

Seismo-electromagnetic data observed by Chubu University before and after 2011 Tohoku Earthquake

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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 also 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 before and after the 2011 Tohoku Earthquake.

In our past studies, we had observed anomalous excitations of Schumann resonances before the 2004 Mid-Niigata Prefecture earthquake and the 2007 Noto Hantou earthquake at Nakatsugawa. However, we cannot find any anomalous Schumann resonances before the 2011 Tohoku Earthquake.

We found strong ULF emissions possibly propagated from the direction of the focal region of the 2011 Tohoku Earthquake on March 2, 2011, 9 day before the earthquake. And also we found propagation anomalies of VLF electromagnetic waves several days before and after the 2011 Tohoku Earthquake. But there was large foreshock on March 9. So we cannot point out that these anomalies were precursors of the 2011 Tohoku Earthquake, and even cannot point out that they were precursors of earthquakes in this stage.

The observed ULF/ELF/VLF anomalies possibly associated with earthquakes were not so convincing enough to predict the earthquakes. And so we need more case studies, further research, and trying to make a probabilistic forecast.

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