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ABSTRACT TITLE: Development and testing the hydrological dynamics of vegetated wetland for CLM

ABSTRACT: The SPRUCE project has engaged several modelers to produce a priori model projections of the experimental treatment conditions to rationalize magnitudes of responses within the SPRUCE experiment. To represent vegetated wetlands in community Land Model (CLM), we incorporate key structural and process changes in the model. Initial efforts with CLM have focused on model modifications needed to represent the isolated hydrologic cycle of the bog environment, as well as the observed patterning of the bog interior into raised hummocks and sunken hollows having distinct hydrologic dynamics and vegetation communities. The preliminary results from the hydrological efforts show that seasonal hydraulic dynamics (water table depths for the hummock/hollow topography) are reasonable and comparable to the observation. Next steps for a priori CLM modeling are to couple the new hydrology treatment with vertically structured soil organic matter pools, and then to introduce components of a methane model recently developed for CLM.