



## Simulation of surface temperature in China with a new generation of land surface model CLM4.5

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Surface temperature is an important factor affecting the balance of ground energy balance and near-surface temperature, and is also one of the main indicators for measuring the simulation capability of land surface models. In order to evaluate the simulation capability of the new generation of land surface model Common Land Model Version 4.5 (CLM4.5) for China's surface temperature, this paper firstly used more than 800 strictly quality-controlled weather stations Surface temperature data in China from January 1988 to December 2018 to comprehensive evaluate the performance of CLM4.5 simulation of China's surface temperature. The results show that CLM4.5 can better simulate the spatial distribution characteristics of LST, but compared with the actual situation, the simulated value is significantly lower. The simulated deviation has obvious regional and seasonal characteristics: the absolute value of the bias is from southeast to northwest gradually increasing and the bias in spring, autumn and winter are small, especially in winter, the absolute value of bias in summer is the largest. The comparison of land surface temperature bias with ec-interim, ec-interim/land shows that ec-interim/land has the smallest deviation except for individual seasons and regions, and CLM4.5 deviation is slightly larger than ec-interim, but different regions and seasons are different. The bias between the northwest and the south is close, while the northern region is obviously larger, and the winter bias is smaller than the other two. From the analysis of the causes, the soil thermal conductivity calculation scheme and the soil temperature calculation scheme used in CLM4.5 may be the cause of the low simulation value.