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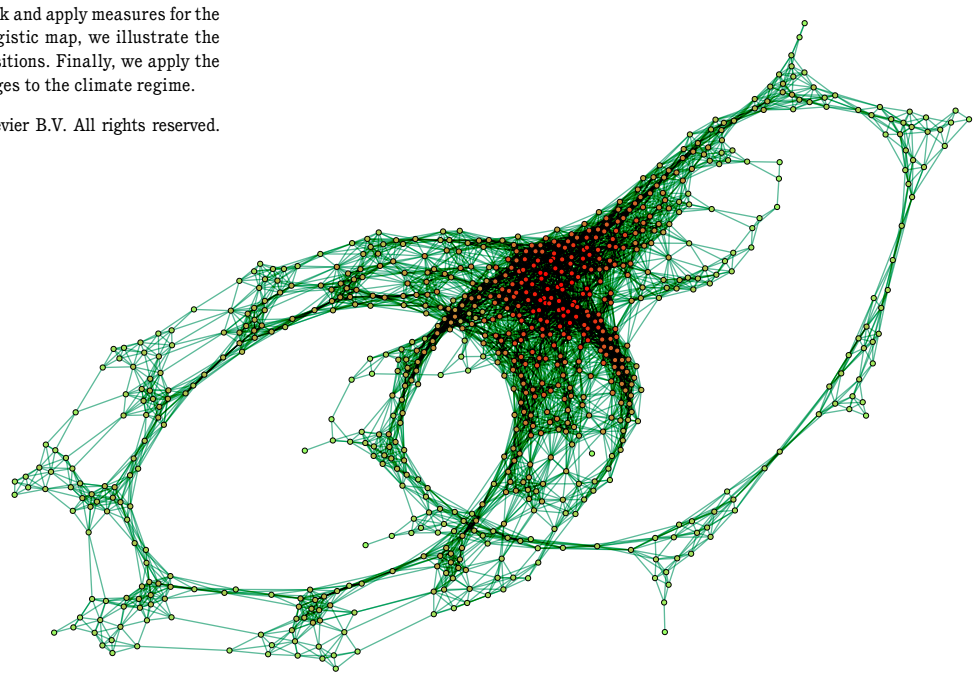
ABSTRACT

We propose a novel approach for analysing time series using complex network theory. We identify the recurrence matrix (calculated from time series) with the adjacency matrix of a complex network and apply measures for the characterisation of complex networks to this recurrence matrix. By using the logistic map, we illustrate the potential of these complex network measures for the detection of dynamical transitions. Finally, we apply the proposed approach to a marine palaeo-climate record and identify the subtle changes to the climate regime.



Our presentations on recurrence based complex network analysis of time series can be found:

Today

Session NP2.5 – Modelling and Understanding Geophysical Systems as Complex Networks

Poster XL167
Norbert Marwan, Jonathan F. Donges, and Sebastian Breitenbach
Synchronous climate transitions during the Holocene in Asia derived from speleothems

Poster XL169
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Recurrence networks - A novel paradigm for nonlinear time series analysis

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Tomorrow

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Talk EGU2010-8219
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