



Predictability of the mid-90s warming over North-Eastern China

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We assessed the ability of the DePreSys3 prediction system to predict the temperature fluctuation over north-eastern China. The hindcasts reproduce the interdecadal evolution of the surface air temperature, with the cooling of the 60s and the warming of the 90s. The abrupt warming of the mid 90s is obtained for the 1 year and 2-5 year lead-time, even after removing a linear trend.

We found that the warming over northeastern China is associated with a positive anomaly in geopotential height at the upper-level. A Rossby wave propagates following the subtropical jet, from the Atlantic Ocean to eastern China. It modulates the temperature over Eurasia, leading to maximums of warming over Europe and China. The wave is therefore proposed to be originated from the Atlantic Ocean. We hypothesize the abrupt warming of the mid 90s and the northward shift of the intertropical convergence zone to be responsible for the wave train.

We thus proposed the Atlantic Ocean to be a source of predictability for northeastern China, owing to the Ocean memory and Ocean initialisation of the decadal hindcasts. The hypothesis will be assessed in further works by computing sensitivity experiments.