



Climate variability simulated by the Brazilian Atmospheric Model (BAM-v0)

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Climate variability and teleconnections are important issues to be discussed in model simulations aiming the improvements of model climate predictions. Precipitation anomalies in certain regions are strongly affected by these features and it is important to know if models are able to reproduce such patterns and influences. The main objective is to analyze the basic global features of the Brazilian Atmospheric Model-version zero (BAM-v0) and to discuss the ability of the model in simulating the interannual precipitation variability in several regions of Brazil, the role of Pacific and Atlantic Sea Surface Temperature and the main teleconnection patterns that affect South America. This is a spectral model with T62L28 resolution and the observed Sea Surface Temperature is the inferior boundary condition at monthly timescale. The integrations are performed considering five initial atmospheric conditions of daily December 1979 data and the period of analyses is 1981 to 2010. The best simulation of interannual precipitation variability occurs in the Northeast Brazil region, which is affected by the tropical Pacific and Atlantic Sea Surface Temperature. The main teleconnection patterns that affect South America are well simulated, such as El Niño-Southern Oscillation, the Southern Annular Mode and the Pacific South Atlantic pattern. The influences of ENSO over South America precipitation are well simulated and the model reproduces the droughts in Northeast Brazil and above normal precipitation over South Brazil during El Niño years and the opposite conditions in La Niña years. Although the model presents precipitation bias over South America, the South America Monsoon System region, indicated by the difference between summer and winter above a certain threshold is well reproduced. The development of the model to a further climate version is underway, aiming to improve the precipitation and other features that are important to climate predictions.