

Kinematic PPP Positioning Using Different Processing Platforms

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SUMMARY

In recent years, many organizations, mainly the International GNSS Service (IGS), have been providing accurate satellite orbit and clock products with different accuracy levels to the researchers. With the advent of these products, a new technique called as Precise Point Positioning (PPP) has started to determine accurate positioning utilizing undifferenced carrier-phase and pseudorange observations collected by only a single GNSS receiver. The technique has attracted wide interest by academic and commercial community in last decade having its several advantages. This technique provides reliable and accurate global solution to the users in dm to cm level of positional accuracy in static and kinematic modes.

There are different alternatives in order to obtain PPP-derived coordinated and can be collected into three groups as; Scientific Software (e.g. Bernese and RTKLIB etc.), Commercial Software (e.g. GRAFNAV), Web-based Processing Services (e.g. CSRS-PPP, APPS, GAPS, and magicGNSS etc.). Each of the mentioned processing platform has its own advantages and disadvantages. These alternatives are preferred depending on users' expectations, opportunities and, knowledge level of GNSS.

In this study, the accuracy performance of the different PPP processing in kinematic mode was assessed. For this purpose, a kinematic test was conducted in a dynamic environment, Obruk Dam Lake, Çorum City, Turkey. The collected data were processed using aforementioned different processing platforms and compared to known coordinates (i.e. known coordinates) obtained from post-processing relative technique. The obtained results were investigated with in terms of usability and provided accuracies.