

Regional seasonal marches of precipitation and their long-term variations in India for 1901-2013

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Regional characteristics of climatological seasonal marches of precipitation and their long-term variations have been examined for the period 1901-2013 in India using a high resolution (0.25°×0.25°) daily gridded precipitation dataset provided by the Indian Meteorological Department. Cluster analysis (Ward's method) was applied for the 30-year climatological 5-day precipitation (1981-2010) at each grid box, and nine regions were divided. Then changes of seasonal precipitation characteristics, including onset, peak, and retreat of rainy season were examined for the 113-year period from 1901-2013 in a regional basis. As a result, for example, in the west coast area where typical monsoonal seasonal changes are observed, a prominent precipitation peak appeared in July prior to 1940, while precipitation in the subsequent rainy season in August has increased during the 20th century, and the degree of concentration of precipitation in July has decreased after the 1940s.

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