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Analysis on the cause of the abnormally persistent high temperature in south of China in July 2013

Yu Zhang, Yaohui Li, and Jinsong Wang
Lanzhou Institute of Arid Meteorology, China Meteorological Administration,China (zhangyu198303@163.com)

The cause of abnormally persistent high temperature in the south of China in July 2013 was analyzed by statistical and diagnostic methods using the station observational data in July 2013 and the NCEP/NCAR reanalysis data from 1981—2013. Results indicated that the Western Pacific Subtropical High showed abnormal precursor in May 2013 and its characteristics index well pointed to the strengthening and westward and northward extension of the High. There was an advantageous condition for such weather in July: the High strengthened in the area between the south of China and Taiwan straits. As the High strengthened and kept abnormal, temperature increased in the troposphere over Eurasia. The development of the tropical cyclone in Pacific is weakened so that south winds decreased significantly in the region from 20 °S∼20 °N and from 100∼140 °E and north winds increased noticeably over the East Pacific. As a result, the High was sustainable and stable and even strengthened its control of the southern regions of the country. When the high temperature is abnormally persistent, the South Asia High goes persistently eastward from May to July, and its characteristic 1 660 gpdm contour is also persistently eastward. The characteristic 1 676 gpdm contour persists and goes much eastward from the 4th June. Both the South Asian High and Western Pacific Subtropical High were showing "relative motion" and "reversed motion", characteristics of oscillating from east to west during that time. Through a typical case from the 2th to 3rd of July, the eastward progression of South Asian High is found to have impact on the strengthening and westward extension of Western Pacific Subtropical High.