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Wavelet analysis for investigation of precise GNSS solutions' credibility

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This poster will present adjustment's results of the Polish Active Geodetic Network (ASG-EUPOS). ASG-EUPOS is the multifunctional precise satellite positioning system established by the Head Office of Geodesy and Cartography in 2008. It consists of almost 100 Polish sites with GPS module, 14 Polish sites with GPS/GLONASS module and 20 foreign sites. The adjusted network consisted of over 130 stations, the period covered observations gathered from June 2008 to July 2010. The method of adjustment elaborated in the CAG, which is the newest, seventeenth EPN LAC (EPN Local Analysis Centre) established at the end of 2009, is similar with the official one used in EPN. It is based on the Bernese 5.0 software. The difference to the EPN's solutions lies in the resolution time of adjustment. In the presented research the 1-hour sampling rate with 3-hour windowing is applied. This allows us to make the interpretations concerning short time information in GPS coordinates series. Analyses using FFT and least squares (tidal) gave very coherent results and confirmed several millimetres diurnal and sub-diurnal oscillations of GNSS coordinates. Wavelet analysis is aimed at the investigation of credibility of the precise GNSS solutions by means of the amplitudes' changes in time. These could be caused by the artificial modulations of the near-by frequencies (P1, S1, K1 in diurnal and S2, K2 in sub-diurnal), but also some geophysical signals could be clearly distinguished.