



Differences and common features in the sea-level variations at Brest and Newlyn : new results from spectral analysis and statistical methods

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The tidal stations at Brest and Newlyn (situated at the southern and northern coast of the English Channel) provide the sea-level observations for a common time period since 1915. Although the two stations are only about 200 km apart, the low-frequency part of the recorded sea-level signals as well as their sea-level trends are quite different. The sea-level records from Brest and Newlyn were often used in the global sea level analysis as the station at Brest is one of the oldest in the world and that at Newlyn is reputed for its high quality.

In this study, we try to identify and separate the common and different modes in the monthly sea-level series at Brest and Newlyn by applying singular spectrum analysis (SSA), wavelet decomposition and several statistical methods. We also analyse the impact of the North Atlantic sea level pressure (SLP) on the sea-level fluctuations at Brest and Newlyn. The different methods employed in this study indicate the changes in the interannual and decadal-scale modes in the sea-level signal at both stations. The differences between these dominant modes are quantified and the possible physical mechanisms responsible for them are discussed.