Determination of Climate Types Using Detrended Fluctuation Analysis

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Using Detrended Fluctuation Analysis (DFA), we have investigated the statistical connection between present climate types and temperature fluctuations. Normally, to determine the climate types, multiple variables, such as temperature, precipitation, and pan evaporation, are necessary. However, in our proposed system, we suggest that only the nature of the temperature fluctuations might be able to determine different climate regimes successfully. To test this idea we have applied the system to the Mediterranean region using GCM downscaled 50km resolution RegCM temperature hindcast (1970-2005) and forecast (2006-2100) data. Our main result is that the temperature fluctuations with or without a temperature scale attached to them, can be used to classify climates in the absence of other indicators such as pan evaporation and precipitation.