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Evaluating performance of Noah-MP with GLDAS forcing data over Tibetan Plateau.

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The Tibetan Plateau (TP) has high altitude, complex topography, soil and vegetation conditions which cause land surface models have relative low ability to simulate the land surface process in this region. In this study, the land surface model Noah-MP, driven by GLDAS forcing data, is used to evaluate its performance in simulating sensible heat flux, latent heat flux and ground temperature at six observation stations of different areas over TP. The simulated results with default multiparameterization options indicate that sensible heat flux is overestimated at most stations, this may be due to air temperature of driving data is low. Latent heat flux shows discrepancy at different stations and ground temperature is underestimated at most stations. By analyzing the sensitivity of simulation results with different multiparameterization options to select options' combination which is more suitable for each station (calibration of combinations), the model improves its performance at all stations. This method can provide more reliable simulations of land surface exchange as boundary condition for coupled model. In addition, there is still have large deviations between the model simulation results and observation data, so it is still important to modify the structure of this model. Meanwhile, continuous observation data is indispensable for the model's calibration.