

Anomalous Walker Circulation Associated with Two Types of the Indian Ocean Dipole

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The Indian Ocean Dipole (IOD), an air-sea coupled phenomenon in the tropical Indian Ocean, can be classified into two types based on sea surface temperature (SST) anomaly patterns. One type is referred to as the canonical IOD; positive (negative) sea surface temperature (SST) anomalies cover the eastern (central to western) tropical Indian Ocean. The other is named the IOD Modoki; it is associated with positive (negative) SST anomalies cover the central (eastern and western) tropical Indian Ocean. It is shown that the canonical IOD is associated with a single cell anomalous Walker Circulation, while the IOD Modoki is accompanied by a double-cell anomalous Walker Circulation. Implications of differences in the anomalous Walker Circulation cell will also be discussed.

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