

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

©2011. Japan Geoscience Union. All Rights Reserved.



SCG069-P02

Room:Convention Hall

Time:May 25 14:00-16:30

Dual frequency interferometer system to detect for earthquake-related anomalous VHF radio propagation

Yuka Tone^{1*}, Nozomi Ohno¹, Katsumi Hattori¹, Isao Yamamoto²

¹Chiba University, ²Okayama University of Science

Recently, earthquake-related electromagnetic phenomena have been reported in various frequency bands. In the VHF band, it is known that anomalous propagation (invisible propagation) precedes larger earthquakes. It is considered to be caused by reflection and scattering of VHF radio waves due to atmospheric disturbances generated in the preparation process of larger earthquakes. Temporal correlation between earthquake and anomalous propagation has gradually been reported. However, a spatial correlation hasn't understood yet. Therefore, in this study, we develop a VHF band interferometer system and we conduct experimental test to evaluate characteristic of the system to identify disturbed area related to earthquake. The system is composed of two Yagi antennas, crystal filters, amplifiers, Phase Delay Controllers, FM digital tuners, a signal generator, and a Phase Difference analyzer.

Now, we perform observation for invisible propagation at Chiba Univ. with the developed system. The target transmitter is FM Sendai [77.1MHz]. The system is locked in direction for FM Sendai [N13°E] with elevation of 20°. Then, we observe 84.1 MHz which is not used for broadcast as a reference, because a comparison with behavior of dual frequencies helps to identify the source of invisible propagation, that is a natural source or a broadcasting source).