



## **Effect of fluctuating surface fluxes on the mean Atlantic Meridional Overturning Circulation**

**B. S. Beena** (1), J. S. von Storch (2)

(1) Institute of Meteorology, University of Hamburg, Hamburg, Germany, (2) Max-Planck Institute of Meteorology, Hamburg, Germany (beena-balan@dkrz.de, Phone: +49-40-41173-150, Fax: +49-40-41173-298)

Stochastic atmospheric forcings are widely used in modeling ocean climate system and its variability. But can they change the mean state of the ocean ? A statistical atmospheric model producing time-varying daily surface fluxes - heat, momentum and freshwater - which can respond to the ocean surface is used. Various experiments of this anomaly model coupled to an OGCM are carried out (a) to quantify the roles of flux fluctuations and oceanic feedback to the fluctuations in determining the time-mean of the Atlantic MOC and (b) to understand the effect of surface flux fluctuations on the present-day mean MOC. Both fluctuations and feedback increased the MOC. An analysis of mixing processes in the model suggests that the increase in the MOC results from a stronger mixing in the north Atlantic. The increase in MOC is also related to a decrease in the Antarctic Circumpolar Current. Our work demonstrates that the small scale weather fluctuations with oceanic feedback can affect the time-mean of the Atlantic MOC.