



COSMOS-UK: Performance of the UK National Soil Moisture Measurement Network Related to Aspects of Cosmic Ray Neutrons

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The COSMOS-UK network delivers consistent near real-time monitoring of soil moisture and meteorological variables across the whole of the UK, at 46 long-term field monitoring locations. All field calibrations, measurement technology, using Cosmic Ray soil moisture Sensors (CRS) and other instrumentation, is standardized. The automated procedures for application of the CRS technique are applied uniformly across the network for the retrieval of the soil moisture measurement from naturally occurring, cosmic ray generated fast neutron counts, continuously measured at each field station. In this paper current methodology and long-term soil moisture observations are presented, with respect to hydrology across a range of soil types, geology, climate and land cover, and the measurement performance is compared across this range of environmental factors. The controlling influences on soil moisture measurement performance, such as the correction of fast neutron counts, are discussed. Finally, recommendations are made for future research topics linked to the understanding of space weather and the flux of cosmic ray generated fast neutrons at the Earth's surface.