



## **Multiscale Phenomena on the Northern Hemisphere and long time Variability**

Andreas Will (1), Stefan Weiher (1), Markus Thürkow (2), Mareike Schuster (2), and Ingo Kirchner Ingo Kirchner (2)

(1) Lehrstuhl Umweltmeteorologie, Brandenburgische Technische Universität Cottbus-Senftenberg, Germany, (2) Institut für Meteorologie, FU Berlin, Germany

The 2way coupled model system between the atmospheric component ECHAM6 of the global climate model MPI-ESM and the atmospheric component of the regional climate model COSMO-CLM allows at simulating the atmospheric scale interaction between the meso-beta scales ( $\geq 50$  km) and the large scales in a selected region and the large scales ( $\geq 300km$ ) globally.

We selected the Central America to North Atlantic region for 2way coupling, which encompasses the region of development of extremely growing Rossby Wave Trains crossing the Atlantic, the region of the Gulf current, where strong forcing of the ocean occurs and the region of Northern Atlantic, where Rossby Wave breaking occurs.

We found a significant reduction of the zonality of the flow, an increased frequency of storms and a significant increase of near surface temperature by several degrees in the Northern Atlantic, between others.

The results indicate that all three meso-scale processes are relevant for the climatology of large to planetary scales on the Northern Hemisphere. The relevance of the processes for low frequency variability will be discussed.