

Electromagnetic anomalies before and after earthquakes observed by the Chubu University ULF/ELF observation network

Jun Izutsu[1]; Kenji Ohta[2]; Masashi Hayakawa[3]

[1] EWSN, Chubu Univ.; [2] Department of ED, Chubu Univ.; [3] Univ. Electro-Comms.

<http://ewsn.isc.chubu.ac.jp/>

We have carried out the observation network of ULF/ELF electromagnetic waves below 50Hz at Nakatsugawa (in Gifu Prefecture), Shinojima (in Aichi Prefecture), and Minami-Izu (in Shizuoka Prefecture). Three magnetic components (Bx, By, Bz) are measured with induction coil antennas (the permalloy of 1.2m length with 100,000 turns of the copper wire) and are digitized with sampling frequency 100Hz. By using FFT analyze, the amplitude ratio and phase difference between the three magnetic components are estimated.

We have already reported on the intensity and arrival direction of background noise observed at Nakatsugawa for earthquakes of Off Kii Peninsula, 2004 Mid-Niigata Prefecture Earthquake, and Sumatra-Andaman Earthquake (Ohta et al., 2005, etc.). We have also observed anomalous excitations of Schumann resonances for large earthquakes (the 1999 Chi-Chi earthquake, the 2004 Mid-Niigata Prefecture earthquake and the 2007 Noto Hantou earthquake). The intensity of a particular mode of the Schumann resonance increased before the large earthquake near the observation station, and decreased after the occurrence of earthquake.

In this study, we compared the data observed at Nakatsugawa with the data observed at Shinojima and Minami-Izu installed in 2007. And also we research about the 2008 Sichuan earthquake and the 2008 Iwate-Miyagi Nairiku earthquake. As a result, neither the anomalous Schumann resonances nor obvious anomalous electromagnetic waves were observed before and after these earthquakes.

In addition, we reviewed the past data observed at Nakatsugawa since 1999 and reinvestigated the anomalies before earthquakes again.

This multi-point observation network is now supported by Academic Frontier Project for Private Universities: matching fund subsidy from MEXT, 2006-2010.