

The influence of AMSRE-derived soil moisture on RAMS-simulated Tibetan Plateau climate

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In this study, the AMSR/E soil moisture data product was assimilated to a Regional Atmospheric Modeling System (RAMS) using EnKF to see how the soil moisture influence the climate, surface sensible heat flux, latent heat flux and how the data assimilation improve the simulation in the Plateau Tibetan. We used two nest grids in the study, one is coarse grid with the 100km grid spacing, and the other is fine grid with the 25km grid spacing. The fine grid's domain is the Plateau Tibetan and the coarse grid covers the Plateau Tibetan and the area around Plateau Tibetan. So we can not only study how the data assimilation improve the simulation but also know how the assimilation domain influence the around area. In the first model integration, the model's 'default' soil moisture was used as the initial value in the model simulation and it is updated as the model going on. The second experiment uses the AMSR/E product as the initial value instead of the 'default' soil moisture in the near-surface level. Then in the third model integration, also use the 'default' soil moisture as the initial value but it will assimilate amsr/e soil moisture product to the model once per day after the model run several days. These simulations will run in both winter and summer. The simulation results prove that use the amsr/e product as the initial value can improve the simulation partly, but the data assimilation run not only capture the parameters (surface sensible heat flux, latent heat flux) feature but also improve the model simulation.

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