Geophysical Research Abstracts
Vol. 13, EGU2011-13756, 2011
EGU General Assembly 2011

The Impending Geoelectric Precursors to the Sumatra Earthquake and the Wenchuan Earthquake

Ping Zhang
Earthquake Administration of Yunnan Province, Kunming 650224, China

Four sets of newly developed anti-interference high-precision geoelectric measurement system, have been stationed in Sichuan and Yunnan province, China, and recorded the harmonic resonance waves of geoelectricity driven by tidal forces (HRT wave) prior to the Mw9.0 Sumatra earthquake. At resonance T=T0, where the wattles component of the impedance is equal to zero, the RT wave peak will be very large, sharp and an earthquake will impend within 1-3 days. As preliminarily estimated, the phase velocity of the RT longitudinal waves is V1=307 km/h and the virtual wave velocity is 207 km/h. Hence, as long as the arrival time difference of the 2 RT waves at one station is known, it is possible to calculate the epicentral distance of a coming earthquake quantitatively. For the Sumatra earthquake, the free period of oscillation is 4-5 h, from which the magnitude of the coming earthquake can be determined. Both the arrival time difference and the virtual wave velocity during and before the earthquake are almost equal to each other, the RT waves during the earthquake were emitted by the fault failure, and the RT waves appearing 2 days before the earthquake were emitted by the early failure of the fault in the hypocenter region of the earthquake. If we have a reasonably designed the network, it will be possible to quantitatively predict the three elements of a coming earthquake. The HRT wave model of impending precursors to strong earthquakes are brie[U+FB02]y introduced. The method to predict the time, origin and the magnitude of strong earthquakes by analyzing the observation data based on the HRT wave model are described. The geoelectric data observed at Hongge station in Sichuan province, China, before Wenchuan Ms8.0 earthquake are analyzed by using HRT model. In such way, the impending precursor signals to the Wenchuan Ms8.0 earthquake are obtained.