



## Sea level trends and interannual variability in the Caribbean Sea

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Sea level trends and interannual variability has been investigated in the Caribbean Sea using altimetry and tide gauge time series from 19 stations. Relative sea level trends range between -2.0 and 10.7 mm/y depending on the length of the available record. Records from stations longer than 40 years converge toward values between 1.2 – 5.2 mm/yr, still a significant range which in some stations is less and in some other significantly larger than the global average. The longest station, Cristobal (102 years) shows a trend of 1.9 mm/yr and, in addition a significant acceleration of  $1.6 \pm 0.3$  mm/y/cy. The observed sea level trends are not affected by the atmospheric pressure effect, within the levels of significance. They are also the same (within the levels of significance) at all seasons. Altimetry shows trends (over 18 years of data) with values up to 5.2 mm/y. In some areas the values are statistically insignificant, but at no areas statistically significant negative values are found. Steric trends from the top 800 m (over the period of altimetric observations) have a basin average trend of 1 mm/y, but it shows large spatial variability with negative trends of -7 mm/y in the Yucatan Basin and positive trends up to 4.9 mm/y in the Venezuela Basin. Decadal trends were found to vary significantly at tide-gauge records as well as altimetric and steric measurements. We further explore the residual interannual variability by comparison with surface wind and climatic indices. This analysis is supported by the Lloyd's Register Trust Fund project Marine Extremes.