

## Prediction of lake level variations using satellite observations in Caspian sea: Case study

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**Abstract:** The demand for accurate predictions of sea level fluctuations in coastal management and ship navigation activities is increasing. To meet such demand, accessible high-quality data and proper modeling process are critically required. In this study, we successfully present the analysis and forecasting of Caspian Sea level anomalies based on about 15-year Topex/Poseidon and Jason-1 altimetry data covering 1993-2008, which are originally developed and optimized for open oceans but have the considerable capability to monitor inland water level changes. The forecast is performed by Holt-Winters exponential smoothing (HWES) and multi-layer perceptron neural network as the alternative methods to assess their applicability for estimating Caspian Sea level anomalies. The modeling results agree well with the observed time series and satisfactorily present reliable results for the short-term prediction of Caspian Sea level anomalies providing reasonable precision and accuracy for supporting water reservoir management plans.

Keywords: Caspian See, lake level, satellite altimetry, exponential smoothing, neural network

Note: We would like to present this paper as a poster.