



Analysis of trends in North Atlantic tidal amplitudes

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Most studies of sea-level variability from tide gauge records have been focused on the variability of mean sea-level (MSL). However, tides are the dominant signal in tide gauge records, and tidal variability is also highly relevant, particularly in the context of sea-level rise and climate change. Trends in high tides, for example, could have an important influence in terms of flooding and storm damage at coastal locations. Although tides are often assumed to be a constant contribution to sea-level at a given site, the amplitude and phase of tidal constituents can exhibit fluctuations and trends due to natural and anthropogenic factors (such as oceanic changes, coastal local changes e.g. building of coastal protection, modifications of coastal morphology, bathymetry, etc...). In the present study, long hourly records from North Atlantic tide gauges are examined. The amplitude and phase of the tidal constituents are obtained for individual years (using the TAPPY - Tidal Analysis Package in Python - software) and the resulting time series of amplitudes are tested for trends in the tidal constituents.