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Lattice Boltzmann inverse modeling of water flows in the Everglades National Park ANDREW PEARSON, MICHAEL SUKOP, Florida International University, VICTOR ENGEL, South Florida Natural Resources Center, Everglades National Park — Knowledge of water flow in the Everglades National Park is vital for ecosystem restoration efforts. Of interest here is the planned rehabilitation of "ridge-and-slough" habitats, characterized by numerous adjacent sawgrass ridges aligned parallel to the flow direction. In many areas, reduced water flow due to water management systems has resulted in the conversion of ridge-and-slough landscapes into dense sawgrass stands. Previous studies of water flow have included tracer experiments, typically performed at several points in the region, with measurements taken over several days. Here we report initial results of inverse modeling of data from the EverTREx series of experiments using the parameter estimation code PEST coupled with a Lattice Boltzmann code. We perform two-component simulations in two dimensions, using satellite imagery to model the presence of vegetation in analogy with a porous medium. The final goals of this project are to reduce or remove the need for on-the-ground experiments for determining water flow characteristics in the Everglades, and to predict the effect of changes in water management systems on the flow.

Andrew Pearson
Florida International University

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