



Reconstruction of the South Atlantic Dipole Index

Ilana Wainer (1), Luciana Prado (1), Myriam Khodri (2), and Bette Otto-Bliesner (3)

(1) University of São Paulo, Institute of Oceanography, São Paulo, Brazil (wainer@usp.br), (2) Sorbonne Universités (UPMC, Univ Paris 06)-CNRS-IRD-MNHN, LOCEAN Laboratory, 4 place Jussieu, F-75005 Paris, France, (3) Climate and Global Dynamics Division, National Center for Atmospheric Research, Boulder, Colorado 80307, USA

Climate indices based on sea surface temperature (SST) can synthesize information related to physical processes that describe change and variability in continental precipitation from floods to droughts. The South Atlantic Subtropical Dipole index (SASD) is based on the distribution of SST in the South Atlantic and fits these criteria. It represents the dominant mode of variability of SST in the South Atlantic, which is modulated by changes in the position and intensity of the South Atlantic Subtropical High. Here we reconstructed an index of the South Atlantic Ocean SST (SASD-like) for the past twelve thousand years (the Holocene period) based on proxy-data. This has great scientific implications and important socio-economic ramifications because of its ability to infer variability of precipitation and moisture over South America where past climate data is limited. For the first time a reconstructed index based on proxy data on opposite sides of the SASD-like mode is able to capture, in the South Atlantic, the significant cold events in the Northern Hemisphere at 12.9^{-1} 1.6 kyr BP and 8.6–8.0 ky BP. These events are related, using a transient model simulation, to precipitation changes over South America.