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

[M-ISO3]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 preearthquake 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, electrochemical 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-P02]Signal Discrimination for radon variation at Asahi station, Chiba, Japan

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The lonospheric anomaly is one of the most promising precursory phenomena for large earthquakes. Lithosphere-Atmosphere-Ionosphere Coupling (LAIC) model has been proposed to explain these phenomena. To examine the possibility of the chemical channel of LAIC model through the monitoring of atmospheric electricity parameters, we have installed sensors for the atmospheric electric field (AEF), atmospheric ion concentration (AIC), radon concentration, radon exhalation quantity (REQ), and weather elements. To detect signals related to earthquakes, variations caused by non-tectonic activities should be removed. In this aim, we performed Multi – channel Singular Spectrum Analysis (MSSA) for observed time series of REQ and climatic parameters and investigated correlation among them. By this method, we could extract components which has clear diurnal and semidiurnal variation. We also could discriminate REQ signals related to variation in weather components by evaluate the correlation between them for each component. Then we researched relations between residual REQ variation and crustic activity such as earthquakes or surface deformation. Data observed during different periods should be researched for detail consideration of these relations.