

Tsukuba 32-m VLBI Station

Kazuhiro Takashima, Yoshihiro Fukuzaki

Abstract

This report summarizes the activity at Tsukuba 32-m VLBI station by the Geographical Survey Institute (GSI) VLBI group. Tsukuba 32-m VLBI station has participated in several international sessions and domestic experiments (JADE sessions) carried out periodically using GSI's domestic network, which includes Tsukuba 32-m VLBI station. We have also carried out local survey at Tsukuba and Aira station at the beginning of 2001.

1. General Information

Tsukuba 32-m VLBI station (TSUKUB32 Table 1 and Figure 1) was constructed at Geographical Survey Institute in 1998. TSUKUB32 has continued to perform geodetic VLBI experiments on a regular basis in several international and domestic VLBI experiments that are listed in Table 2.

GSI has five permanent stations in Japan. The network of these stations is named GARNET (GSI Advanced Radiotelescope Network).

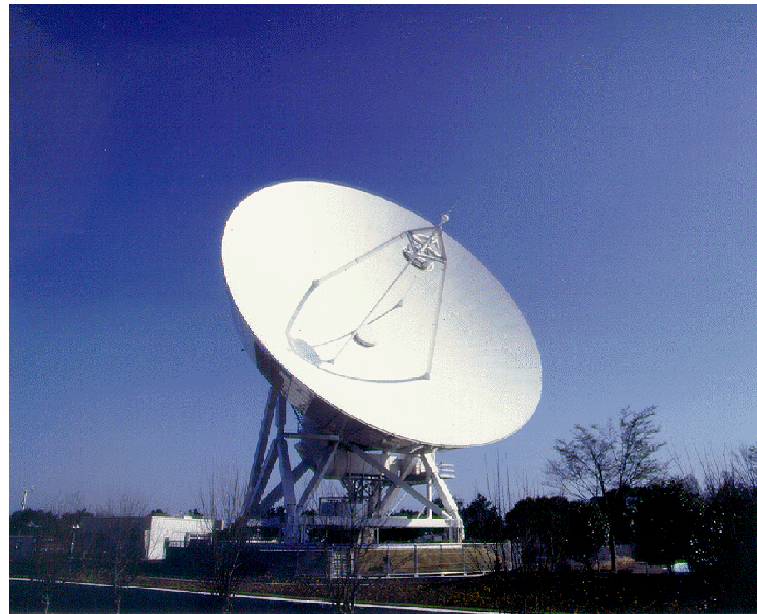


Figure 1. Tsukuba 32-m VLBI antenna.

2. Component Description

The current configuration of Tsukuba 32-m is shown in Table 3. In 2001, we have made some improvements. The version of current implemented Field System is FS-9.5.2. The Mark IV decoder

Table 1. Location and address of Tsukuba 32m VLBI station

Latitude (deg)	36.1031 N
Longitude (deg)	140.0887 E
Altitude	44.7m
Address	Geographical Survey Institute Kitasato 1 Tsukuba Ibaraki 305-0811 JAPAN
Web	http://vldb.gsi.go.jp/sokuchi/vlbi/english/

Table 2. The experiments at Tsukuba 32m VLBI station in 2001

Experiment	Code	Number
CORE-1	C1008,010,011,012,013,014,015,016,017,018,019	11
CORE-C	CC101,102,103	3
VLBA	RDV25,26,27,28,29,30	6
CRF	CRF10,11,12	3
JADE(regular)	JD0101,103,105,107	4
JADE(remote)	JD0102,104,106	3
JAPAN-TIE	JPNTI7	1
Other	SURVEY002, APSG09	2
Total		33

has been installed in June, 2001. The K4 decoder has been developed and also installed at the same time. The video converter has been modified from USB only to USB and LSB with 8 MHz BW in order to match the change of frequency sequence of CORE-1. GSI's internet domain name has been changed from gsi-mc.go.jp to gsi.go.jp as of January 2001.

Table 3. Configuration of Tsukuba 32m antenna

Site 8-letter code (2-letter)	TSUKUB32 (Ts)
IERS DOMES number	21730S007
CDP number	7345
Site Position (ITRF2000)	
X coordinate (m)	-3957408.752
Y coordinate (m)	3310229.367
Z coordinate (m)	3737494.789
SEFD (Jy)	X:320 S:360
Az slew 3.0 deg/sec	Range 10.0 - 710.0
El slew 3.0 deg/sec	Range 5.0 - 88.0

3. Staff

The staff of VLBI group at GSI has changed. Table 4 lists the present staff members.

Table 4. Staff working at GSI VLBI group

Name	Position	Jobs
Shigeru MATSUZAKA	IVS Networks Representative	
Yoshihiro FUKUZAKI	Leader of VLBI group	
VACANT	Collocation chief	Collocation
Katsuhiko NAGATA	Operation chief	Experiments Coordination, Operation
Masaru YAZAWA	Analysis chief	Baseline Analysis, Operation
Kazuhiro TAKASHIMA	VLBI chief	
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

Ms. K. Kobayashi will leave GSI at the end of February, 2002 due to expiration of her contract terms. Mr. Y. Fukuzaki will visit Bonn University from beginning of March, 2002 for one year as a visiting scientist.

4. Current Status and Activities

In 2001, domestic experiment using GARNET was carried out four times with local operators and three times using remote controlled operation. This session is named JADE (Japanese Dynamic Earth observation by VLBI). GIFU3 station with 3m antenna owned by Gifu University has participated in JADE session since September 2000. The network has now six stations and ten baselines. The result of JADE session is available on the GSI VLBI Web page (<http://vlb.db.gsi.go.jp/sokuchi/vlbi/sess/index.html>).

Tie experiments among the stations that have a large antenna, Kashima 26-m, Kashima 34-m and Tsukuba 32-m were carried out from March 2000 to February 2001. These sessions are 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 owned by CRL also participate in these sessions.

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

5. Future Plans

It is planned to increase JADE session from four times a year to eleven by remote controlled operation.

Kashima 26m antenna (Figure 2), which is the first one constructed for VLBI in Japan, will be destroyed in 2002. The antenna which is the first Japanese antenna for VLBI will come to an end this year. We have already carried out six JAPAN-TIE sessions to tie between Kashima 26m

and Tsukuba 32m. Tsukuba 32m will act as the reference station in Japan, taking on the job of Kashima 26m from now on.



Figure 2. Kashima 26m VLBI antenna

References

- [1] Y. Fukuzaki: Tsukuba 32-m VLBI station, IVS 2000 Annual Report, pp.135–138, February 2001
- [2] 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