HYDROLOGICAL SITE HEIGHTS MEASURMENT WITH THE DOMESTIC GNSS RECEIVERS

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The main topic of the article is the overview and results analysis of the research devoted to hydrological posts height leveling issues. The research was carried out by the Russian Institute of Radionavigation and Time and the State Institute of Hydrography. The problem of geodetic maintenance of hydrological post is overviewed, the technique of the problem solution with the domestic GNSS-receivers is proposed. The experimental measurments were made in Novgorod region.

The results of the experiments are analyzed. The main conclusion is that the domestic GNSS-receivers with a high-degree geoid model (ex. EGM2008, GECO, EIGEN-6C4) can provide the leveling precision equivalent to III-IV classes of leveling with classical geodesy methods, that's necessary for geodetic maintenance of hydrological posts. The accuracy level can be reached only in case of precise and accurate initial data. The measurements need to be made with the relative GNSS positioning methods to avoid the systematical errors.

The initial data in the context of these works are heights of control/basic points. The points should be static and safe for the heights were true and reliable. The main problem is the unsatisfactory condition of the State height system that includes the leveling points and their normal heights in Baltic system 1977. Most of the points are destroyed or shifted. The leveling net of Novgorod region (as the whole Russian Federation height points system) needs to be restored and being monitored further.

Currently it is impossible to make conclusions on the possibility of hydrological posts leveling with GNSS-methods taking in account the conditioning of the leveling net over the territory.

Key words: hydrology, GNSS, geoid, GAO2012, EGM2008, EIGEN-6C, orthometric height, height anomaly.

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Received 09.09.2019