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**Punit Gandhi\*** (gandhipr@vcu.edu), **Sarah Iams**, **Sara Bonnetti**, **Amilcare Porporato** and **Mary Silber**. *A Fast-Slow Model of Banded Vegetation Pattern Formation in Drylands*.

From infiltration of water into the soil during rainstorms to seasonal plant growth and death, the ecohydrological processes that are thought to be relevant to the formation of banded vegetation patterns in drylands occur across multiple timescales. On gently sloped terrain, the patterns often appear as bands of vegetation growth alternating with bare soil. The vegetation bands can be tens of meters thick with spacing on the order of a hundred meters, and form a regular striped pattern that often occupy tens of square kilometers on the landscape. We propose a fast-slow switching model in order to capture the relevant processes on appropriate timescales within a conceptual modeling framework based on reaction-advection-diffusion equations. We explore the fast-slow model through numerical simulation on a one-dimensional hillslope, and find agreement with certain observations about the phenomenon, including band spacing and upslope colonization rates. We also find that the predicted soil moisture dynamics is consistent with time series data that has been collected at a banded vegetation site. (Received January 16, 2020)