
Relationship between Azores High and Indian summer monsoon

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Abstract

A dominant mode of interannual variability of Indian summer monsoon rainfall shows west-east dipole pattern with above normal rainfall towards west and central India and subdued rainfall towards the east and northeast India, and is related to the vigorous Azores High. The vigorous Azores High is accompanied by enhanced subsidence resulting in well-built widespread upper troposphere convergence. This forms the meridional vorticity dipole consisting of anomalous cyclonic and anti-cyclonic circulation at 30°N and 50°N, respectively, and boosts the Rossby wave source. The cascading down Rossby wave train imposes successive negative, positive and negative Geopotential height (GPH) anomalies over north Mediterranean, northwest and northeast of India, respectively. The negative GPH anomaly at the north Mediterranean increases the Asian jet towards the Caspian Sea, strengthening the monsoon circulation through the 'silk-road' pattern. While, the dipole GPH anomaly north of India shifts the Tibetan High westwards, triggering monsoon activity towards the west.

Keywords: Azores High, Indian summer monsoon, Rossby wave train, Rossby wave source, Tibetan High, silk road pattern

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