Geophysical Research Abstracts
Vol. 16, EGU2014-14874, 2014
EGU General Assembly 2014

Statistical tests on seismo-ionospheric precursors of the total electron content

Jann-Yenq Liu (1,2), Chi-Shen Huang (1,3), and Yuh-Ing Chen (3)

(1) National Central University, Institute of Space Sceince, Chung-Li, Taiwan (jyliu@jupiter.ss.ncu.edu.tw, +886-3-4228374), (2) National Space Organization, Hsinchu, 30078, Taiwan, (3) Institute of Statistics, National Central University, Jhongli, 32001, Taiwan

The predictability of earthquakes has been a hotly debated question in earthquake science for some time. The answer to which begs another question, “Are there credible earthquake precursors?” This paper finds whether the seismo-ionospheric precursors (SIPs) exist or not. Statistical analyses are applied to test the ionospheric total electron content (TEC) and 376 magnetic M>=5.0 earthquakes in Taiwan during 1999-2010. To avoid possible seasonal effects, based on the 15-day running median, a standardized TEC is computed. Phi coefficient and receiver operating characteristics show that SIPs, TEC significantly decreasing, tend to appear in the afternoon period of 1-5 days and in the nighttime period of 8-15 days before the earthquakes, and the statistical significance is proportional to the earthquake magnitude.