The Summer Precipitation Response to the Lengths of the Preceding Winter over Yangtze-Huaihe River Valley

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Based on NCEP/NCAR reanalysis datasets and nonlinear similarity method, the Lengths of Preceding Winter(LPW) in the Yangtze-Huaihe River Valley(YHRV) has been divided from 1961 to 2011, we investigate the varies of LPW and the relationship between LPW and following summer precipitation, results indicate that: LPW clearly display interannual and decadal changes in the period of 1961-2011. The variations of LPW are closely related to temperatures, pressure and meridional wind speed. Compared with the climatic status, a longer LPW correspond to a lower temperature, a higher pressure and a stronger meridional wind, which shows that these three factors are probably the key factors of the adjustment of LPW. These characteristics also vary from region to region. There is significantly positive correlation between the Summer Precipitation and LPW. The statistical analysis also found that the longer/shorter the LPW, the more/less the summer precipitation in YHRV. The synthetic analysis of the circulation field indicate when LPW are significantly longer than climatic status, a blocking situation is formed easily in the region of Ural Mountains and the Sea of Okhotsk in the summer, which will affect the summer rainfall in YHRV. By using Singular Value Decomposition method, the relationship between Summer Precipitation and LPW is also very significant. This study is expected to provide a new perspective for short-term climate prediction and meteorological service.

Keywords: Summer Flood Season Precipitation, Nonlinear Similarity Method, Lengths of the Preceding Winter, Yangtze-Huaihe River Valley

