

An interaction network perspective on global sea surface temperature variability

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On interannual-to-multidecadal time scales variability in sea surface temperature appears to be organized in large-scale spatiotemporal patterns. In this study, we investigate these patterns by studying the community structure of interaction networks constructed from sea surface temperature 5 observations. Much of the community structure can be interpreted using known dominant patterns of variability, such as the El Niño/Southern Oscillation and the Atlantic Multidecadal Oscillation. The community detection method allows to bypass some shortcomings of Empirical Orthogonal Function analysis or composite analysis and can provide additional information with respect to these classical analysis tools. In addition, the study of the relationship between the communities and indices of 10 global surface temperature shows that, while El Niño/Southern Oscillation is most dominant on interannual time scales, the Indian-West Pacific and North Atlantic may also play a key role on decadal time scales.