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Late Pleistocene and Holocene Climatic Variability in the Carpathian-Balkan Region

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Trends of Summer Air Temperatures in the Romanian Carpathians Detected by Using a Serially Correlated Errors Model

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This paper investigates summer temperature trends in the Romanian Carpathian Mountains, for three types of topographies: summit, slope and depression. We used a change-point regression model with serially correlated errors and compared it with a mainstream change-point model with independent errors. Statistical theory ensures that the former model gives a more accurate trend analysis than the latter model. For both models we identified strongly decreasing trends before the change-point and strongly increasing trends afterwards for most summer temperature series. The change-points are more consistent with each other, in the early 80's, when using the former model. These general results occur for all topography types. A separate multiple regression model reveals that the temperature dynamics in the Romanian Carpathians can be explained by a linear effect of several major atmospheric circulation patterns.