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Ultra-rapid dUT1 measurement with high-speed network

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UT1 (Universal Time 1) is essential data for orbit control of an artificial satellite, space exploration or analysis of GPS data. Although the UT1 value is calculated by international VLBI observations operated by International VLBI Service for Geodesy and Astrometry (IVS), it takes several hours or several days to obtain UT1 values because it takes a lot of time to process the VLBI data.

Although we conduct some data analysis, we use the final solution of UT1 which is calculated using the observed UT1 value on VLBI observation. The final solution includes the prediction UT1 values, which accuracies decrease with time. Therefore, many users of the UT1 solution require submission of observed UT1 value as soon as possible after the observation.

Geospatial Information Authority of Japan (GSI) has implemented a number of experiments for quasi real-time estimation of UT1 value since 2007. In 2008, we introduced the system for quasi real-time estimation into an international VLBI session, and it enables us to obtain the UT1 results within a few minutes after the observing session of regular VLBI session. GSI became an IVS analysis center in April, 2010. Since then, we have improved the system and checked the qualities of the results. I will report our recent activities in my presentation.

Keywords: VLBI, UT1, EOP, High-speed network, ultra-rapid