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A comparison study of tidal prediction techniques for applications in the German Bight

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The harmonic representation of inequalities (HRoI) is a technique for tidal analysis and prediction. The HRoI has been used at BSH for over six decades to calculate heights and times of high and low waters for German tide tables. In its original form, it is tailored to predict the vertices of semi-diurnal tides. A more generalized version of the HRoI allows analysing the full tidal curve at equal fractions of the mean lunar day. We compare results from the HRoI with other tidal analysis techniques, e.g. the common harmonic method, for locations in the German Bight. The study includes several tide gauges in the rivers Ems, Weser and Elbe. Short durations of rise and rapid water level changes after low water often characterize the tide curves in these rivers and pose challenges to tidal predictions.

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