



Relationship between sea-level pressure and sea surges in the Camargue (French Mediterranean coast).

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A statistical study of sea-level height and sea-surge time series at a stations (Gau de la Dent) in the Camargue (Rhône delta, French Mediterranean coast) and sea-level pressure (SLP) is used to identify the meteorological conditions associated with sea-level variations, especially those associated with strong sea surges from 1903 to 2002. Mean SLP composites from 5 days before major sea surge events suggest the dominant influence of storms, moving northwest to southeast across the North Atlantic and strengthening as they approach the Bay of Biscay. During such storms, strong onshore winds may persist for up to 4 -5 days and tend to strengthen from 3 days to one day before the surge event. The correlation between the daily maximum sea-level height in the Camargue and the daily sea-level pressure average over the Bay of Biscay is strong. A methodology is developed for assessing the low-frequency SLP variability impact on the sea-level height in Camargue. A cross- validated linear regression is used to hindcast the interannual variability of the monthly 75th and 90th percentiles of the daily maximum sea-level height from the monthly mean SLP over the Bay of Biscay. Then, a weather classification has been used to summarize the extra-tropical atmospheric circulation. It appears that all strong sea surges are associated with one particular weather type showing a deep depression over the Bay of Biscay.