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Coupling subsurface, land surface, and atmospheric flow models

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With the ability to simulate complex models of subsurface, surface, and lower atmospheric flows, recent attention has been focused on understanding feedbacks between these regimes. In this talk, we will present our work in combining a variably saturated subsurface flow model with surface and lower atmospheric models with the goal of enhancing wind prediction and understanding climate change impacts. We will motivate the work with these two application areas, then discuss our simulation capabilities and some of the challenges we face.