

Observation and detection of ULF geomagnetic changes before earthquake in Kanto

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1. Research Purpose / Background

Many electromagnetic phenomena relevant to an earthquake have been reported in recent years.

Since it precedes with an earthquake and, it is thought that these electromagnetic phenomena are very important for earthquake prediction.

In observation of an earthquake electromagnetism phenomenon

1-1. The technique of observing directly the electromagnetic waves emitted from the focus on the ground

1-2. The technique of detecting the ionospheric perturbation relevant to an earthquake using the terrestrial existing electric wave

1-3. The technique of detection of ionospheric perturbation using a satellite, etc.

Its attention was paid to ULF magnetic field change considered to precede with an earthquake and to generate also in this research.

In ULF, a frequency band of 10 Hz or less is put, and it is a detectable range.

From the epicenter to observation station show that

Magnitude 6 -> radius 60 km

Magnitude 7 -> radius 100 km

It is experientially calculated from the past observations.

That is, it is shown that it is very effective in pinpointing a position in advance to a big earthquake.

It aims at contributing to future seismic activity prediction in building a ULF network of observation and analyzing observational data.

2.The special feature of this research

Now, prepare for the earthquake in the metropolitan area.

2-1. The south Kanto network of a ULF magnetic field observation exists, and it is storing the data for about ten years.

2-2. The result which suggests significance statistical about an earthquake and the abnormalities in ULF has been obtained.

2-3. It is necessary to reinforce the present network.

2-4. We are anxious about the earthquake of magnitude 8 classes off Boso, and it is necessary to collect the basic data immediately after the earthquake on March 11, 2011.

Furthermore, I would like to tie to generating mechanism pursuit of an earthquake electromagnetism phenomenon by also doing many researches of other techniques (change of the radon concentration in the atmosphere, etc.), and conducting synthetic analysis in combination with ULF.

3. Research Program and Method

After 3.11, the ULF observation station which targeted the offing of Choshi distortion is not released completely offshore. And we are anxious about the occurrence of a big earthquake, so observation station was newly established in Asahi-city, Chiba, and observation was started.

Next, synthetic analysis is conducted by combining acquisition data with the ULF data of other observation station, and the other technique observational data (radon concentration observation in the atmosphere, etc.).

4. Result Expected

It was difficult to catch ULF magnetic field change preceded with the earthquake off shore from Choshi in the once network of observation.

Since there are comparatively many occurrences of an earthquake also before that the distortion after 3.11 remains, and 3.11 in this area, a possibility that ULF electromagnetic radiation is caught in advance and can be detected by establishing an observation station in this area newly becomes very high as stated previously.

A possibility that a big earthquake will occur can greatly contribute to the elucidation of the generating mechanism of a precursor in the detection accuracy of an earthquake ULF signal analyzing increase and its data by observing in high area.

Furthermore, an earthquake precursor is detected, and the research to solve is useful for future disaster reduction, and is a field also with great expectation from society.

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