



The hydrology in the Met Office land surface scheme and its sensitivity to model parameters.

E. Compton (1) and N. Gedney (2)

(1) The Met Office, Hadley Centre, JCHMR, Wallingford, Oxfordshire, United Kingdom (emma.compton@metoffice.gov.uk, 01491 692424), (2) The Met Office, Hadley Centre, JCHMR, Wallingford, Oxfordshire, United Kingdom (nicola.gedney@metoffice.gov.uk, 01491 692424)

In common with many land surface schemes used within climate models, the standard UK Met Office land surface scheme (JULES) has a relatively detailed vertical description but no depiction of sub-grid scale horizontal variation, leading to errors in runoff (Gedney & Cox, 2003). JULES was therefore extended to include the major influence of sub-grid scale topography on soil moisture (JULES_LSH; Clark & Gedney, 2008). However, there is some uncertainty in the parameter values required for JULES_LSH. This is especially the case for the topographic data, where the use of relatively coarse elevation data leads to an apparent smoothing of the surface.

The global land surface schemes are run offline, whereby the variables used to drive the models are taken from observations (developed in the WATCH and GSWP2 projects). In order to gauge whether including sub-grid scale soil moisture improves the model simulation, the standard JULES model and JULES_LSH are compared against observations. The impact of uncertainty of the additional JULES_LSH parameters is also analysed. The model assessments are carried out over a range of different temporal and spatial scales. This includes analysing modelled daily catchment river flow against gauge station measurements. The long-term mean modelled river flows across the globe are also compared to observations.