



Accuracy Assessment of the Precise Point Positioning for Different Troposphere Models

Mahmut Oguz Selbesoglu, Mert Gurturk, and Metin Soycan

Dept. of Geomatic Engineering, Yildiz Technical University, Istanbul, Turkey (oguzs@yildiz.edu.tr)

This study investigates the accuracy and repeatability of PPP technique at different latitudes by using different troposphere delay models. Nine IGS stations were selected between 00-800 latitudes at northern hemisphere and southern hemisphere. Coordinates were obtained for 7 days at 1 hour intervals in summer and winter. At first, the coordinates were estimated by using Niell troposphere delay model with and without including north and east gradients in order to investigate the contribution of troposphere delay gradients to the positioning. Secondly, Saastamoinen model was used to eliminate troposphere path delays by using standart atmosphere parameters were extrapolated for all station levels. Finally, coordinates were estimated by using RTCA-MOPS empirical troposphere delay model. Results demonstrate that Niell troposphere delay model with horizontal gradients has better mean values of rms errors 0.09 % and 65 % than the Niell troposphere model without horizontal gradients and RTCA-MOPS model, respectively. Saastamoinen model mean values of rms errors were obtained approximately 4 times bigger than the Niell troposphere delay model with horizontal gradients.