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Community structure and dynamics in climate networks

A. A. Tsonis

University of Wisconsin-Milwaukee, Department of Mathematical Sciences, Milwaukee, WI, United States (aatsonis@uwm.edu)

We consider climate networks constructed from observed and model simulated fields of three climate variables and investigate their community structure. We find that for all fields the number of effective communities is rather small (four to five). We are able to trace the origin of these communities to certain dynamical properties of climate. Our results suggest that the complete complexity of the climate system condenses beyond the 'weather' time scales into a small number of low-dimensional interacting components and provide clues as to the nature of the climate subsystems underlying these components.