

Evaluation of multi-physics on the simulation of extreme hot summer in 2003 over CORDEX-EA-II Region.

Poster Summary

In the work, a WRF 48-member ensemble is conducted for JJA climate in 2003 over CORDEX-EA-II domain. The key physical processes include four microphysics schemes (MP), two short and long-wave radiation scheme (RA), two land surface models (LSMs) and three cumulus parameterization schemes (Cu). Overall, the performance of the ensemble for JJA precipitation indicates certain dependence on the climate regimes. And convective and microphysical processes have a direct effect on precipitation as expected. It is also evident that LSMs and RA schemes play a crucial role for surface temperature over all studied regions. In the summer, Tibetan Plateau and north of China are the most sensitive sub-regions to physical parameterizations. The simulation of temporal variation of rainfall depends more on the options of RA and LSMs than Cu and MP over Tibetan Plateau. With CAM radiation scheme and NOAH LSM applied, the reproduction for rainfall and temperature can be improved over Tibetan Plateau in a large degree. Our analysis also shows that the combination of Noah Land Surface Model (LSM), Lin microphysical, G3D Cumulus and CAM radiation schemes provides the most reliable reproduction of climate extremes for both precipitation and temperature over China.