



## **Spatio-temporal distribution of seasonal and annual temperature extremes in the NCEP/NCAR reanalysis**

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We investigate the link between increasing global temperatures and the occurrence of regional temperature extremes. Reanalysis data from the National Centers for Environmental Prediction and the National Center for Atmospheric Research (NCEP/NCAR) are used to analyse the spatial distribution and temporal evolution of atmospheric 2m temperature extremes for the period from 1948 to 2006. The results show that areas affected by seasonal/annual cold or warm extremes in the same year exhibit a large spatial coherence. Since 1948 two extreme events particularly stand out: the El Niño year of 1998 which set warm records for many tropical areas and the winter of 1968/1969 when the lowest temperatures were recorded over large parts of Siberia. The amplitude of the temperature anomaly that occurred during the winter of 1968/1969 exceeds any other warm or cold seasonal anomaly since at least the mid 20th Century. During the 1948 to 2006 period, an asymmetry characterises the temporal evolutions of the area surface affected by warm and cold extremes. In accordance to the recent warming trend, the fraction of the Globe's surface experiencing warm extremes in the same year has steadily increased during the last decades. However, the corresponding decrease in the occurrence of cold extremes is less pronounced. For the winter (Dec-Jan-Feb) and autumn (Sep-Oct-Nov) seasons the temporal evolution of cold extremes cannot be distinguished from that expected in a climate with no warming trend.