

POSSIBILITY OF DIRECTION FINDING OF EPICENTER BY ELECTROMAGNETIC PRECURSORS OF EARTHQUAKE AND APPLICATION TO EARTHQUAKE PREDICTION

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Recent observation in the USSR appears to suggest that the electromagnetic emission occurs just prior to earthquakes. To apply this phenomenon for earthquake prediction, the instruments are set up at Sugadaira Space Radio Observatory of University of Electro-Communications, Nagano, Japan, under the Japan-USSR Cooperation Program in 1980. The recorded noise level at 81 kHz is comparatively quiet throughout 24 hours. However, an earthquake (M=7) occurred at 0733 UT on March 31, 1980, epicenter location of in Kyoto prefecture. The instrument recorded an anomalous amplitude increases to 15 dB higher than the normal level about one half hour before main shock as shown in Figure 1. VLF level was also recorded unusual impulsive emission below 1.5 kHz occurred shortly before earthquake.

Similar 81 kHz emissions were observed 15 times to the earthquakes of M over 5.0 and epicenter location on the ground area, which included the case of "Chubu earthquake" at Ontake area.

Now the authors have been built the multipoints new direction finding system around the Tokyo area for the pointing of epicenter under the grants of ministry of education, Japan in the fiscal years of 1981 and 1982. One of the most successful result of the epicenter prediction by this networks was obtained the earthquake at 1214 UT, February, 1983, in the Ibaragi prefecture of M=6.3. Figure 2 shows the distribution and location of observation points and the location of epicenter of this earthquake.

In the prior to about 8 hours before the main shock, all stations started the record of many short timing anomalous emissions until the main shock. The all stations have set up N-S and E-W sensors. The data of E-W sensors of three stations, which located to western side from epicenter, detected the signals at same time in each other. The separation between stations were about 50 to 100 km. These stations records are illustrated in Figure 3. Figure 4 shows the vector relationship of this direction finding.

This results suggests highly possibility to apply the prediction of the epicenter location just prior to earthquake by the multipoints radio receiving networks of electromagnetic emission detector. But the best reply to investigation on the origin of emission mechanism is now under the consideration.

