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# Comparison of different methods for searching shifts in sea level records

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Historical sea level records are often contaminated by abrupt shifts provoked by either anthropogenic effects (e.g. urbanization) or natural phenomena (e.g. earthquakes). It is difficult to recognize the shifts in the noise of the sea level variations. On the other hand, the shifts can crucially affect the estimates of sea level trend and low-frequency variations. We analyse the efficiency of various methods based on the statistical decision theory in applying them to the sea level records. Several synthetic sea level data are generated with special attention done to reproduce the temporal correlations in the sea level series. We have also applied the detection methods for analysing several real sea level records. It is demonstrated that the detection algorithms based on the Generalized Likelihood Ratio are happened to be rather robust for searching the shifts in the correlated sea level data, although the techniques taking into account the long-range dependence detect smaller shifts in sea level records.