

Introduction of K5 VSSP system into VERA Mizusawa Station

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<http://veraserver.mtk.nao.ac.jp/index-J.htm>

VERA, which consists of four VLBI stations with 20m diameter antennas, is required to obtain the coordinates accuracy of 1-2mm within the network, and the accuracy of 10mm in the ITRF.

In the geodetic VLBI observation within VERA network, we use S/X bands and 1Gbps recording system (16MHz band width, 16ch, 2bit sampling) using digital filter. We succeeded first 24-hour geodetic observation with this system in November 2004. We operate semi-regular geodetic observations twice a month at present. The estimated observation errors in the horizontal positions are about 2mm and vertical ones are 8mm for the one time.

VERA Mizusawa station joins with the JADE experiments which are coordinated by Geographical Survey Institute of Japan (GSI) since December 2002. These observations aimed to establish the ITRF coordinates for Mizusawa station. We used K4 backend system (4MHz band width, 16ch, 1 bit sampling, 128Mbps record) in these JADE observations till January 2005 (JADE0501). We introduced K5 VSSP system into Mizusawa station in January 2005 in order to correspond with the backend system replacement in GSI. We carried out fringe test with 11m diameter antenna of Gifu University with the help of Dr. H. Takaba on early February. We are planning to carry out parallel recording with K4 and K5 systems in JADE observations on February and March. After the comparison with K4 and K5 systems, we will change over the backend from K4 to K5. The system compatibility with other VLBI stations will increase by introducing the K5 system, and the expansion of the VLBI network is expected.

At present, only Mizusawa station in VERA can join with JADE observations. Thus other VERA stations are connected with ITRF coordinates via Mizusawa station. We are now developing the 1Gbps recording system which is same as VERA stations one in Mitaka correlation center. The system will be used to record the GSI Tsukuba VLBI station's data which is transferred via optical fiber network. We introduced hardware parts already and now we are developing field system for the backend system. After we develop the VERA compatible backend system in Mitaka, we can construct five VLBI network stations with GSI Tsukuba station and VERA stations. The accuracy of coordinates tie with ITRF will increase greatly.