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The Quasi-Biweekly Oscillation Characteristics of Persistent Heavy Rain over Southeast China and its general circulation

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Abstract The low frequency characteristics of persistent heavy rain from May to August over Southeast China (SC) and its general low frequency circulation is studied using daily rainfall station data in China, OLR data and NCEP/NCAR reanalysis dataset. The source and propagation of the low frequency signal are also investigated by the composite analysis. Results show that the summer rainfall over SC has the characteristics of quasi-biweekly oscillation. The event number of persistent heavy rain gets it peak around June 10 and July 1. The precipitation of five-day low frequency rain events takes up the largest ratio of all low frequency events. In the low atmosphere a strong low frequency cyclonic circulation is located over SC, while a strong low frequency anticyclone is over South China Sea (SCS) to Western Pacific region. The persistent low frequency water vapor is supplied from the Bay of Bengal[U+3001]SCS and the Philippine Sea, and converges over the south of the Yangtze River. At the same time, a low frequency anticyclone controls Northeast China in the upper troposphere. This circulation cooperating with a low frequency anticyclone west of it and a low frequency cyclone located over the coastal water, is favorable to a divergence environment in SC. Thus, the upward motion is enhanced. About 7 days before the low frequency rainfall, there was a low frequency anticyclone over about 150ºE in the lower level and it strengthened and propagated to the coastal water of Southeast China, while the low frequency cyclone over the SCS propagated northwestward to SC. At the same time, the western Pacific subtropical high has an apparently westward extension.The low and high circulations cooperating with each other result in the low frequency rainfall over SC.
Key words: southeast China, persistent heavy rain, low frequency rainfall, low frequency circulation