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# Assessing the level of acceptability of climate models with large scale soil moisture fields from remote sensing

G Schumann (1), D.J. Lunt (1,2), P.J. Valdes (1), R.A.M. de Jeu (3), K. Scipal (4), and P.D. Bates (1)

(1) School of Geographical Sciences, University of Bristol, University Road, Bristol, BS8 1SS, UK, (2) Geological Sciences Division, British Antarctic Survey, Cambridge, CB3 0ET, UK, (3) Department of Hydrology and Geo-Environmental Sciences, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands, (4) Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, 1040, Vienna, Austria

We demonstrate that global satellite products can be used to evaluate climate model soil moisture predictions but conclusions should be drawn with care. The quality of a limited area climate model (LAM) was compared to a general circulation model (GCM) using soil moisture data from two different Earth observing satellites within a model validation scheme that copes with the presence of uncertain data. Results showed that in the face of imperfect models and data, it is difficult to investigate the quality of current land surface schemes in simulating hydrology accurately. Nevertheless, a LAM provides, in general, a better representation of spatial patterns and dynamics of soil moisture. However, in months when data uncertainty is high, particularly in colder months and in periods when vegetation cover and soil moisture are out of phase, it is not possible to draw firm conclusions about model acceptability. Our work indicates that a higher resolution LAM has more benefits to soil moisture prediction than are due to the resolution alone and can be attributed to an overall intensification of the hydrological cycle relative to the GCM.