

Data Center at Communications Research Laboratory

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Abstract

The Data Center at Communications Research Laboratory archives and releases the databases and analysis results processed at the Correlation Center and the Analysis Center at Communications Research Laboratory. Regular VLBI sessions with the Key Stone Project VLBI Network were the primary objects of the Data Center. These regular sessions continued until the end of November 2001. In addition to the Key Stone Project VLBI sessions, Communications Research Laboratory has been conducting geodetic VLBI sessions for various purposes and these data are also archived and released by the Data Center.

1. Introduction

The IVS Data Center at the Communications Research Laboratory (CRL) archives and releases the databases and analysis results processed by the Correlation Center and Analysis Center at CRL. Major parts of the data are from the Key Stone Project (KSP) VLBI sessions [1] but other regional and international VLBI sessions conducted by CRL are also archived and released. Since routine observations of the KSP network terminated in the end of November 2001, there were no additional data for the KSP regular sessions in 2002. In 2002, five geodetic VLBI sessions were carried out and processed. The analysis results in the SINEX (Solution Independent Exchange) file format and other form of data formats are available from the WWW and FTP servers. Database files generated with the Mark-III database file format are available upon request and will be sent to the users in DDS tape cartridges. Database files of non-KSP sessions, i.e. other domestic and international geodetic VLBI sessions, are also available from the FTP server. Table 1 shows the list of WWW and FTP server systems maintained by the Data Center at CRL.

Table 1. URL of the WWW and FTP server systems.

Service	URL
KSP WWW pages	http://ksp.crl.go.jp/
IVS WWW mirror pages	http://ivs.crl.go.jp/mirror/
FTP	ftp://ftp.crl.go.jp/pub/dk/ivs/

The maintenance of these server machines has been moved from the VLBI research group of the CRL to the common division for the institutional network service of the laboratory in 2001 to improve the network security of these systems.

2. Data Products

2.1. KSP VLBI sessions

The KSP VLBI sessions were performed with four KSP IVS Network Stations at Kashima, Koganei, Miura, and Tateyama on a daily or bi-daily (once every two days) basis until May 1999. The duration of each session was about 23.5 hours. Within the period, daily observations

were performed from March 1 until April 1, 1999 to obtain continuous VLBI data series for various investigations such as studies about the atmospheric delay models and for the improvements of the data analysis technique. The high-speed ATM (Asynchronous Transfer Mode) network line to the Miura station became unavailable in May 1999 and the real-time VLBI observations with the Miura station became impossible. After this time, the real-time VLBI sessions were performed with three stations at Kashima, Koganei, and Tateyama. Once every six days (every third session), the observed data were recorded to the K4 data recorders at three stations and the Miura station participated in the sessions with the tape-based VLBI technique. In this case, the observed data at three stations except for the Miura station were processed in real-time and the analysis results were released promptly after the observations completed. A day later, the observed tapes were transported from Kashima, Miura, and Tateyama stations to Koganei station for tape-base correlation processing of the full six baselines. After the tape-base correlation processing completed, the data set produced with the real-time VLBI data processing was replaced by the new data set.

In July 2000, unusual site motion of the Tateyama station was detected from the KSP VLBI data series, and the frequency of the sessions was increased from bi-daily to daily since July 22, 2000. The daily sessions were continued until November 11, 2000, and the site motion of the Tateyama and Miura stations were monitored in detail. During the period, it was found that Tateyama station moved about 5 cm to the northeast direction. Miura station also moved about 3 cm to the north. The unusual site motions of these two stations gradually settled and the current site velocities seems to be almost same as the site velocities before June 2000. By investigating the time series of the site positions, the unusual site motion started from sometime between the end of June 2000 and the beginning of July 2000. At the same time, volcanic and seismic activities near the Miyakejima and Kozushima Islands began. These activities are believed to have caused the regional crustal deformation near the area, and the unusual site motions at Tateyama and Miura are explained by the event.

