



The Anomalously High Pole Tide in the North and Baltic Seas Estimated by the PSMSL Tide Gauge Data

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Pole tide driven by the Chandler wobble, has the period of about 14 months and typical amplitudes in the World Ocean of ~ 0.5 cm. However, in the North and Baltic Seas they are anomalously high. To examine this effect we used long monthly sea level records from 80 stations with the length up to 212 years. High-resolution spectra revealed a cluster of neighboring peaks with periods from 410 to 440 days. The results of spectral analysis were applied to estimate the integral amplitudes of pole tides from all available tide gauges along the coast of seas. The height of the pole tide was found to gradually increase from the entrance of the Baltic Sea (Danish Straits) to the northeast end of the Baltic Sea. The largest amplitudes – up to 4.5-7 cm – were observed in the heads of the Gulf of Finland and the Gulf of Bothnia. Significant temporal fluctuations in amplitudes and periods of the pole tide were observed during XIX and XX centuries.