

北海道, 東北, 中部地方における  
ネットワークMT法観測の概観

**Overview of the Network-MT experiments  
in Hokkaido, Tohoku and Chubu Districts**

上嶋誠 (東大地震研)・Network-MT 研究グループ

M. Uyeshima (ERI, U. Tokyo) & Research Group of the Network-MT experiments

**Abstract**

The Network-MT (NMT) experiment started in 1980s. It initially aimed at investigating SES (Seismic Electric Signals) of the VAN method (Varotsos and Alexopoulos, 1984ab). Based on the pioneering experiments by Mori (1985, 1987), done in the vicinity of the Mito city in Ibaraki, it used the metallic telephone line network and earth facilities of the telephone company to measure the electrical potential differences with long dipole lengths.

In 1989, for the purpose of elucidating the regional and deep electrical conductivity structure, the first NMT experiment was performed in the central and eastern part of Hokkaido, N Japan (Uyeshima et al., 2001), which was followed by Aomori experiment in 1990. In these experiments, we could use really long (~100km) metallic Network Trunk Connection lines connecting the central telephone stations. We also used the Network lines connecting the central station and the branch repeater stations. In this way, we could completely cover a target area. During this period, data recorders (SES87) with 12 bits AD and 20s sampling, those (DRF1) with 16bits AD and 1min sampling, and those (TNK) with 16 bits AD and 30s sampling were used to measure electrical potential differences.

In 1993, new data recorders (SES93) with 20 bits AD and 1 or 10s sampling were developed, and have been used up to now. By using the new instruments, we started new NMT surveys in 1994-1997 covering almost whole Tohoku district, which included Akita, Iwate, Yamagata and Miyagi (Uyeshima et al., 2002). In this period, the metallic Network Trunk Connection lines were almost completely replaced with the optical fiber cables. Then only the Network lines between the central station and the branch repeater stations could be used.

Meanwhile, from c. 2003, even the Network lines between the central and the branch repeater stations were almost completely replaced with the optical fiber cables. Then self-made electrodes were buried in the respective toll area, and electrical potential differences between a telephone station and the purpose build electrodes in the respective toll area were measured (Yamaguchi et al., 2009). Until 2004, we used public telephone lines to transmit the data to ERI. After 2004, the data transmission was done by using the LAN with the aid of ISDN or ADSL lines. In 2006-2008 and in 2011-2013, the NMT surveys along the Niigata-Kobe Tectonic Zone, respectively, in the vicinity of the Atotsugawa Fault (Uyeshima et al., 2007, Usui et al., 2010), and in the 1891 Noubi earthquake source region were performed.