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The observation of seismo-electromagnetic phenomena in Earth Watch Safety Net Research Center, Chubu University

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Earth Watch Safety Net Research Center of Chubu University has established electromagnetic observation network in order to study seismo-electromagnetics.

We have observed ULF/ELF electromagnetic waves at three observation stations (Nakatsugawa, Shinojima and Minami Izu) in order to catch the emissions from the focal region of earthquakes. And we have observed VLF electromagnetic waves at Kasugai in order to measure the change of the propagation characteristic in the ionosphere and atmosphere disturbed by the energy from the epicentral region.

In this study, we talk about the result of the observation by this network. We found that ULF emissions observed at Nakatsugawa station have been propagated possibly from the direction of the epicenter of the 2004 Mid Niigata Prefecture and 2007 Noto Hantou earthquake. However, in the case of the 2008 Iwate-Miyagi Nairiku earthquake and 2009 Suruga-Bay earthquake, the number of ULF emissions whose direction angle was pointed to the epicenter was not outstandingly large.

We have also observed anomalous excitations of Schumann resonances before the 2004 Mid-Niigata Prefecture earthquake and the 2007 Noto Hantou earthquake at Nakatsugawa. However, in the case of the 2008 Iwate-Miyagi Nairiku earthquake and 2009 Suruga-Bay earthquake, there are no anomalous excitations at three stations.

The observed ULF/ELF anomalies possibly associated with earthquakes were not so convincing enough to predict the earthquakes. And so we need more event studies and further research.

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Keywords: seismo-electromagnetics, ULF/ELF observation, Schumann resonance