Session: B2 Oral presentation

Extreme weather in nested ensembles: the weatherathome experiment

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The weatherathome experiment (http://weatherathome.net) exploits the unique large-ensemble capability provided by public resource distributed computing to provide regional climate model simulations at 50 and 25km resolution nested within a 1.5 degree resolution global atmospheric GCM. With this set-up and a global community of 50-60,000 dedicated volunteers we can generate hundreds of thousands of years of RCM model-time, representing a unique resource for the study of extreme weather. Weatherathome is currently simulating the climate of 1959-2010 with models driven by observed sea-surface temperature and sea ice, using atmospheric parameter perturbation to allow for uncertainty in the response, and constraining models using the comparison of simulated top-of-atmosphere fluxes with satellite observations. We are addressing the attribution and prediction problems by subtracting SST patterns of warming to date attributable to human influence, and adding SST change patterns of forecast warming, all estimated from the CMIP-3 and CMIP-5 ensembles. Results from these initial experiments will be presented, focussing particularly on the European region, and predictions will be compared with the GCM, RCM, emulator and weather-generator approach taken by the UK Climate Projections, UKCP09.