A Simple Detection Method for the South Atlantic Convergence Zone (SACZ)

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The South Atlantic Convergence Zone (SACZ) is a meteorological phenomenon directly connected to the South American Monsoon System (SAMS). It is characterized as a continuous cloud band oriented in the NW-SE direction, extending from the Amazon region to the South-Central Atlantic, and persisting for at least four days. Acting as a significant source of precipitation during late Spring and Summer in South America, the SACZ plays a pivotal role in ensuring a consistent water supply for agriculture, reservoirs filling and drought mitigation in the region. The proposed index is a simplified version of methods existing in the literature and relies on the utilization of thresholding Outgoing Longwave Radiation (OLR)and clustering techniques for SACZ identification. The simplicity of this new index makes itsuitable for analysis that require lengthy time series and extensive datasets. The OLR dataused was obtained from NOAA's Daily Outgoing Longwave Radiation Climatic Data Record.The validation is based on confirmed SACZ episodes documented on the monthly' Climatological Bulletin' from the Centro de Previsão do Tempo e Clima (CPTEC), coveringthe period from 1996 to 2014. The results show that the index overestimates the number ofevents, as it can also capture frontal systems, leading to the identification of different zones of convergence. Furthermore, this study involves an analysis of key attributes, such as themonthly frequency and geographical positioning of the SACZ.

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