



Future trends of precipitation over Europe based on ECHAM5-OM1 simulations

A. Matthies, G.C. Leckebusch, U.Ulbrich

Freie Universität Berlin, Institut für Meteorologie (anne.matthies@met.fu-berlin.de / Phone: +49-30-838-71152)

An increase of precipitation extremes in both directions would seriously interfere with life on Earth. This study concentrates on the estimation and classification of precipitation events simulated with the ECHAM5-OM1 CGCM for present day conditions and future trends (IPCC-scenarios A1B and A2, 2061-2100). The area of investigation is Europe, which is split up into different climatological subareas. The precipitation simulation of the 20th century (1961-2000) is validated with the ERA40-reanalysis data, revealing systematic deviations depending on the region investigated. A climate change signal is estimated for different regions over Europe separately. It appears that frequency and magnitude of precipitation for classes of low and middle intensity decrease at an amount of 20-30%. For classes with high intensity an increase by a similar amount is analyzed, with different characteristics for different regions. Particularly in northern Europe an increase of intense precipitation is shown, whereas in the South of the continent frequency and magnitude in low and middle classes decrease notably. Model results also suggest that winter snowfall is decreasing all over Europe, also depending on the region and scenario investigated. In order to identify the relevant causes for these changed precipitation pattern, the occurrence of extreme precipitation events is related to changes in the flux of specific humidity in the lower troposphere.