

# Cornell Fluid Dynamics Seminar Series

Presents

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## “Water Penetration Through Sand Dunes”

12:15-1:15 p.m.

Tuesday, October 20, 2009

178 Rhodes Hall

Pizza and refreshments will be served at noon.

Hyper-arid deserts receive small rainfall during short periods. Because newtonian liquids flow through porous media as a non-linear function of volumetric content, water penetrates sand dunes quickly, sinking to depths that are unaffected by dry and hot surface conditions. As aeolian transport slowly pushes a crescent-shaped barchan dune, trapped water seemingly migrates upwind, thus creating a dry zone at the avalanche face, and a moist region resurfacing near the toe. We present recent measurements of moisture stratigraphy taken in the Sahara, and a numerical model of water balance in the dune. We also discuss how the inhomogeneous packings that we observed in sand ripples induce variations of water content during rainfall.