Accuracy of GNSS from commercially available software

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In high precision GNSS applications, studying the positioning accuracy plays important role. The accuracy is usually software specific. Recently the accuracy of GNSS was reported sufficiently from the research software. The accuracy was related to both PPP and RP using static and rapid static surveying methods. However, it has almost been a decade now the user has not been informed about the positioning accuracy of commercial software. With the emerge of multi-GNSS, studying the positioning accuracy gains further importance. Therefore, it is our curiosity to experince the limits of commercial software in terms of positioning accuracy for high precision work. Considering the capability of commercial software given in the literature, in fact slightly going beyond those limits, we designed an experiment using the GPS stations of the International GNSS Service. In particular, the data of GPS and GLONASS from the GNSS techniques were processed. Topcon's commercially available software (Magnet 4.01) was used for the data processing. The IGS thresholds of 3 mm horizontal and 6 mm vertical positioning accuracies were taken as the "high-precision standard" for the assessments. The required accuracy standard on the average is achievable up to 100 km baselines with 24 h of the observation session for horizontal positioning. However, for vertical positioning, 6-7 mm can only be achieveble upto 2 km with min 3 hours of the observation session.