



Twenty-first century CMIP5 projections of atmospheric circulation over British Isles under RCP4.5 and RCP8.5 scenarios

Paolo De Luca (1), Colin Harpham (2), Rob Wilby (1), Gregor Leckebusch (3), Christian Franzke (4), and John Hillier (1)

(1) Geography Department, Loughborough University, UK, (2) Climatic Research Unit (CRU), School of Environmental Sciences, University of East Anglia, UK, (3) School of Geography Earth and Environmental Sciences, University of Birmingham, UK, (4) Meteorological Institute and Center for Earth System Research and Sustainability (CEN), University of Hamburg, Germany

Daily atmospheric synoptic-scale circulation over the British Isles (BI) can be represented by Lamb Weather Types (LWTs). These 27 weather patterns are obtained from the variation of sea level surface pressure across the BI geographical domain. The principal LWTs are: anticyclonic (A), cyclonic (C), westerly (W), northerly (N), easterly (E), southerly (S) and north-westerly (NW), with the other 20 LWTs being combinations of these. At present LWTs have not yet been considered for future projections of climate. Thus, data from NCEP-NCAR reanalysis (1950-2005) and from 3 different CMIP5 models (HadGEM2-ES, MPI-ESM-LR and MIROC5), i.e. historical (1950-2005), RCP 4.5 and RCP 8.5 (2006-2100) scenarios have been obtained and an analysis of LWTs frequency is presented. Historical and future projections are compared and contrasted, and how future changes in atmospheric circulation patterns may affect storm activity and hydrology and their related natural hazards (e.g. extra-tropical cyclones, floods and droughts) is discussed.