Abstract Details

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Title: A summary of the RIKEN International Frontier Research Project on Earthquakes (IFREQ) and future direction of the short-term earthquake prediction research.

Abstract:

Mitigation of seismic hazards requires integration of science and human action, namely the science of earthquakes, anti-seismic engineering and socio-political measures. When structural damage is reduced, most other seismic hazards will also be reduced. On top of that, if short-term prediction is made, casualties will be further reduced dramatically. We review the state of the art of short-term prediction, in particular the recent progress in the approach using the electromagnetic phenomena. The RIKEN International Frontier Research Project on Earthquakes (IFREQ) has demonstrated the existence of pre-seismic ultra-low frequency (ULF) geoelectric potential changes as has long been claimed by the Greek VAN group. In fact, during the project period, RIKEN-IFREQ deployed about 40 monitoring stations for the geoelectric potential changes over the country. It was demonstrated that the VAN-type pre-seismic changes appear in Japan. The pre-seismic changes were observed before M □ 5 earthquakes that occurred within 20 km or so of our stations. Clear co-seismic signals, synchronized with the arrival of seismic waves, have also been observed for nearby earthquakes. Furthermore, IFREQ also verified the precursory signatures of ULF geomagnetic variations. Thus, the reinforcement of existing structures and enhancement of short-term prediction research are the two keys for seismic hazard mitigation.

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