



Climate extremes: Observational data sets for climate change studies and monitoring

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Recent years have seen a huge increase in interest in the study of extreme weather and climate events due to their devastating societal, ecological and economic impacts. The Hadley Centre has recently led the development of a number of new observational datasets suitable for the study and monitoring of extremes.

HadGHCND, developed in association with the US National Climatic Data Center, is a gridded data set of daily maximum and minimum temperature observations covering the period 1946 to the present. HadEX is a new global data set of observed climate extremes indices from 1951 to 2003, which comprises a total of 27 indices including frost days, warm spell duration, consecutive dry days and extreme precipitation. Analysis of HadGHCND and HadEX indicates large-scale warming, particularly in daily minimum temperatures and their associated indices. Precipitation indices from HadEX suggest a widespread increase, but the changes are much less spatially coherent than for temperature change.

EMSLP is a new daily European-North Atlantic (70W-50E, 25-70N) mean sea level pressure data set for 1850-2003. EMSLP has been used to examine the circulation patterns associated with recent extreme events across the European-North Atlantic region in the context of historical events, in particular those associated with changes in extreme storms over the UK. Prior to 1986 no pre-winter (Nov/Dec) storm event over the UK was associated with an NAO-like pattern; most pre-winter events in the past decade however have occurred during this pattern. This may provide some evidence for a shift in the large-scale circulation patterns affecting severe storms in pre-winter.

These and other datasets are available from the Hadley Centre website at www.hadobs.org and are suitable for a wide variety of climate and impacts analysis applications.