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Spatial and Temporal Variation of Torrential Rain over Northwest China and General Circulation Anomaly in Summer

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The features of spatial and temporal variation of torrential rain over Northwest China and general circulation were analyzed, by using the daily precipitation observed at 248 stations and NCEP/NCAR reanalysis data from 1981 to 2010. The results show that torrential rain occurred in Shanxi province, southeast of Gansu province and southeast of Ningxia Hui Autonomous Region. The frequency of torrential rain reduced gradually from southeast to northwest, and had obvious inter-annual difference . Torrential rain mainly occurred between July and August each year, the number of torrential rain in July and August contributed 64% to the whole year, with the highest in July and sub-high in August. The number of regional torrential rain was most numerous in late July. The regional torrential rain in Summer was greater than normal when the western Pacific subtropical high was strong, west ridge point reached 110˚E and low pressure systems constantly appeared at middle and high latitudes area of Asia. The south air at low level (700hPa) stretched northward to the east part of northwest, and transported the vapor to the region, and encountered northwest air at about 35˚N. The regional torrential rain in Summer was less than normal when the western Pacific subtropical high was weak, far away from the mainland China, and the high pressure systems constantly appeared at high latitudes area of Asia, while the north air was dominated over the east part of northwest.