Geophysical Research Abstracts
Vol. 16, EGU2014-13808, 2014
EGU General Assembly 2014
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From Single or Multiple Time Series to a set of Complex Network Measures Time Series- A novel Decomposition and Interpretation of Time Series

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raditionally, time signals are analyzed by such methods that either derive single global value or local windowed information. In this paper, a complex network of a multi-fractals approach on time-series is a technique that includes multi-scale and non-linear decomposition of a signal in two stages, local and global. The first stage gives the multi-resolution wavelet decomposition of the local signal structures, while the second stage combines the local information in a non-linear multi-fractal setting and global definition via the complex networks of local intensity and phase coherency. For testing the strength and robustness of the method, new in-sites into the dynamics and interaction of the Southern Oscillation (ENSO-El Niño) Index (also known as SOI) and Indian Ocean Dipole, known as the Dipole Mode Index (DMI) will be presented.