



Monitoring of the Long-Standing Changes of the Absolute Gravity in Observatory of Jozefoslaw and at Main Tectonic Units on Poland Territory

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Gravimetric investigations of the long-standing, not tidal variations of the absolute gravity using ballistic FG – 5 No. 230 gravity meter, bought by Warsaw University of Technology at 2005, were performed on four stations outside the Teisseyre – Tornquist Zone (T – T Zone) as well as at Józefosław Astro - Geodetic Observatory of the Warsaw University of Technology, located near Warsaw, near the northern edge of T – T zone on Precambrian Platform. Raw results of observations were corrected by Earth's tide influences, loading effects of the Earth's crust and ocean, by polar motion influence to the gravity as well as from the reason of gravitational and deformation influences of the atmosphere. Monitoring of the gravity on Józefosław station, during three years once a month, pointed out quasi-periodic non-tidal variations.

Absolute gravity determinations in previous campaigns (1992 – 2001) on Polish territory were performed using various ballistic gravity meters, many types and quality, as well as there were spread in time. In epochs since 2006 to 2008 with our instrument FG – 5 No. 230 there were obtained the gravity values minor on all investigated stations. It was about 17 μGal on Satellite Lamkówko station, near Olsztyn, and 12 μGal in Borowiec Astro-Geodynamical Observatory of the Space Research Centre, Polish Academy of Sciences with comparison to the results from 8 – 10 y earlier obtained using Polish absolute gravity meter ZZG, Italian IMGIC and two FG-5 instruments from Austria and USA. The variation since 1996 to 2006 on Giby (station of the gravity national fundamental net) was appeared as only 7.5 μGal . On very stable station Ojców (Seismic Observatory of the Polish Academy of Sciences) located on Świętokrzyskie Mts. craton, the decrease of gravity equal to 9 μGal has been noticed after 9 years.

Recovered variations of gravity on Poland territory might have the sources in gravity global or regional variations in the hydrological influences in the vicinity of stations as well as in incorrect earlier determinations of the gravimetric corrections, mainly in vertical gradient of gravity above absolute stations.