Astronomia – Università degli Studi di Catania, via S. Sofia, 64 95123 Catania, Italy

Measurements of soil radon were carried out in an area of the Hyblean Foreland (South East of Sicily). Measurements were performed by means of a portable active device provided with an ionization detection chamber and a soil probe one meter deep. The investigated area is located few kilometres NW from Ragusa town and it is interested by fault systems and fractures oriented NNW-SSE.

The measurements have been performed along lines crossing the faults, with the aim to individuate where major exhalations occur. As known the tectonic discontinuities in the Earth's crust, as fractures and faults, may be preferential paths for radon gas uprising (Crenshaw et al., 1982; Aubert and Baubron, 1988; D'Alessandro et al., 1992; Brogna, 2004; Burton et al., 2004); in fact, generally, the most higher values of radon have been found in proximity of the fault planes. This fact seems to be linked to the different state of ground fracturation as characterised by means of geological and geophysical prospections.

## References

- Aubert, M., and Baubron J. C., 1988. Identification of a hidden thermal fissure in a volcanic terrain using a combination of hydrothermal convection indicators and soil atmospheres analysis, *J. Volcanol. Geotherm. Res.*, 35, 217–225.
- Brogna A., 2004. Emissioni di radon in territori interessati da fenomeni vulcanici e sismogenetici: effetti sulla salute. Tesi sperimentale di Laurea. Università degli Studi di Catania.
- Burton, M., Neri M., and Condarelli D., 2004, High spatial resolution radon measurement reveal hidden active faults on Mt. Etna, *Geophys. Res. Lett.*, 31, L07618.
- Crenshaw, W. B., Williams S. N., and Stoiber R. E., 1982. Fault location by radon and mercury detection at an active volcano in Nicaragua, *Nature*, 300,

345–346.

- D'Alessandro W., De Domenico R., Parello F., and Valenza M., 1992. Soil degassing in tectonically active areas of Mt. Etna, *Acta Vulcanol.*, 2, 175–183.