



Improved modeling of permafrost dynamics in a GCM land-surface scheme

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Global climate models (GCMs) are frequently used to understand and predict future climate change, but most of GCMs do not attempt to represent permafrost dynamics and its potentially critical feedbacks on climate. In this paper, we evaluate the Community Land Model (CLM3), which is a land-surface scheme, against observations and identify potential modifications to this model that improve fidelity of permafrost and soil temperature simulations. These modifications include increasing the total soil depth by adding new layers, incorporating a surface organic layer and modifying the numerical scheme to include unfrozen water dynamics and more realistic phase change representation.