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Persistence in Mean Monthly Temperatures in France

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Persistence may be regarded as a baseline to forecasting, not only at short time-scales, but on subseasonal to seasonal time scales as well. The present study explores the persistence of monthly mean temperatures in the dense network of long time series in metropolitan France. The data reveals very high persistence in coastal areas, both at the Mediterranean Sea and at the Atlantic coast. However, this persistence has a high seasonal variability; it is very high in the summer, but low in the winter, suggesting strong dependence of the persistence on static stability. There are signs of negative correlation between mean temperatures of adjacent months in the autumn in inland areas and in the winter in S-France. These features may possibly be attributed to soil moisture and regional impact of cold spells on the atmospheric circulation.