



Predictability of the extreme summer 2003 over Europe

A. Weisheimer, F.J. Doblas-Reyes, and T.N. Palmer
ECMWF, Reading, UK, (Antje.Weisheimer@ecmwf.int)

The summer 2003 over Europe was the warmest on record and had severe impacts on the society, economy and environment. The physical processes that led to the extreme conditions are, however, not well understood and coupled GCMs have difficulties to re-forecast this highly unusual event. Here we present new results from ensembles of seasonal re-forecast experiments over a 15-year period using the ECMWF coupled GCM initialised with analysed atmospheric and oceanic states. While the current operational seasonal forecasting system fails to indicate any relevant risk of an extreme heat wave in JJA 2003, latest model developments in a number of physical parametrization schemes noticeably improve the predictability of the extreme European summer temperature. Evidence will be presented showing that only the interplay between the large-scale atmospheric dynamics (enhanced convective activity over the Sahel region) and local processes at the land-surface lead to the successful prediction of the temperature anomalies over large parts of Europe. This work was carried out as part of the FP6 project ENSEMBLES.