



## **Analyses of the global geopotential models and different sources of gravity field elements used to reductions of geodetic observations**

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For reductions of geodetic observations onto geoid and ellipsoid (eg. astronomical coordinates, deflections of the vertical, astronomical azimuth and linear measurements) it is necessary a knowledge of the gravity field parameters. Also, in the leveling network it is necessary to collect such information to calculate the normal (or orthometric) correction. The poster provides an assessment of the available gravity data sources for use in the reduction of mentioned observations. As a such source it is understood of direct measurements, the interpolated anomalies of the existing gravity data sets and a calculateion them based on geopotential models. The study included field data, data from the Polish National Geological Institute including anomalies used for interpolation, and data from the model Earth Gravitational Model 2008 (EGM2008) in full form and truncated to 360 degree and order. In the case of the normal corrections mentioned sources also are analyzed in comparison with the values measured Faye's anomalies on selected benchmarks of leveling lines in various Polish regions. The paper shows the requirements of precision to be met by gravimetric data to provide by the required technical instructions. It was found that for 90% of the Polish it is possible to dispense with the measured data to the data generated from the geopotential model while maintaining the sufficient accuracy. For mountain areas, however, it is necessary to use the natural elements of the gravity field determined only by direct measurements.