



## **Interdecadal MOC variability as an ocean internal mode**

Xiuhua Zhu (1,2), Johann Jungclaus (1), Jochem Marotzke (1)

(1) Max Planck Institute for Meteorology, Germany

(2) International Max Planck Research School on Earth System Modelling, Germany

InterDecadal Variability (IDV) with a period of 25-40 years has been identified in various observations and modelling studies concerning North Atlantic climate change. IDV is associated with variations in the North Atlantic Meridional Overturning Circulation (MOC).

In ECHAM5/MPIOM coupled atmosphere-ocean model, IDV is characterized as temperature and salinity anomalies appearing near Newfoundland while in the rest of the basin with opposite sign. The anomalies move eastward from Newfoundland, take the path of the North Atlantic Current, and follow the subpolar gyre. This result is consistent with previous studies.

A series of experiments with the ocean component of the coupled model show that IDV exists as an ocean internal mode; in other words, neither atmospheric forcing nor dynamic atmosphere-ocean coupling is crucial for its existence. Our analysis shows that IDV is highly dependent on the overflow variations, which leads to a new hypothesis to explain the origin of IDV.