



## The extratropical influence on extreme rainfall over Northeastern Brazil

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The rainy season of northern Northeastern Brazil (MAM), one of the tropical regions with the largest interannual variability, is associated with the ZCIT influence, which is located in the southermost position during this season. However, there is a large interannual variability in the ITCZ position, associated with atmospheric and oceanic anomalies, responsible for dry or wet years in the region. Several studies have shown the influence of the SST gradient between North and South Tropical Atlantic on precipitation over Northeastern Brazil (NEB). When the Tropical North Atlantic is warmer than average and the Tropical South Atlantic is colder than average, the ZCIT is located to the north of the climatological position, situation that implies in drought condition over Northeastern Brazil. When the situation reverses, the ZCIT is located to the south, resulting in favorable conditions to precipitation over the region. The intensity of precipitation associated with the ZCIT and its position in MAM is affected by several features, besides the Atlantic SST variability, such as the ENSO episodes and MJO. Recently, we identified a North Atlantic extratropical influence related to the NAO variability and a South Atlantic extratropical signal in cases of ZCIT displaced to the north or to the south of the climatological position. In the present study, atmospheric and oceanic characteristics are analyzed in extreme cases of precipitation over NEB in the period of 1979 to 2009. The atmospheric and oceanic composite fields in wet and dry cases show the influence of extratropical centers of action over the North and South Atlantic and over the North and South Pacific. Similar extratropical influences were identified in relation to the extreme case of flooding in NEB in 2009.