

Interactive comment on “Inter-annual variability of mean sea level and its sensitivity to wind climate in an inter-tidal basin” by Theo Gerkema and Matias Duran-Matute

Anonymous Referee #2

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The author investigated the relationship between the annual wind records from a weather station and annual mean sea level in an inter-tidal basin, the Dutch Wadden Sea. They found that the inter-annual variability of mean sea level can be largely explained by the west-east component of the net wind energy vector. By correcting observed values of annual mean level for meteorological factors, they further found the margin of error reduces by about a factor of three in the trends of the 20-year sea level record. Their results illustrated the regional variability in annual mean sea level and its inter-annual variability and highlighted the sensitivity of sea level on wind direction over the Dutch Wadden Sea.

This study is interesting and contributes to the understanding of regional climate

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change. However, I have two major concerns to be addressed before I can recommend publication of the manuscript. I have detailed my comments below.

1. A mechanism is needed of winds on inter-annual variability sea level variability in this particular small region. The analysis so far is a good start, whereas the authors need to explore the physical processes and mechanism via a regional climate model.

2. Is this regional change of winds and sea level related to large-scale atmosphere and ocean changes? What is the atmosphere circulation pattern associated with the wind change over the Dutch Wadden Sea? Some effects from the westerly jet shift or ENSO?

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