Geophysical Research Abstracts, Vol. 9, 02562, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02562

Generation of Hyper Climate Modes

D. Dommenget and M. Latif
IFM-GEOMAR, Kiel, Germany

Climate variability on multidecadal timescales of many decades has been described extensively from observations of the last millennium. Understanding the mechanisms generating the multidecadal climate variability is a prerequisite for an early detection of anthropogenic climate change that evolves on similar timescales. Here we present evidence from observations and CGCM simulations, which show that global-scale multidecadal climate variability, so called hyper climate modes, can be generated solely by local air-sea interactions. The surface heat flux variability associated with global atmospheric variability patterns is integrated by the large heat capacity of the ocean. Once sea surface temperature (SST) anomalies have developed in the Tropics, global atmospheric teleconnections spread the signal around the world. These hyper climate modes can vary on timescales of up to 10,000 years. Ocean dynamics may influence the regional expression of the variability, but are not at the heart of the mechanism which produces the hyper modes.