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Wavelet decomposition in Earth's gravity field investigation

J. Bogusz (1), A. Klos (1), and W. Kosek (2)
(1) Military University of Technology, Warsaw, Poland (klos_ania@wp.pl), (2) Space Research Centre, Warsaw, Poland

This publication presents the results of using wavelet decomposition on data from sites belonging to GGP (The Global Geodynamics Project). GGP is an international program that records the Earth's gravity field with high accuracy at a number of worldwide stations using superconducting gravimeters. In the presented research the data with 1-second sampling rate is utilized. This allows us to detect changes with known frequencies that are the multiplicities of 1-second. The wavelet transform gives us a great range of possibilities to detect such a changes due to either detecting how the amplitude of oscillations changes in time or by the decomposition of time series and detecting the determined frequencies. The wavelet decomposition was performed with the use of the Meyer wavelet. The Meyer wavelet is the regular, orthogonal, symmetric wavelet. The data, taken to project's realization, come from the period of the earthquake registered on the different site's localization. The aim of this research is to decompose the time series from GGP stations and analyze how the Earth's gravity field changes in time.