

Climate Teleconnections and Their Influence on the Spread of Dengue

Authors : Edilene Machado, Carolina Karoly, Amanda Britz, Luciane Salvi, Claudineia Brazil

Abstract : Climate teleconnections refer to the climatic relationships between geographically distant regions, where changes in one location can influence weather patterns in another. These connections can occur through atmospheric and oceanic processes, leading to variations in temperature, precipitation, and other climatic elements. Studying teleconnections is crucial for better understanding the mechanisms that govern global climate and the potential consequences of climate change. A notable example of a teleconnection is the El Niño-Southern Oscillation (ENSO), which involves the interaction between the Equatorial Pacific Ocean and the atmosphere. During El Niño episodes, there is anomalous warming of the surface waters in the Equatorial Pacific, resulting in significant changes in global climate patterns. These changes can affect rainfall distribution, wind patterns, and temperatures in different parts of the world. The cold phase of ENSO, known as La Niña, is often associated with reduced precipitation and below-average temperatures in the state of Rio Grande do Sul, Brazil. Therefore, the objective of this research is to identify patterns between El Niño-Southern Oscillation (ENSO) events in their different phases and dengue transmission. Meteorological data and dengue case records for the city of Porto Alegre, in the southern region of Brazil, were used for the development of this research. The study highlighted that the highest incidence of dengue cases occurred during the cold phase of the El Niño-Southern Oscillation (ENSO).

Keywords : climate patterns, climate teleconnections, climate variability, dengue, El Niño-Southern oscillation

Conference Title : ICCCM 2024 : International Conference on Climate and Climate Change Modeling

Conference Location : Tokyo, Japan

Conference Dates : May 23-24, 2024