



Space-time patterns of global sea-level variability

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The description of sea-level variability at the global scale has been revolutionised by the availability of continuous and high-quality sea-level observations from satellite altimetry missions. However, while the regular spatial coverage of altimetry data is particularly convenient for global studies of sea-level variability and for the identification of spatial patterns of regional variability, the time series of altimetry observations are still very short, particularly taking into account the temporal scales involved in sea-level variations. In this study a new method, trend empirical orthogonal functional analysis (trend-EOF), is applied for extracting long-term space-time patterns of sea-level variability from satellite altimetry data. The approach is particularly adequate for extracting trend patterns from short time series, such as the ones resulting from satellite retrievals, and is applied here to the global dataset comprising 17 years of satellite altimetry observations. The resulting modes allow to characterise spatial trends in sea-level and to assess the influence of phenomena such as ENSO in global sea-level variability.