VOLUME DEFORMATION VARIATIONS AND WELL-AQUIFER RESPONSE, ITS CONNECTION WITH GRAVITY MEASUREMENTS

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Precise gravity measurements at $g_0 \cdot 10^{-9}$ level requires taking into account density change, caused by the Earth's crust deformation and the movement and position of the fluid in the layer. The paper presents analysis of water level observation in three boreholes situated at Primorie, at Kamchatka and at Baikal region. Water-level fluctuations were influenced by earth tides, barometric pressure, co-seismic effects and season precipitations. Water tidal signal was analyzed for calculations of level-strain coefficients, its values changed from 0.1 mm/10^{-9} to 1.6 mm/10^{-9}. Gravity corrections were developed by volume variation. For borehole drilled at monolithic rock we used the phase-lag effect for tidal strain and crack-system orientation was studied in Pribaikalie mountain valley. Long-term gravity results were tested with water level data at Talaya station (Pribaikalie). Talaya gravity point situated at monolithic rock had no influence from water level variation. Level-correction was less than absolute gravity measurement error. Quick co-seismic effects of earthquakes are well registered by level measuring, deformation graphical and absolute gravimetric methods.

Keywords: absolute gravity observation by GABL and different kind correction, water level into borehole, volume deformation, Primorie, Kamchatka, Pribaikalie, co-seismic, tidal, barometric, and season effects, , gravity correction for Pribaikalie measurements

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Received 26.04.2021