



## **Examining trends in extreme sea-levels from long tide gauge records**

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Relative sea-level heights from tide gauge records provide valuable information on coastal regional variability. Although sea-level long-term variability is often characterised by a mean slope through ordinary least squares, variability in other parts of the sea-level distribution can be equally or even more important than trends in mean levels, for e.g. changes in extreme high waters can impact considerably coastal locations and populations. In this work, this issue is addressed by applying quantile regression for the estimation of trends in extreme sea-levels. Tide gauge records from the Baltic Sea, a region with with one of the world's densest observational networks and a long tradition in measuring sea-level, are analysed. The results show that differences between mean (OLS) and median (quantile 0.5) slopes exhibit a clear spatial pattern, with larger differences (more asymmetric sea-level distributions) in the Gulf of Bothnia and in the southwestern Baltic. For most stations median slopes are higher than lower quantile slopes, and upper quantile slopes are significantly higher than median slopes.