



Graph-theoretical analysis of regional climate variability

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Regional climate variability over Germany is characterised by distinctive patterns of statistical interrelations. The structure and complexity of such patterns can be studied by means of complex network theory. In particular, daily station mean temperature and rainfall data based on observations provided by the German Weather Service (DWD) are used to construct a complex climate network. To study the topology and the complex nature of the network, we apply a weighted version of complex network measures taking the different spatial coverage of weather stations into account. We find a regionally varying network topology which can be partly attributed to orography and the influence of marine and continental climate. We use this approach to investigate and compare projections of future climate variability, which is important for an analysis of impacts and risks of extreme weather situations due to a changing climate.