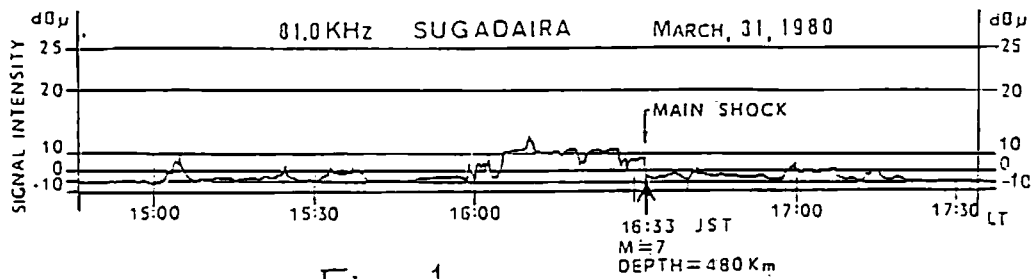


Fig 1

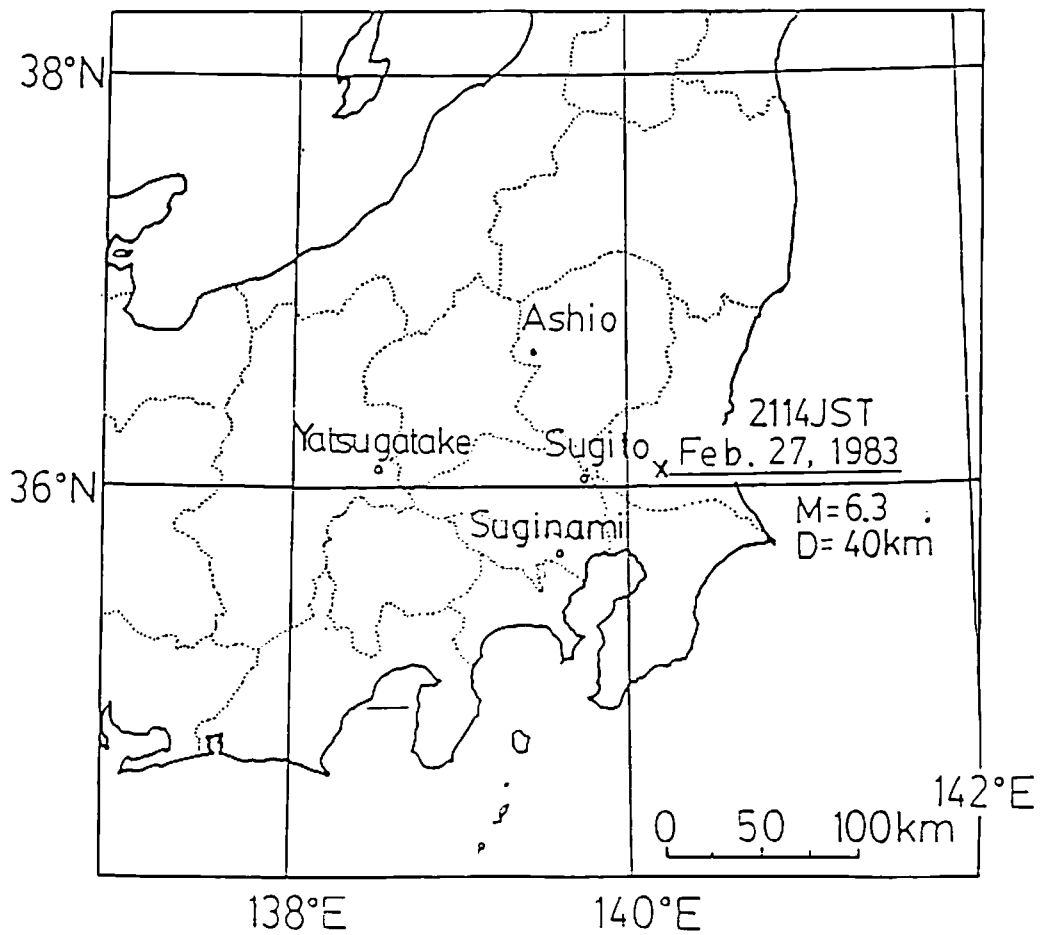


Fig. 2

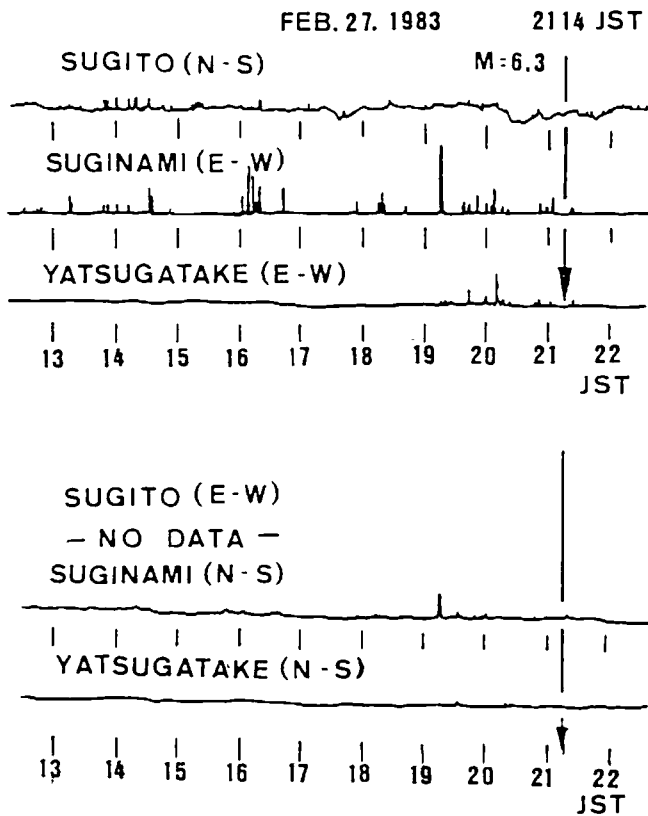


Fig 3

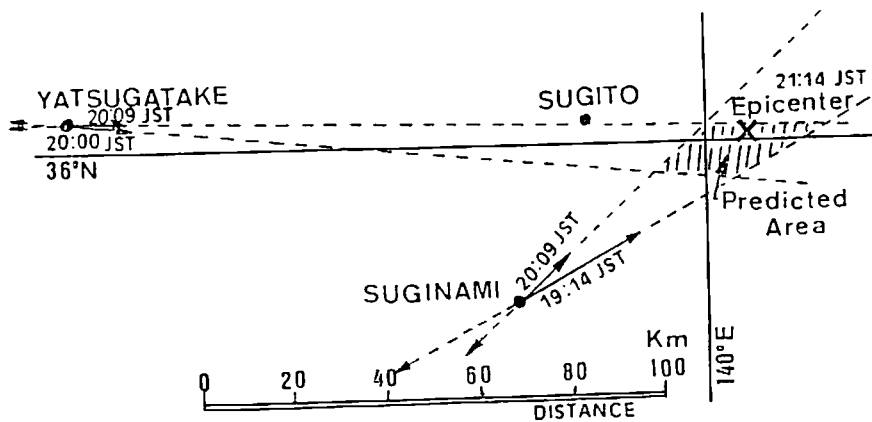


Fig 4