



Cross Wavelet Analysis. Significance Testing and Pitfalls

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We present a detailed evaluation of cross wavelet analysis of bivariate time series. Firstly, we present common wavelet measures and develop a statistical test for zero wavelet coherency by means of Monte Carlo simulations. Secondly, typical pitfalls of wavelet analysis, especially of wavelet cross spectra and wavelet coherency are discussed. Based on these results, we show that coherency between ENSO and NAO is an artefact for most of the time from 1900 to 1995. However, during a distinct period from around 1920 to 1940, significant coherency between the two phenomena occurs.