Evaluation results of the data analysis server for the Advanced Precise Positioning System

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A data analysis server for the Advanced Precise Positioning System (APPS) has been developed. The server automatically processes and analyzes GPS observation data sent from general users and it reports to the users with reliable estimations of the site coordinates on the international terrestrial reference frame. The developments of the APPS began in 2000 as joint efforts of the Communications Research Laboratory and the Hitachi Zosen Information Systems, Co., Ltd. aiming to enable anyone to obtain reliable and accurate positions without special knowledge about the GPS positioning and its data analysis.

In the APPS, general users send their GPS observation data to the data analysis server by means of e-mail in the RINEX file format. The server automatically processes and analyzes the GPS observation data sent from these users with the observation data at IGS sites. All the processes which require special knowledge about GPS data analysis are proceeded by the data analysis server and the most reliable data set of a-priori information including ephemiris of the GPS satellites and Earth Orientation Parameters are used in the data analysis. Therefore, the users can obtain reliable positioning results only by sending GPS observation data to the data analysis server. By developping the numerical distribution model for the ionosphere and troposphere, we can expect to make the precise GPS positioning still easier because the users can use single frequency GPS receivers and do not need to obtain meteorological data at the observation sites.

Test operations of the data analysis server have been performed to evaluate its performance and the preliminary results will be reported. After the test operations, further developments will be performed to improve its performance while the computational loads to the server are very high.