



## **Parametrizations of land-atmosphere energy and mass transfer: the role of the snow layer and the freeze/thaw cycle**

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Land surface models are currently an active area of research because of their importance for circulation models on many spatial and temporal scales. Here we will compare the impact of different parametrization of the snow layer and the freeze-thaw cycle. The background of this study is the setup of a long-term monitoring network in the Guadarrama mountains north of Madrid (GUMNET), where a number of complete meteorological observation sites will be complemented by shallow boreholes (10 m - 20 m), where temperatures and soil moisture are measured at various depths. We will focus our study on the aspects of different available land-surface models (Jules, Noah, CLM) which impact their suitability to be used in a data assimilation framework with future data from GUMNET.