Prediction accuracy of sea level anomalies data in the east-equatorial Pacific region in time of El Niño, La Niño and normal conditions

T. Niedzielski (1,2), **W. Kosek** (1)

(1) Space Research Centre, Polish Academy of Sciences, Bartycka 18A, 00-716 Warsaw,

Poland (niedzielski@cbk.waw.pl), (2) Department of Geomorphology, Institute of Geography

and Regional Development, University of Wroclaw, pl. Uniwersytecki 1, 50-137 Wroclaw,

Poland

The aim of the research is to predict local sea level anomaly (SLA) time series determined from TOPEX/Poseidon and Jason-1 altimetric observations. The analysis of SLA data is limited to the east equatorial Pacific – the region in which the El Niño/Southern Oscillation (ENSO) signal is particularly well seen in local sea level change. Two prediction schemes are adopted. First, we apply the extrapolation of polynomial-harmonic deterministic least-squares (LS) model for a linear trend, annual and semi-annual oscillations. Second, we utilize the combination of the extrapolation of a polynomial-harmonic model with the autoregressive (AR) forecast of stochastic residuals (LS+AR). Spectral analysis of the LS residuals shows wideband signal causes by irregular ENSO variations in this region. The LS+AR technique enable one to derive significantly more accurate predictions in respect to those computed by pure LS method. The results show that this improvement in the prediction accuracy may be seen for El Niño, La Niño, and normal conditions.