EMS Annual Meeting Abstracts
Vol. 10, EMS2013-352, 2013
13th EMS / 11th ECAM

The new UK Soil Moisture Real-time Monitoring Network

J.G. Evans, HC Ward, JR Blake, EJ Hewitt, M Fry, and LA Ball
Centre for Ecology & Hydrology, Process Hydrology, Wallingford, United Kingdom (jge@ceh.ac.uk)

Soil moisture plays an important role in controlling land-surface energy fluxes, flood and drought hazards (e.g. crop failure), and the soil processes governing greenhouse gas emissions. In meteorological models the soil water content is determined as part of the land surface scheme and the performance of this soil moisture component requires evaluation; however, there are few in situ data representative of a suitable scale comparable to model data i.e. large area measurements at the field scale or greater (which integrate across local spatial heterogeneity). There are even fewer networks of such measurements that may begin to give real-time national scale soil moisture data which sample such influencing factors as climatic gradients, soil type variability, topography and the different land cover types. Here we describe a major investment in a new UK soil moisture and hydro-meteorological real-time monitoring network based principally on large area measurements provided by Cosmic Ray Soil Moisture Sensors. Each network station also delivers high quality micro-meteorological variables. The rationale, sampling strategy and operation of the network are described. The future scientific applications are surveyed along with the planned implementation of soil moisture data assimilation into the community land-surface model.