# Integrating satellite-based soil moisture into landslide science and hazard assessment products
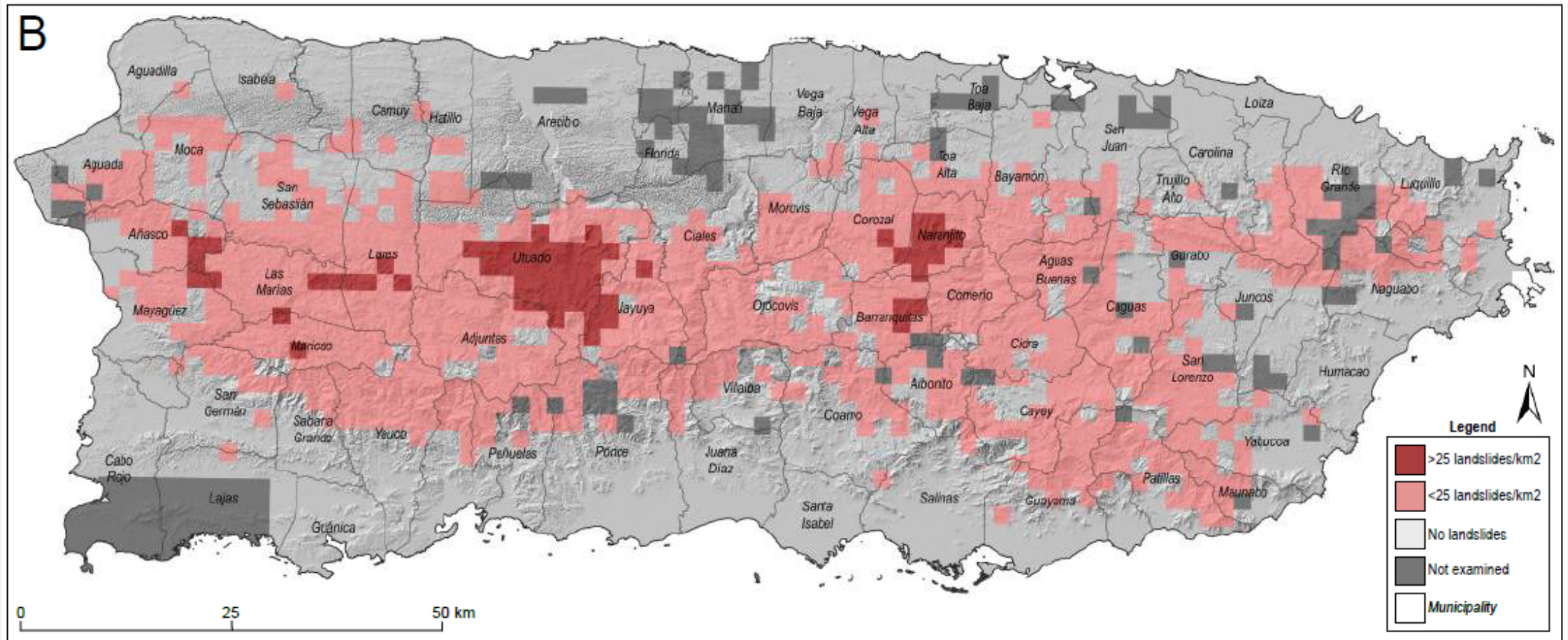
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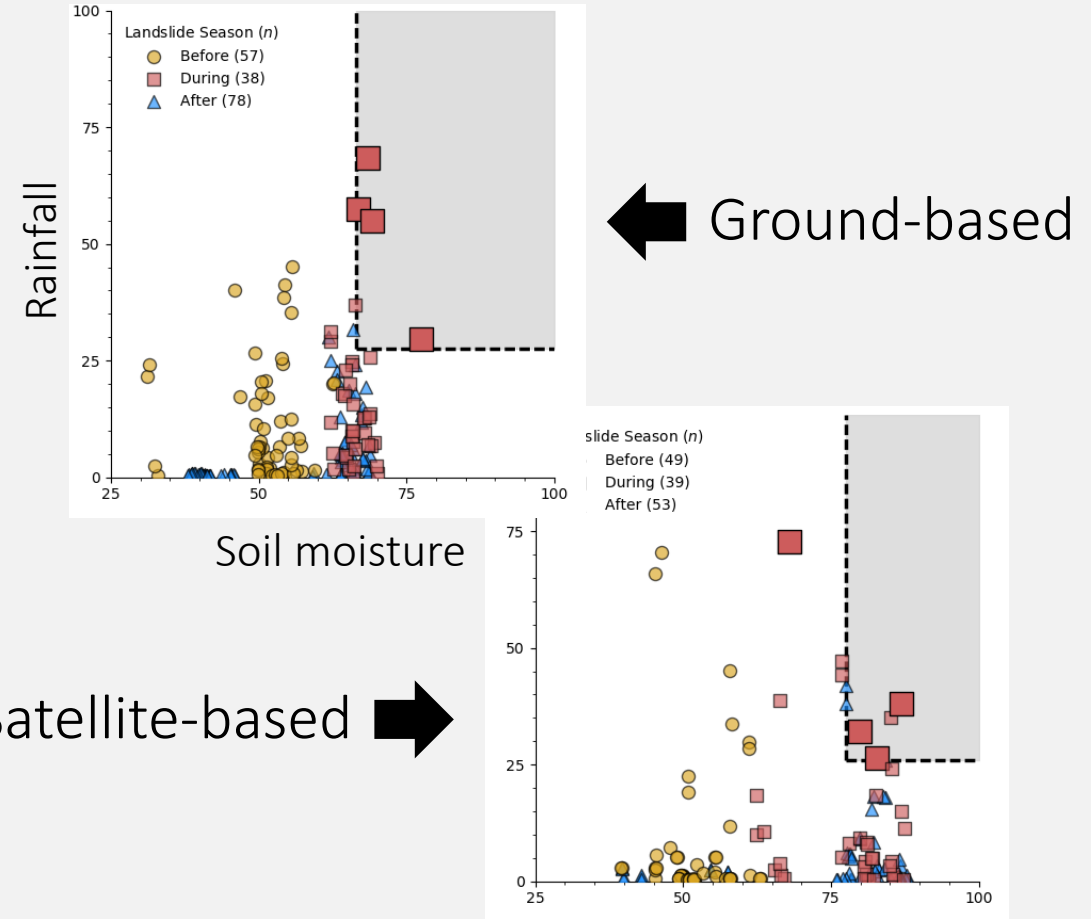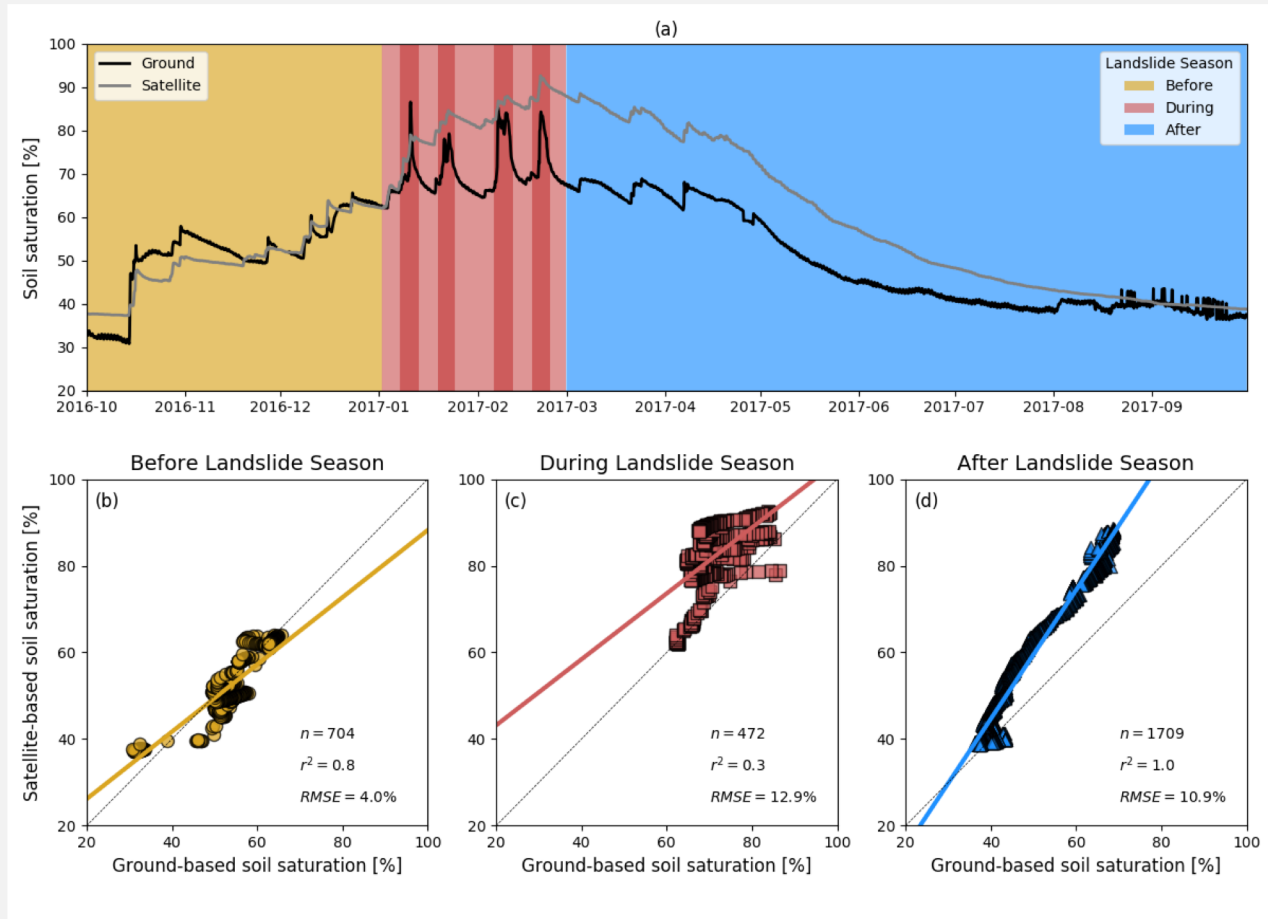
