



Cross Wavelet and Coherence Analysis of Coupling and Teleconnections

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The wavelet cross spectrum and wavelet coherence are widely used measures to investigate time and scale dependent interrelations between different climate processes as for instance between El Niño/Southern oscillation (ENSO) and the Indian summer monsoon or between ENSO and the North Atlantic oscillation. However, both methods are subject to intrinsic problems: The wavelet cross spectrum is a non-normalized paper producing peaks not only in case of a physical interrelation but also in case of high variance of one of the processes. This problem is overcome by wavelet coherence which, however, faces a second problem: Even for independent processes, significant results might appear because of intrinsic properties of wavelet analysis and because of short intervals of random covariance. In this contribution, we briefly review the mentioned problems and present a recently published significance test for wavelet coherence that is capable of identifying these pitfalls.