

Signal Discrimination for radon variation at Asahi station, Chiba, Japan

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The Ionospheric 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.