Comparison of Different Software for GPS Network Adjustment

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SUMMARY

Accuracy and productivity of NAVSTAR GPS enabled its application in solving different geodetic problems - from establishment of reference networks to a survey. The work with this system is a highly automated process - data collecting is reduced mainly to turning a receiver on, while data processing is performed within the branded quality software environment. All necessary functions are available withih the software, with well designed user interface which leads the users through the data collection, data processing, and reports creation. There are a lot of GPS manufacturers in the world market, which implies a set of GPS processing software packages. Each of them is unique in some functions, with different data processing algorithms applied. Usually, the companies do not publish the mathematical models used for baseline processing, network adjustment, and coordinate transformations. Because of that, it is good to know do different software packages give the congruent results. For our study case, we used the measurements in a control network of Banja Luka city. We processed the network in three different software packages: Trimble Total Control, Leica GeoOffice, and Spectra Precision Survey Office. The conclusions drawn from this study case prove the significant differences in final results, which means that a special care should be paid in the high precision geodetic surveys, especially the control networks.