

Tsukuba 32-m VLBI Station

Yoshihiro Fukuzaki

Abstract

This report summarizes the activity at the Tsukuba 32-m VLBI station (Fig 1) by the Geographical Survey Institute (GSI) VLBI group. The Tsukuba 32-m VLBI station has participated in several international VLBI sessions. Domestic experiments (JADE sessions) are carried out periodically using GSI's domestic network, which includes the Tsukuba 32-m VLBI station. We have a plan to increase the JADE sessions and perform collocation surveys at the Tsukuba and Aira stations.

1. Activities

Tsukuba 32-m VLBI station has participated in several international VLBI experiments that are listed in Table 1.

GSI has five permanent stations in Japan. Distributions of these stations are shown in Fig 2. The network is named GARNET (GSI Advanced Radiotelescope Network). In 1999 and 2000, domestic experiment using GARNET was carried out four times a year. This session is named JADE (Japanese Dynamic Earth observation by VLBI). From JADE-0003 Gifu station with 3m antenna owned by Gifu University has participated in JADE session. The network has now six stations and ten baselines. The result of the JADE sessions is available on the GSI VLBI Web page (<http://vlb.db.gsi.go.jp/sokuchi/vlbi/english>).

A tie experiment among the stations that have a large antenna, Kashima 26-m, Kashima 34-m and Tsukuba 32-m, was carried out in 2000. This session is named JPNTI. The purpose of JPNTI sessions is to transfer the coordinates of Kashima 26-m and Kashima 34-m established by a long period of observation to Tsukuba 32-m VLBI station. Four KSP stations also participate in this session.

The data for CORE-OHIG6,7,9,12 sessions in Syowa station, Antarctica were dubbed from K4 into MarkIIIa at Tsukuba 32-m VLBI station. These data were correlated at Bonn Correlator and analyzed at GSFC.

Table 1. International experiments at Tsukuba 32-m VLBI station after Nov. 1999

Experiment	Code
CORE-A	CA075,76,77,79,80,81,82,83
CORE-1	C1001,02,03,04,05,06,07
CORE-B	CB701,702
VLBA	RDV19,20,21,22,23,24
JPNTI	JPNTI2,3,4,5,6
Other	NEOS-A351, SURVEY001, CRF09, APSG07

2. Changes

The staff of VLBI group at GSI has changed. Table 2 lists the present staff.

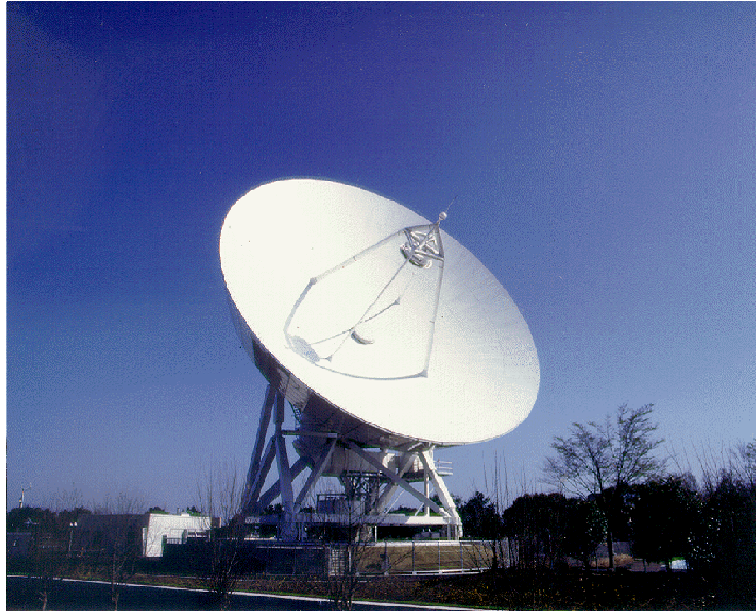


Figure 1. Tsukuba 32-m VLBI antenna.

Six months after installing Tsukuba 32-m antenna, the Azimuth rail, which was 73 kg per meter and 10 cm width, was cracked because the stress from the wheel was larger than the value designed by the antenna manufacturer. In April 1999, the rail was replaced with a larger one (Fig 3). So far, no significant problems with the rail have occurred. By this replacement of Azimuth rail, the height of the reference point of Tsukuba 32-m antenna has changed +43.7mm.

