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An intercomparion of simulated and observed brightness temperatures of snow

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An existing land-hydrology model including snow physics was coupled to a microwave emission model (MEMLS) for a multi-year simulation of the accumulation and melting phases of the snowpack at Valdai in Russia using data from PIPLS2c. Simulated brightness temperatures were compared against satellite-based observations in the 18, 21 and 37 GHZ (V and H polarization) from SMMR. Despite lack of detailed data for carrying out rigorous atmospheric correction, the comparison shows high correlation coefficients and relatively small bias. The snow physics in the model is considerable simpler than those in other commonly used models such as SNTHERM, and thus these results suggest interesting questions regarding the connection between model complexity, spatial and temporal resolution (scale) of interest, and the accuracy required for useful estimation of snow water equivalent from remote sensing observations.