

Study on Lithosphere-Atmosphere-Ionosphere Coupling based on Atmospheric Electricity, Ion Concentration, and Radon Observations

Katsumi Hattori¹⁾, Kaori Oyama¹⁾, Chie Yoshino¹⁾, Ryuichi Furuya²⁾,
Kiyotaka Ninagawa³⁾, and Isao Yamamoto³⁾

1)*Graduate School of Science, Chiba University, JAPAN*

2)*ComSystems, Co. Ltd., JAPAN*

3)*Okayama University of Science, JAPAN*

Recently, Ionospheric anomalies possibly associated with large earthquakes have been reported by many researchers. These reports suggest the existence of "Lithosphere- Atmosphere-Ionosphere Coupling (LAI coupling)", For the LAI coupling, 3 channels have been proposed; they are "acoustic", "chemical", and "electromagnetic" channel. In this study, the chemical channel is considered to be dominant and in order to understand basic characteristics of the chemical channel, we observe ion content concentration, atmospheric electric fields, and meteorological parameters in the southern part of Boso Peninsula. We have installed COM-3700, produced by Com System Inc., to measure ion content concentration at Akishima (Tokyo), Kiyosumi (the southern part of Boso Peninsula) and Uchiura (the southern part of Boso Peninsula). Atmospheric electric field and weather conditions (temperature, humidity, air-pressure and wind conditions) have also been measured simultaneously at Kiyosumi station. We are now collecting fundamental data to understand variations. After the 2011 off the Pacific coast of Tohoku Earthquake(M9.0), We observed anomalous variations of ion content concentration and atmospheric electric field. It may result from atmospheric radioactive material released by the Fukushima Daiichi Nuclear Power Plant accident. We think this variation of atmospheric electricity parameters is response to increase of radioactive material in the atmosphere.

In addition, we have installed radon and their daughter materials observation system since August 2012. Details will be given in our presentation.

Acknowledgement

This research is partly supported by a Grand-in-Aid for Scientific Research of Japan Society for Promotion of Science (19403002), National Institute of Information and Communication Technology (R & D promotion funding international joint research).