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The Impact of Climate Modes on Summer Temperature and Precipitation of Darwin, Australia, 1870-2011

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ABSTRACT

Monthly mean summer (DJF) temperature and precipitation from Global Historical Climate Network (GHCN-V3) for the period of 1870-2011, are analyzed to assess the role of teleconnections on climate of Darwin, Australia. Indices of El Nino-Southern Oscillation (ENSO), Antarctic Oscillation (AAO), Pacific Decadal Oscillation (PDO), North Atlantic Oscillation (NAO), Arctic Oscillation (AO), and Pacific North American Oscillation (PNA) are extracted from monthly means and compared with climatic data of Darwin. Most of these climate modes are shown to have a strong influence on the monthly mean summer temperature and precipitation. ENSO is shown to have a positive relationship with the amount of precipitation received and a negative relationship with the temperature. Where an El Nino event produces warmer drier conditions and a La Nina event produces colder wetter conditions. The AAO is shown to cause cold and dry conditions during the positive phase and warm and wet conditions during the negative phase. The PDO is shown to cause El Nino like condition during the positive phase causing warmer, drier weather, and La Nina like conditions during the negative phase causing cooler, wetter weather. Through the analysis it is also shown that the NAO, AO, and PNA have little effect on the temperature and precipitation patterns of Darwin.

KEYWORDS

Climate Modes; Teleconnections; Climate of Darwin; Climate Change; Climate Variability; ENSO; AAO; PDO

Cite this paper

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