Continuous Broadband Observation with Ishioka VLBI Station

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The International VLBI Service for Geodesy and Astrometry (IVS) promotes the transition from legacy VLBI system with S/X frequency bands to the next-generation VLBI system called VGOS (VLBI Global Observing System). The goals of VGOS are “1-mm position accuracy”, “continuous measurements”, and “turnaround time to initial geodetic results of less than 24 hours” for contributing to the Global Geodetic Observing System (GGOS), which provides the geodetic infrastructure for monitoring the Earth system. VGOS requires a receiver with wide bandwidth (3-14 GHz) and an antenna with high slewing rate. The Geospatial Information Authority of Japan (GSI) constructed a new VLBI facility in Ishioka in 2014 which meets the VGOS requirements. The Ishioka VLBI station is regularly involved in international VLBI observations with S/X bands as one of the most important stations of IVS, and is in preparation for VGOS operation. In August 2016, we performed experimental broadband observations and confirmed the compatibility of equipment between Ishioka and other overseas stations.

From November through December 2017, the international continuous VLBI campaign called CONT17 was performed. CONTs are international campaigns which have been organized every a few years to monitor the Earth orientation parameters (EOP) with high time resolution and to demonstrate the state-of-the-art VLBI technique. CONT17 carried out 5-day continuous broadband observation compatible with VGOS frequency setup for the first time as well as 15-day conventional S/X-band observation. Ishioka was involved in CONT17 with VGOS setup as the only station in Asia with other five VGOS stations. This talk will summarize the efforts of GSI and problems to be solved for VGOS operation, including the preparation, observation status, and primary results of the broadband observation in Ishioka.

