



Dynamical Patterns of Climate Networks: Blinking Links and Stable Structures

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Using measurements of atmospheric temperatures we create climate networks in different regions on the globe. A link in these networks is related to the temporal correlation between records of temperature and height (pressure) level between two places (nodes). Response of the intermediately strong links in these networks to global patterns such as the El-Niño Southern Oscillation (ENSO) and the North Atlantic Oscillation (NAO) is, in general, much sharper than the response of non mixed moments (mean, variance) of temperature or height level [1]. In particular, the response to El-Niño has the quality of links that repeatedly appear and disappear - like blinking [2]. The response to NAO has the quality of very slow gradual decrease in the number of links, which is much more delicate and hard to detect. A phenomenological model that captures the behavior during El-Niño is suggested.

Stronger links also play important role, as they sometimes arrange in rigid autonomous patterns that persistently influence their surrounding environment.

References

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