

RADON-EXHALATION DYNAMICS FOR PREDICTING TECTONIC EARTHQUAKES

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Radon-exhalation dynamics for predicting tectonic earthquakesV. Outkin (1), A. Yurkov (1), S. Krivasheev (2), Chi-Yu King (3)(1) Inst. of Geophysics Ural's Branch RAS, Jekaterinburg, Russia, e-mail: outkin@igeoph.mplik.ru/Fax: 007 3432 678872, (2) Moscow's Eng.-Phys.Inst, Moscow, Russia; (3) Univ. of Tokyo, Tokyo, JapanRadon exhalation in deep mines has previously been found to show the following zonal distribution before mine burts: A radon decrease by factor of 3 to 4 in a zone of compression in the vicinity of the burst and a radon increase by a factor of 8 to 10 in zone of extention at larger distances. A burst event usually occur shortly after the maximum radon change. In the present study we have checked whether a unique set of soil-air radon-concentration data recorded on San-Andreas fault in Caifornia (Chi-Yu King) show similar patterns. Our result shows similar zones of compression (radon decrease), extension (radon increase), and no change for 25 tectonic earthquakes of magnitude 4 and 5, which are always located subsequently in a zone compression. The zone of compression has a dimension of about 25km for an earthquake of magnitude 4, and 50km for magnitude 5. The zones of extention usually have a dimension of more than 100 km. The radon values usually begin to show significant changes less then 3 to 4 months before the corresponding seismic events, with maximum changes occurring about 1 to 2 weeks before the events. However such a pattern may be disturbed by the occurrence of forshockes, which may cause additional radon changes. The dynamics of radon exhalation, if properly monitored and analyzed, may be useful for predicting earthquakes.Submittal Information1. Vladimir I. Outkin, Amundsen str. 100, Jekaterinburg, 620016, Russia; tel: +7 3432 67 88 89 / fax: +7 3432 67 88 72 / e-mail: outkin@igeoph.mplik.ru2. Seismicity, Seismo-Tectonics.3. Presentation panel4. Poster