



## **The medieval climate anomaly in Europe: comparison of the summer and annual mean signals in two reconstructions and in simulations with data assimilation**

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The spatial coverage and the origin of the Medieval Climate Anomaly (MCA, around 1000 AD) in Europe is analysed using two recent reconstructions and simulations constrained to follow those reconstructions using data assimilation. The numerical experiments are performed with the climate model of intermediate complexity LOVE-CLIM and the data assimilation technique is based on particle filter using an ensemble of 96 simulations. On annual mean, the maximum warming during the MCA is stronger at high latitudes and is related to stronger westerlies. In summer, the temperature changes during the MCA, which are larger in southern Europe and over the Mediterranean Sea, are associated with reduced westerlies and stronger southerly winds coming from North Africa. These results underline the complexity of the spatial and seasonal structure of the changes in Europe during this period.