



Implication of Earthquake Precursory Studies in Taiwan With Special Emphasis on Soil-gas Radon Measurements

Vivek Walia (1), Arvind Kumar (1), Ching-Chou Fu (2), Shih-Jung Lin (1), Kuo-Liang Wen (1,3)

(1) National Center for Research on Earthquake Engineering, NARL, Taipei, Taiwan (vivekwalia@rediffmail.com), (2) Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan, (3) Department of Earth Sciences and Institute of Geophysics, National Central University, Jhongli, Taiwan

Earthquake prediction research is one of the most challenging tasks as precursory signatures are not easy to access. However, geochemical and hydrological observations have provided significant and promising results for earthquake prediction research. Among the potential geochemical precursors, radon changes are probably the most frequently used for earthquake monitoring/predicting research. However, radon anomalies are not only controlled by seismic activity but also by meteorological parameters like soil moisture, rainfall, temperature and barometric pressure. Hence, assessment and quantification of these influences are a major prerequisite in the isolation of precursory signals. In the present study, we focused to investigate the relation of variations of the soil-gas radon composition to earthquakes through a real-time network of monitoring stations in the vicinity of the geologic fault zone of Northeastern and Southwestern parts of Taiwan. The data is processed using a different kind of filters to reduce the noise level. It helps us to filter out the high-frequency noise and daily variation caused by different parameters. Based on the anomalous signatures from particular monitoring stations we are in a state to identify the area for impending earthquakes of magnitude ≥ 5 and tested it for the proposed the tectonic based model for earthquake forecasting in Taiwan. For the earthquake prediction, the efficiency of an operational system depends not only upon its logical correctness but also upon the response time, which is obtained by the real-time network.