



Persistency in monthly mean temperatures in Europe

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Time series from a number of weather stations in Europe have been studied in order to assess the persistency of monthly mean temperatures.

In most regions, the correlation between the mean temperatures of two months next to each other in time has maxima in the summer and in the winter, while there are minima in the spring and the autumn. An exception from this is in the oceanic warm climate in the southwest, where the spring minimum is missing.

A plausible explanation for the positive correlation in the winter may be related to snow on the ground. The snow is associated with cold spells and increases the albedo, contributing to extension of the low temperatures. The summertime correlation may be related to the water content of the soil. A cold and rainy period results in wet soil and subsequently, relatively large part of the energy of the incoming solar radiation is consumed by evaporation, rather than sensible heating. In the spring, there is generally no snow on the ground and in the autumn, the air temperature is not as sensitive to the water content of the soil as in the summer. This may explain the low correlation in spring and autumn.