EMS Annual Meeting Abstracts
Vol. 14, EMS2017-558, 2017

An analysis of sub-daily rainfall to characterise long term trends in UK rainfall

Mark McCarthy
Met Office, Hadley Centre, Exeter, United Kingdom (mark.mccarthy@metoffice.gov.uk)

In the past few decades there has been an increase in annual average rainfall over the UK, particularly over Scotland. However, the trend is less clear from longer term records of rainfall over England and Wales since 1766. UK climate records also exhibit a large number of extreme and record rainfall events in the 2000s. In order to investigate the characteristics of rainfall events that are contributing to these apparent trends we have analysed the UK Met Office archive of hourly data. The UK digital climate archive contains extensive records of hourly rainfall and other core meteorological observations, with a small number of stations having near continuous measurements available for the period 1949 to present. For this investigation we have examined all station records with at least 30 years of near-continuous hourly data. For each station we have generated a database of rainfall events, in which a rain event is bounded at both ends by at least one dry hour. We also extract temperature, humidity and wind data for the last dry hour preceding each rain event. Events are therefore summarised by their temperature, humidity, wind speed and direction as well as total rain, duration, peak hourly rain rate, and mean hourly rain rate. In this presentation we describe the quality and homogeneity of the resulting database of rain events, and use it to describe changes in the character of UK rainfall and extremes since the mid 20th Century.