



Benefits of remotely sensed surface status and soil moisture data for the hydrological evaluation of a land surface model

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The newly available combined surface status and surface soil moisture products retrieved by the ASCAT sensor onboard satellite METOP are exploited with a view of assessing the strengths and weaknesses of surface hydrological modelling in the land surface model ORCHIDEE over Eurasian permafrost regions. Spatial and temporal resolutions of both satellite products make them suitable for such evaluation purposes.

Modelled and remotely-sensed timings of soil thaw and freeze-back agree reasonably well over the 2007-2009 period when data are available. Despite a good daily correlation with the remotely-sensed signal, the land surface model is unable to capture the main seasonal dynamics and spatial patterns of surface soil moisture in the Eurasian Arctic and Sub-Arctic areas. We hypothesize that part of those weak performances originate from the non-representation of surface ponding in the model, the coarse treatment of the hydrological specificities of mountainous areas and spatial inaccuracies in the meteorological forcing in remote, North-Eastern Siberian areas.