

Key Stone Project VLBI Stations (Kashima, Koganei, Miura, and Tateyama)

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Abstract

Four stations of the Key Stone Project Network at Kashima, Koganei, Miura, and Tateyama continued frequent and automated VLBI observations throughout the period from March 1999 to December 2000. From the end of June 2000, unusual motions of Tateyama and Miura stations were detected as the results of volcanic and seismic activities near the Miyakejima and Kozushima Islands. To investigate and monitor the motions of Tateyama station, the frequency of the VLBI observations at Tateyama, Kashima, and Koganei stations were included and the observations were performed every day almost continuously from June 2000 through November 2000.

1. Introduction

The Key Stone Project (KSP) VLBI Network consists of the four stations at Kashima (Ibaraki), Koganei (Tokyo), Miura (Kanagawa), and Tateyama (Chiba). The geographic locations of these four stations are shown in Figure 1.

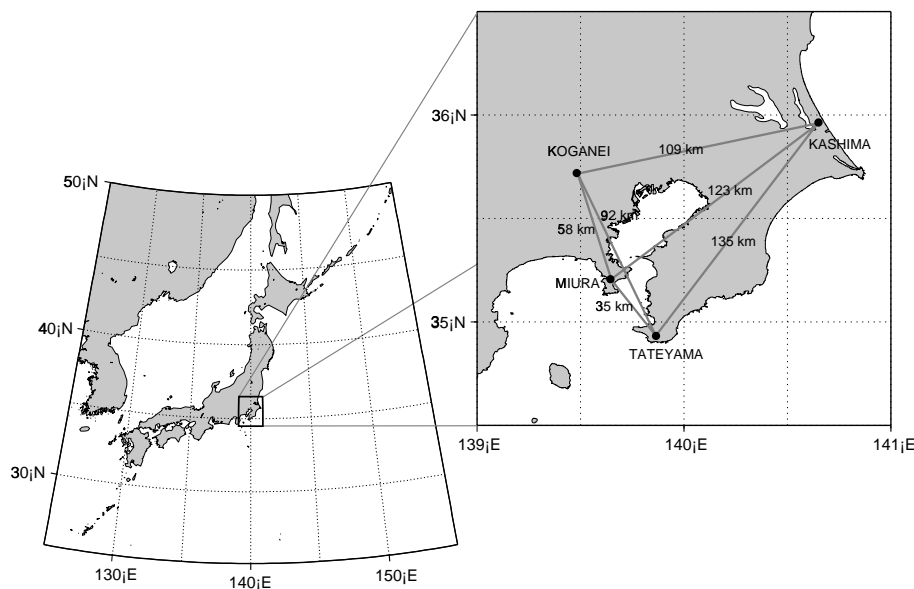


Figure 1. Geographic locations of four Key Stone Project network sites.

Each station is equipped with an 11-m diameter antenna. Kashima, Koganei, and Tateyama stations are connected with the real-time VLBI system while the Asynchronous Transfer Mode (ATM) network to Miura station became unavailable in May 1999. Since the correlation processing of the tape-based VLBI data takes longer than the real-time VLBI system, the frequency of the VLBI observations at Miura station was decreased from every two days to every six days since May 1999. Observation data rate is 256 Mbps since October 1998.

2. Activities

Table 1 lists the number of successful VLBI sessions performed at each station during the period between March 1999 and December 2000.

Table 1. Number of successful VLBI sessions performed at each station.

Station names	Number of successful sessions
Koganei	398
Kashima	391
Miura	123
Tateyama	394

The number of VLBI sessions performed with the Miura station is smaller than the other three stations since the Miura station has participated only in the tape-based VLBI sessions which were performed every six days since May 1999. Considering that the total number of days during the period is 672 days, the other stations were performing VLBI observations about 60% of the time. The reason why the number of VLBI sessions exceeded 50% by about 60 days was because daily VLBI sessions were performed with four stations in March 1999 and with the three stations except Miura station between July 22 and November 11, 2000. The daily VLBI sessions were performed in March 1999 to obtain continuous VLBI data before the ATM network link to the Miura station was terminated in May 1999. The other daily VLBI sessions from July 22, 2000 were performed to follow the unusual site motion of the Tateyama station due to the volcanic and seismic activities near the Miyakejima and Kozushima Islands [1]. Both of these attempts to perform daily continuous VLBI observations for such a long period were successful and valuable data were obtained. These achievements demonstrated how robust the four KSP VLBI Network stations are and the high reliability of the automated observation and data processing systems.

3. Future Plans

It was planned to terminate the operations of the Tateyama and Miura stations in September 2000 since the project was originally started as a five-year project. However, unusual site motions were detected for Tateyama and Miura stations in July 2000 and the operations of these two stations were extended. The operation of the Miura station was extended for three months and the operation of the Tateyama station was extended more than one year. The last VLBI session with the Miura station was completed January 5, 2001. The antenna and the observation facilities of the Miura station will be transported to the Tomakomai Experimental Forest of the Hokkaido University (Figure 2). On the other hand, the antenna and the observation facilities of the Tateyama station will be transported to the campus of the Gifu University in 2002. Both of these stations will be used for geodetic and astronomical VLBI observations in the future.

References

- [1] Yasuhiro Koyama, Ryuichi Ichikawa, Mamoru Sekido, Tetsuro Kondo, Hitoshi Kiuchi, Jun Amagai, and Taizoh Yoshino: Site position displacements due to the seismic and volcanic activities in the area

of Izu islands detected by the KSP VLBI Network, CRL IVS Technology Development Center News, No. 17, pp.8-10, November 2000.

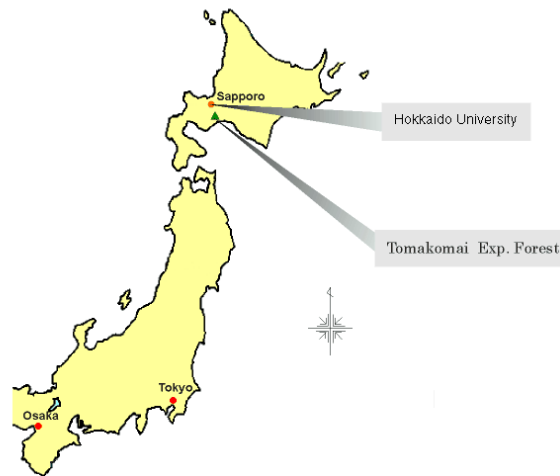


Figure 2. Geographic location of the Tomakomai Experimental Forest of the Hokkaido University. The antenna and the VLBI observation facilities of the Miura station will be transported to the site in 2001.