

Comparison of the East Asian Summer Monsoon Activities Represented by Clouds and Precipitation

*Yunying Li¹, Yun Jia¹

1. College of Meteorology and Oceanography, National University of Defense Technology, China

Based on the pentad average ISCCP (International Satellite Cloud Climatology Project) D1 cloud data and a merged station and satellite precipitation data from 1998 to 2007, two types of cloud index and precipitation index are defined, which respectively reflect changes in clouds and precipitation locations and precipitation intensity associated with the East Asian summer monsoon (EASM) activities. The cloud and precipitation indices are used to study the advancing process of the EASM in mainland China. It is found that both indices can well represent the quasi-stationary stage and the north jump of the EASM, and they are consistent spatially and temporally. Based on changes in the cloud indices, active, transitional and interruptive monsoon periods in three regions of South China, East China and North China are defined. Differences in the cloud indices as well as differences in the circulation and water vapor fields at 500 hPa between the active and interruptive periods are examined, and the reasonability of the cloud indices is proved. Comparison of monsoon activity periods defined by the cloud indices and precipitation index shows that the monsoon active (interruptive) days are basically the same. However, the difference between the cloud and precipitation indices is that the precipitation index emphasizes the change in precipitation, while the cloud indices emphasize the change in cloudiness. The difference between monsoon active (interruptive) days respectively defined by cloud and precipitation indices could also reflect differences in the feature and type of precipitation.

Keywords: Cloud indices, East Asian summer monsoon, Active period