Geophysical Research Abstracts,
Vol. 11, EGU2009-2595, 2009
EGU General Assembly 2009


# Multidecadal Variability of the North Brazil Current

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The North Brazil Current (NBC) flowing northward in the tropical south Atlantic is one of the strongest western boundary currents in the world ocean. It's unique location, straddling the tropical Atlantic where currents are predominately zonal, suggests that it is a major component of the Atlantic Meridional Overturning Circulation (AMOC). Fritz Schott was one of the first to suggest using the NBC as an index for AMOC transport, which is difficult to simulate accurately in models and data assimilation systems due to a lack of observational constraints.

Here, we calculate an NBC transport time series based on five decades of historical ocean observations near the western boundary off the coast of Brazil between 6° and 11°S. Results reveal a large magnitude NBC variation on multidecadal time scales that is coherent with the Atlantic Multidecadal Oscillation in sea surface temperature, multidecadal swings in Sahel Drought and Atlantic hurricane activity, as well as the subtropical and subpolar upper ocean salinity anomalies. All of these multidecadal variations have been linked to the AMOC in a number of modelling studies, suggesting that our observed multidecadal NBC variability is an useful indicator of the AMOC. Concerning the possible slowdown of AMOC under global warming and the debate about whether a slowdown has already occurred, our NBC transport time series shows no significant trend over the last half century. The results provide important constraints on climate models used for climate change projections and decadal time scale climate predictions.