Effect of Outliers in Assessing Significant Wave Heights Through a Time-Dependent GEV Model

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Abstract : Recorded significant wave heights sometimes exhibit large uncommon values (outliers) that can be associated with extreme phenomena such as hurricanes and cold fronts. In this study, some extremely large wave heights recorded in NOAA buoys (National Data Buoy Center, noaa.gov) are used to investigate their effect in the prediction of future wave heights associated with given return periods. Extreme waves are predicted through a time-dependent model based on the so-called generalized extreme value distribution. It is found that the outliers do affect the estimated wave heights. It is concluded that a detailed inspection of outliers is envisaged to determine whether they are real recorded values since this will impact defining design wave heights for coastal protection purposes.

Keywords : GEV model, non-stationary, seasonality, outliers
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