



The moisture sources and transport for the northern Xinjiang of China during 1979 to 2013 summer season

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From the perspective of the recycling precipitation, this work examines the moisture sources of the northern Xinjiang during the summer season through the regionally unbounded dynamic recycling model (DRM) with Lagrangian back-trajectory track method by using the ERA-interim reanalysis during 1979~2013. The 10-day moisture trajectories identify the majority humidity contributions to the precipitation of northern Xinjiang are from the upwind westerly water transport and the sources can be traced to the North Atlantic and Arctic region. Furthermore, the moist air evaporated from Black Sea, Caspian Sea and Aral Sea provides a large of amount moisture through west to east moist transport belt to the northern Xinjiang. Although the westerly moisture transport is the main source for the precipitation of the study region, the strongest moisture transport belt starting from eastern margin of Tibet plateau and then swinging northward and along the southern Tianshan Moutian arriving the domain. Moreover, the moisture contribution from Bay of Bengal and Arabian Sea and more easterly water streams cannot be ignored during the heavy rainfall events in the study region.