



## **The North Atlantic Oscillation and the ITCZ in a climate simulation**

I.F.A. Cavalcanti (1) and P. Souza (2)

(1) National Institute of Space Research, CPTEC, Cachoeira Paulista, Brazil (iracema@cptec.inpe.br, 55 12 31012835), (2) IGAM-Minas gerais

The North Atlantic Oscillation (NAO) and the Atlantic Intertropical Convergence Zone (ITCZ) features are analyzed in a climate simulation with the CPTEC/COLA AGCM. The CPTEC/COLA AGCM reproduces the ITCZ seasonal north-south displacement as well as the seasonal east-west intensity, but the model overestimates the convection. The two phases of NAO are well simulated in the four seasons and also the largest intensity in DJF. The main mode of atmospheric variability considering the North and South Atlantic region, which displays a shifting of the NAO centers and a center of action over South Atlantic to the south of Africa is also reproduced. This mode, in DJF, is associated with the north-south ITCZ displacement in April, in the observed data. The displacement of the NAO centers southwestward allows the increase of pressure over the tropical North Atlantic Ocean and the increase of trade winds and displacement of the confluence and convergence zone southwards. The opposite occurs when the centers are displaced northeastward. The model Atlantic ITCZ position in April is associated with the anomalous (observed) Atlantic SST and the southward displacement of the confluence zone, but the simulated atmospheric features in DJF does not display the main mode of variability, as in the observations. This occurs due to the lack of interaction between the atmosphere and ocean in the atmospheric model. While in the observations the physical mechanism that links the NAO centers of action to the ITCZ position is the ocean-atmosphere interaction, from DJF to April, the atmospheric model responds to the prescribed SST at the same month, in April.