GSI's internet domain name has been changed from gsi-mc.go.jp to gsi.go.jp since January 2001.

Table 2. Staff working at GSI VLBI group

Name	Position	Jobs
Shigeru MATSUZAKA	IVS Networks Representative	
Yoshihiro FUKUZAKI	Leader of VLBI group	
Tadayuki AKIYAMA	Collocation chief	Collocation, Operation
Kousei SHIBA	Operation chief	Experiments Coordination, Operation
Kazuhiro TAKASHIMA	Visiting scientist at GSFC	Improvement of software for VLBI analysis
Masaru YAZAWA	Analysis chief	Baseline Analysis, Operation
Shinobu KURIHARA	Operator	Baseline Analysis, Operation
Michiko ONOGAKI	Operator	Antenna and H-maser maint., Operation
Kohei MIYAGAWA	Correlation chief	Correlation, Operation
Kyoko KOBAYASHI	Assistant	Correlation, Operation

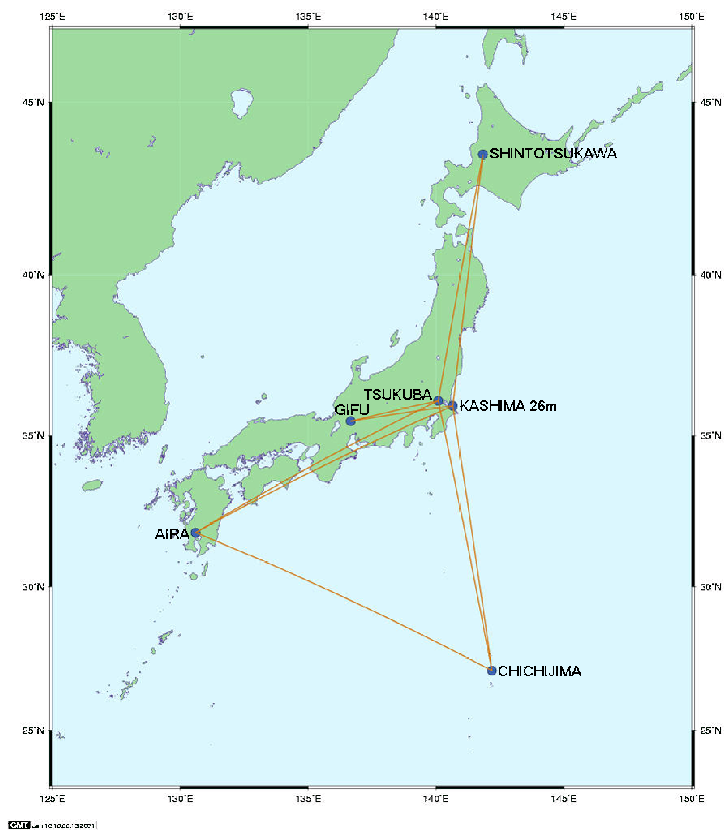


Figure 2. GSI domestic VLBI network and Gifu station.



Figure 3. Azimuth rail replacement (Left: before Right: current).

3. Prospect

It is planned to increase JADE sessions from four times a year to eight.

IGS station (TSKB) is close by the 32m VLBI antenna (300m) at Tsukuba station, and a GPS station of GSI Earth Observation Network is close by the VLBI antenna at Aira station. Collocation survey at Tsukuba and Aira station will be performed in 2001.

References

- [1] Ishihara, M., K. Nemoto, M. Iwata, K. Shiba, K. Takashima, and S. Matsuzaka: Tsukuba 32-m VLBI station, IVS 1999 Annual Report, pp.115–118, August 1999
- [2] Ishihara, M., K. Nemoto, M. Iwata, K. Shiba, K. Takashima, and S. Matsuzaka: Tsukuba VLBI Center, IVS 1999 Annual Report, pp.160–163, August 1999
- [3] Takashima, K., S. Kurihara, M. Ishihara, K. Nemoto, M. Iwata, K. Shiba, M. Onogaki, and K. Kobayashi: Status and Results of GSI Domestic VLBI Networks, Bull. Geograph. Surv. Inst., Vol. 46, pp.1–9, March 2000