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Time Variations of the Effects of Circulation Variability Modes on European Temperature and Precipitation

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Five modes are identified in the winter monthly mean 500 hPa heights over the Euro-Atlantic sector by rotated principal component analysis. The time variations of the effects of the atmospheric circulation modes on temperature and precipitation at more than 100 European stations are examined for period 1958-1998. Time variations are investigated by running correlations with the 15-year window. At the majority of stations, the correlations with circulation patterns vary considerably in time both for temperature and precipitation. The spatial structure of the variations is assessed by cluster analysis of time variations of correlations. The groupings suggest possible mechanisms of the time variations in the circulation-to-climate effects.