



Assessing the performance of VMF3 for GNSS stations in Indonesia using Bernese PPP

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Tropospheric delay is one of the major error sources for space geodetic techniques, such as the Global Navigation Satellite Systems (GNSS). This delay needs to be taken into account to improve the accuracy of observations. Mapping functions are used to scale the delay from zenith direction to an arbitrary elevation angle. Several mapping functions have already been published, including the Global Mapping Functions (GMF) and Vienna Mapping Functions 1 (VMF1). Recently, a refined version, VMF3, was released. This study aims to test the performance of VMF3 on GNSS observations in Indonesia. For this purpose, 40 stations from the permanent GNSS network in Indonesia (InaCORS) were chosen based on their location and data availability. Data processing was carried out using Precise Point Positioning (PPP) in Bernese GNSS Software for the year 2014. A priori site-specific tropospheric gradients GRAD were included in the data processing as well. Station coordinates were estimated daily, while the zenith wet delays were estimated every 30 minutes and tropospheric gradients were estimated hourly. A similar processing scheme was carried out using GMF without a priori gradients. The results from this processing were then compared to the results from VMF3 to see whether VMF3 can improve GNSS observations in Indonesia.