
[EE] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS03] Interdisciplinary studies on pre-earthquake processes

convener: Katsumi Hattori (Department of Earth Sciences, Graduate School of Science, Chiba University), Jann-Yenq Liu (Institute of Space Science, National Central University, Taiwan), Dimitar Ouzounov (Center of Excellence in Earth Systems Modeling & Observations (CEESMO), Schmid College of Science & Technology Chapman University, Orange, California, USA, 共同), Qinghua Huang (Peking University)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session expands the interdisciplinary discussions on preparation process of earthquake and earthquake predictability by presenting the latest progress in studying the physically based pre-earthquake phenomena. New observations from space and ground have provided evidences, which may enhance better understanding of tectonic activity. The session anticipates talks that include but not limited to observations and analyses of seismic, electrical, electromagnetic, electro-chemical and thermodynamic processes related to stress changes in the lithosphere along with their statistical and physical validation. Presentations on the latest observational results associated with major earthquakes obtained by different methodologies are welcomed. The topics of the session are as follows but not limited.

- General discussion on earthquake preparation process and the physics of pre-earthquake signals
 - Theory, modeling, laboratory experiments, computational simulation for generation and propagation of pre-earthquake signals and their connection with seismic cycle
 - Multi-parameter observations, detection, and validation of pre-earthquake signals
 - Cross-disciplinary studies, practical and technical approaches for better understanding of earthquake preparation processes and their connection with seismicity
-

[MIS03-P03] Possible geomagnetic S_q abnormal related to great earthquake

*Xiaocan Liu^{1,2}, Katsumi Hattori^{2,3}, Peng Han⁴ (1. Institute of geophysics China Earthquake Administration, 2. Graduate School of Science, Chiba University, Chiba, Japan, 3. Center for Environmental Remote Sensing, Chiba University, Chiba, Japan, 4. Department of Earth and Space Sciences, Southern University of Science and Technology, Shenzhen, China)

Keywords: geomagnetic S_q , abnormal, great earthquake

At about 130°E to 150°E longitude sector, using 20 geomagnetic observatories absolute minutely xyz- three components data from 2009 to 2012, we detect the possible abnormal of geomagnetic solar quiet variation (S_q) related to the great Tohoku Mw9.0 earthquake, shocked at 11th Mar. 2011, firstly, by NOC analyzing we pick out S_q variation from observation, then by Spheric Harmonic Analyzing (SHA), we depart the inner and external equivalent currents J_e and J_i , well as the two parts model geomagnetic field B_e and B_i , as the results, J_e and J_i , well as the deviations ΔJ_e and ΔJ_i , are distorted in epicenter area at two geomagnetic quiet days of 27th and 23th in Jan. 2011, namely two months before the earthquake, and the x components phase direction changed for MMB ESA KNY OKI stations, besides the enlarged magnitudes at the two quiet days (23th and 27th), especially the

different pattern of OKI at 27th, as double maximum of pre-noon and after-noon variation appeared.