

An integrated observational site for monitoring pre-earthquake processes in Peloponnese, Greece. Preliminary results.

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We are presenting the first results of developing a new integrated observational site in Greece to study pre-earthquake processes in Peloponnese, lead by the National Observatory of Athens. We have developed a prototype of multiparameter network approach using an integrated system aimed at monitoring and thorough studies of pre-earthquake processes at the high seismicity area of the Western Hellenic Arc (SW Peloponnese, Greece).

The initial prototype of the new observational systems consists of: (1) continuous real-time monitoring of Radon accumulation in the ground through a network of radon sensors, consisting of three gamma radiation detectors [NaI(Tl) scintillators], (2) nine-station seismic array installed to detect and locate events of low magnitude (less than 1.0 R) in the offshore area of the Hellenic arc, (3) real-time weather monitoring systems (air temperature, relative humidity, precipitation, pressure) and (4) satellite thermal radiation from AVHRR/NOAA-18 polar orbit sensing.

The first few months of operations revealed a number of pre-seismic radon variation anomalies before several earthquakes ($M>3.6$). The radon increases systematically before the larger events. For example a radon anomaly was predominant before the event of Sep 28, M 5.0 (36.73°N, 21.87°E), 18 km ESE of Methoni. The seismic array assists in the evaluation of current seismicity and may yield identification of foreshock activity. Thermal anomalies in satellite images are also examined as an additional tool for evaluation and verification of the Radon increase. According to the Lithosphere-Atmosphere-Ionosphere Coupling (LAIC) concept, atmospheric thermal anomalies observed before large seismic events are associated with the increase of Radon concentration on the ground.

Details about the integrating ground and space observations, overall performance of the observational sites, future plans in advancing the cooperation in observations will be discussed.