

Assessment of NAVCAST Precise Orbit and Clock Products for Real-Time GPS/Galileo PPP

Abdelsatar Elmezayen and Ahmed El-Rabbany (Canada)

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SUMMARY

Precise point positioning (PPP) is a popular GNSS technique, due mainly to its ability to provide precise navigation solution using a standalone GNSS receiver. In 2018, a new real-time service, NAVCAST, which provides real-time precise orbit and clock products for the GPS and Galileo constellations, was launched. Galileo GNSS system has recently completed a total of 24 healthy satellites, which makes it possible to rely on it, along with GPS, to provide accurate positioning for a wide range of real-time applications. In this paper, a real-time GPS/Galileo PPP algorithm, which make the use of NAVCAST products, is adopted and used. To assess the potential positioning accuracy of real-time GPS/Galileo PPP through the NAVCAST real-time products, two different land vehicular tests were conducted in Toronto, Ontario, Canada. The German Federal Agency for Cartography and Geodesy (BKG) NTRIP client (BNC) software was used to process the GPS/Galileo observations in real-time mode. It is shown that a sub-decimeter horizontal positioning accuracy can be achieved in real-time mode. In addition, a sub-decimeter to a meter-level vertical positioning accuracy can be achieved in open-sky and urban environments, respectively.

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