

## JAPANESE VLBI PROJECT - VERA

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**ABSTRACT.** The Japanese VLBI project VERA (VLBI for the Earth Rotation study and Astrometry) is being designed. It will be dedicated to regular monitoring of the Earth's rotation and astrometry. VERA will be composed of two antennas spanning about 2300km and a correlator of multi-station capability. The diameters of the antennas are 35m and 15m.

### 1. TARGET OF THE VERA

The International Latitude Observatory of Mizusawa (ILOM) and the Tokyo Astronomical Observatory (TAO) designed the main points of the Japanese VLBI network VERA (VLBI for the Earth Rotation study and Astrometry). It will be dedicated to regular monitoring of the Earth's rotation in an international VLBI network like the current IRIS (IAG and COSPAR Sub-Commission; International Radio Interferometric Surveying). The accuracies of the Earth rotation parameters are expected to be remarkably improved by the participation of the VERA (Yokoyama and Manabe, in press). VERA also aims at intensive observations of UT1 and nutation using its own single baseline. It will also be used radio astrometry purposes, for example, establishment of the celestial reference frame and measurements of radio-source distances. In addition, it is expected to be used both for astrophysics and geophysics in cooperation with other fixed stations, mobile systems, SLR stations and GPS receivers. VERA will be open for any users, in principle.

### 2. OUTLINE OF THE VERA

VERA is planned to be composed of two antennas equipped with the K-3 or the Mark III system. One antenna of 35 m diameter is expected to be located in the vicinity of the ILOM which is in the northern part of the Japanese main island. The other antenna with the diameter of 15 m will be located in one of the South-West Islands. The baseline spans about 2300 km. Antennas will be built on granite bedrocks to

avoid irregular local displacements. The slew rate of the antennas will be over 1 degree per second for raising the efficiency of the observation. A receiver of 22 GHz will be available, in addition to those of S and X bands. 43 GHz band is expected to be received, because RMS error of the surface accuracy of the antennas is under 0.5mm. The correlation center with a multi-baseline correlator will be located in the present complex of the ILOM. VERA will be brought into operation in three years.

### 3. PROMOTION OF THE VERA

The committee for promoting the VERA was organized early 1986 after the agreement of the Japanese group of astrometry and geodesy for constructing a domestic single baseline VLBI network. The committee members come from the ILOM, the TAO, the Radio Research Laboratory, the Geographical Survey Institute, the Earthquake Research Institute and the Hydrographic Department. Two VERA symposia were already held to discuss hardware and software systems of the VERA. Scientific proposals for the use of the VERA were also made at the symposium from researchers of various fields for discussing scientific targets and main points of the VERA. The ILOM is a responsible institute for the realization of this project. System design is being made at the ILOM in collaboration with other relevant institutes.

### REFERENCE

- K. Yokoyama and S. Manabe : in press, "The Role of Japan in the New International Earth Rotation Service ( Expected Contribution of the Planned Japanese VLBI System VERA )", in *Earth's Rotation and Reference Frames for Geodesy and Geodynamics*.