

Web-based GNSS Data Processing Services as an Alternative to Conventional Processing Technique

Reha Metin Alkan, Veli Ilci and I. Murat Ozulu (Turkey)

Key words: Positioning; GNSS, PPP, On-line PPP, Web-based Positioning

SUMMARY

Until recent years, it was necessary to obtain positioning with GPS using at least two receivers and collected data should be processed for high accurate positioning by using GNSS data processing software whether scientific or commercial. However, the usage of such software is also quite difficult because of they require deep knowledge and experience in the field of GNSS. Furthermore, they mostly require the license fee.

Regarding the improvements in information technology and GNSS data processing methodology, many new opportunities have been served to the users and web-based processing services have been started to use as strong alternative to the conventional data processing method. The only requirement for using these services which generally provide free of charge and limitless usage is a computer with an internet connection and web browser. The users of such systems have to perform uploading/sending their collected RINEX data by using the interfaces of the services, e-mail or ftp sites to the system and selecting a few options such as static/kinematic modes, datum, antenna and etc. With these services, when the data is received to the service, processing starts and the results are sent to the users in a short time.

As of today, there are several web-based online GNSS processing services that some of them calculate the coordinates with differential method; (e.g. AUSPOS, OPUS, Trimble-RTX), or with PPP technique (e.g. CSRS-PPP, APPS, GAPS, magicGNSS). The use of these systems saves time and labour force by eliminating the need for a reference station and knowledge and usage of processing software.

In this study, commonly-used web-based GNSS processing services are compared to each other with respect to the provided accuracy. Within this frame, 24-hour data set collected at the one of

TUSAGA-Aktif Network, CORU reference station were used. The 24-hour-data files were divided into several shorter session as; 24 consecutive 1 hour sessions, 12 consecutive 2 hours sessions, 6 consecutive 4 hours sessions, 4 consecutive 6 hours sessions, and 2 consecutive 12 hours sessions. All these observation files were processed with differential technique by using Trimble RTX, AUSPOS and OPUS; with PPP technique using CSRS-PPP, magicGNSS and APPS web-based online services. The findings reveal that these services can be used in many surveying applications with a cost-effective manner and very easily without knowledge of any GPS processing software. In this study, after giving some information about the widely used web-based services in the world with advantages and disadvantages, the obtained results will be discussed.