

TeroPoint: Online Processing Service for Accurate Positioning at National Level

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SUMMARY

During the last decade, several online services have become available to process static and kinematic GNSS data in post-processing. Examples are: AusPOS (Geoscience Australia), TrimbleRTX, CSRS-PPP (Natural Resources Canada), and APPS (JPL). These services can provide efficient and accurate estimation of coordinates from GNSS data using differential (e.g., AUSPOS) or Precise Point Positioning (e.g., APPS) strategies if basic requirements are respected on the submitted RINEX file (e.g., enough data-span, correct metadata on the header) without the need of the user to be an expert on the use of academic (e.g., GIPSY-OASIS, Bernese) or commercial (e.g., TBC, LGO) GNSS processing software packages.

However, these services normally only provide solutions with respect to the latest global reference frame (currently ITRF2014) at the epoch of observation. At most, they also provide the solutions with respect to the national reference frame of their own country (e.g., AusPOS also gives the solutions with respect to GDA2020; CSRS-PPP with respect to NAD83). Therefore, they are unable to be used directly in the majority of the rest of the world since a further step is required: the transformation of the coordinates from the global reference frame (ITRF2014) at the epoch of the observation into the national reference frame of the country of interest, which is normally defined with respect to a previous ITRF at a certain reference epoch.

TeroPoint makes it possible to obtain coordinates at centimeter uncertainty level with respect to the national reference frame of any country using a simple and user-friendly webservice. It was developed by TeroMovigo (a spin-off of University of Beira Interior) in collaboration with JPL (Jet Propulsion Laboratory) and can be used in any country where an agreement has been reached with the governmental agency responsible for geo-referencing activities. In fact, TeroPoint will only be accessible in countries where the service has been certified by the responsible

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agency.

We detail the use of TeroPoint for post-processing surveying/geodetic applications, focusing on its particular features that can benefit simultaneously the national mapping agencies and their users (e.g., surveyors). Coordinates can be obtained few minutes after the submission of the file, which can be uploaded almost immediately (a couple of hours) after the end of the data acquisition. We present some study-cases comparing the results obtained with TeroPoint and with other software packages.

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