2.2. Other VLBI sessions

In addition to the KSP regular VLBI sessions, domestic and international geodetic VLBI sessions have been conducted by CRL in cooperation with Geographical Survey Institute (GSI) and other organizations. These sessions are listed in Table 2. The observed tapes of these sessions were correlated by using the K-4 correlator at CRL either at Koganei or at Kashima.

Table 2. Geodetic VLBI sessions conducted by CRL

Year	exp. names	sessions
1999	K4 Tie	K4TIE1, K4TIE2
2000	Japan Tie GIFT	JPNTI2, JPNTI3, JPNTI4, JPNTI5, JPNTI6 GIFT01, GIFT02
2001	Japan Tie HOKT	JPNTI7 HOKT01
2002	HOKT CUTE Usuda	HOKT02 CUTE01, CUTE02, CUTE03 USUDA1

K4 tie experiments were carried out with Fairbanks, Wettzell (K4TIE2 only), Kashima 34m, and four KSP VLBI network stations to determine coordinates of the KSP network stations in the International Terrestrial Reference Frame (ITRF). Japan Tie experiments were carried out with Tsukuba 32m, Kashima 26m, and Kashima 34m stations to determine precise transformation vector from Kashima 26m station to Tsukuba 32m station. GIFT experiments and HOKT experiments were performed to determine precise position of the Gifu 11m station and Tomakomai 11m station, respectively. These two stations are the recently established geodetic VLBI stations by transporting KSP VLBI stations at Tateyama and Miura, respectively. CUTE experiments are intended to perform domestic VLBI experiments with two KSP VLBI stations, Gifu 11m station, and Tomakomai 11m station. CUTE is the acronym of 'CRL and University Telescope Experiments'. Usuda experiment was performed to determine precise position of the Usuda 64m station.

Figure 1 show the number of geodetic VLBI sessions and number of valid observed delays used in the data analysis for each year. It has to be noted that the CUTE03 session performed on December 16, 2002 is not included because the observation tapes are being processed.

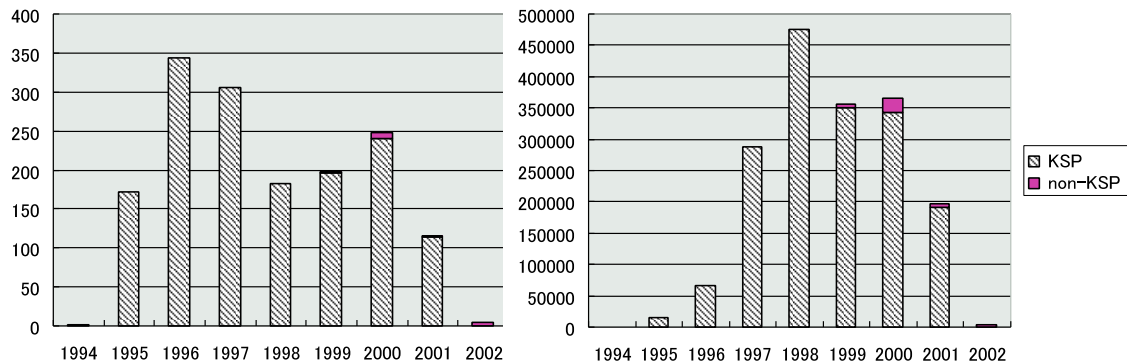


Figure 1. Number of sessions (left) and observed delays (right) used in the data analysis for each year up to the year 2002.

3. Future Plans

Although the regular VLBI sessions with the KSP VLBI network finished in 2001, the IVS Data Center at CRL will continue its service and will archive and release the analysis results accumulated by the Correlation Center and Analysis Center at CRL. In addition, a number of VLBI sessions are planned to be conducted in the year 2003 and these data will be archived and released to the public users.

References

- [1] Special issue for the Key Stone Project, J. Commun. Res. Lab., Vol. 46, No. 1, March 1999