C-08 Investigation of trends (sea level rise) in hydrological time series

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The inadequacy of mathematical treatment to investigate trends in hydrological time series for a considerable long period might lead to wrong conclusions. This is more prominent as scientists are more concerned with the impacts of climate and land use changes on water resources than ever before. This paper presents an investigation of trends in the historical mean annual sea levels at Colombo harbour for last 50 years to check whether there is a significant sea level rise. Using different tests, randomness, statistical significance of long lasting trends and local trends were investigated.

It is very common to fit linear regression models to time series and it is a relatively simple exercise. Standard tests such as Kendall's rank correlation and linear regression were applied to the time series and it revealed that assumption of a linear model lead to a wrong conclusion indicating an insignificant sea level rise during the past 50 years.

This paper illustrates the fitting of a time series to a fourth degree polynomial. When this model was fitted to the observed data, it was found that findings based on the previous linear model were not sound and the new model indicated a significant long lasting increasing trend in the sea level rise.