Preliminary analysis of the ionosphere-corrected PPP-RTK user performance.

Psychas, Dimitrios; Verhagen, S.; Liu, Xianglin

Publication date
2019

Document Version
Final published version

Citation (APA)
Psychas, D., Verhagen, S., & Liu, X. (2019). *Preliminary analysis of the ionosphere-corrected PPP-RTK user performance.*. Abstract from EGU General Assembly 2019 , Vienna, Austria.

Geophysical Research Abstracts
Vol. 21, EGU2019-13130, 2019
EGU General Assembly 2019

Preliminary analysis of the ionosphere-corrected PPP-RTK user performance

Dimitrios Psychas (1,2), Sandra Verhagen (2), and Xianglin Liu (1)

(1) Fugro Innovation & Technology B.V., 2263 HW Leidschendam, The Netherlands (d.psychas@fugro.com), (2) Department of Geoscience and Remote Sensing, Delft University of Technology, 2628 Delft, The Netherlands

The realization of the integer ambiguity resolution (IAR) enabled precise point positioning (PPP) method, the so-called PPP-IAR, is enabled by providing single-receiver PPP users with satellite phase biases to recover the integerness of the user ambiguities. Successful IAR can greatly reduce the PPP solution convergence time. However, the unknown parameters for the ionospheric delays that are estimated by the PPP-IAR user do not allow for fast (or instantaneous) convergence to the centimeter-level positioning accuracy. A great shortening in the convergence time is expected in case precise ionospheric corrections are available to PPP-IAR users, realizing the transition to PPP-RTK mode.

This paper presents a preliminary analysis on the improvement of PPP-IAR user positioning performance using precise ionospheric corrections, which are required for fast convergence. The ionospheric corrections used at the user level were determined by modeling with B-splines the PPP-IAR high-precision ionospheric slant delays computed from receivers of a regional network. The improvement of the PPP-IAR user performance was analyzed in terms of the required time to correctly fix the integer ambiguities and the convergence time of the PPP-RTK positioning solutions.