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# Rapid assessment of landslide occurrence following Hurricane Maria in Puerto Rico



Bessette-Kirton et al. (2019), *GSA Today*: Satellite-based soil moisture data are an explanatory variable for observed landslide concentrations.

# Ground- vs. satellite-based landslide thresholds in the San Francisco Bay Area
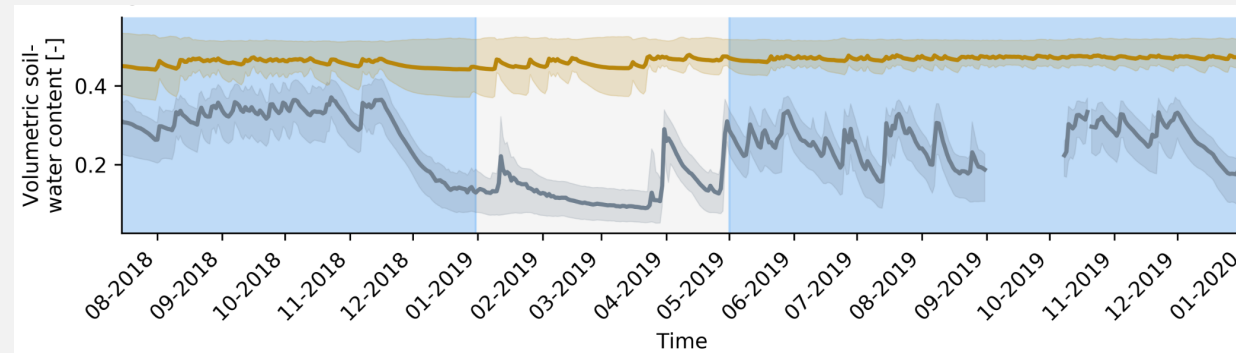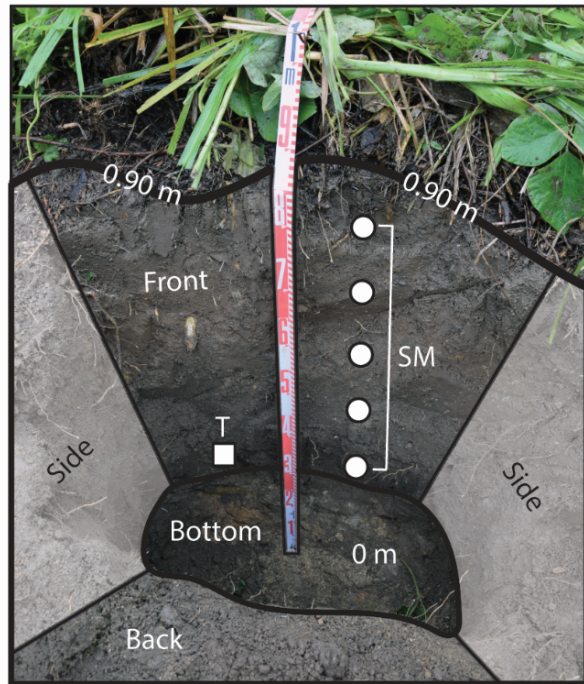


Thomas et al. (2019), *WRR*: Ground-based thresholds show superior performance because in situ soil moisture data better reflect gravity-dominated subsurface flow.
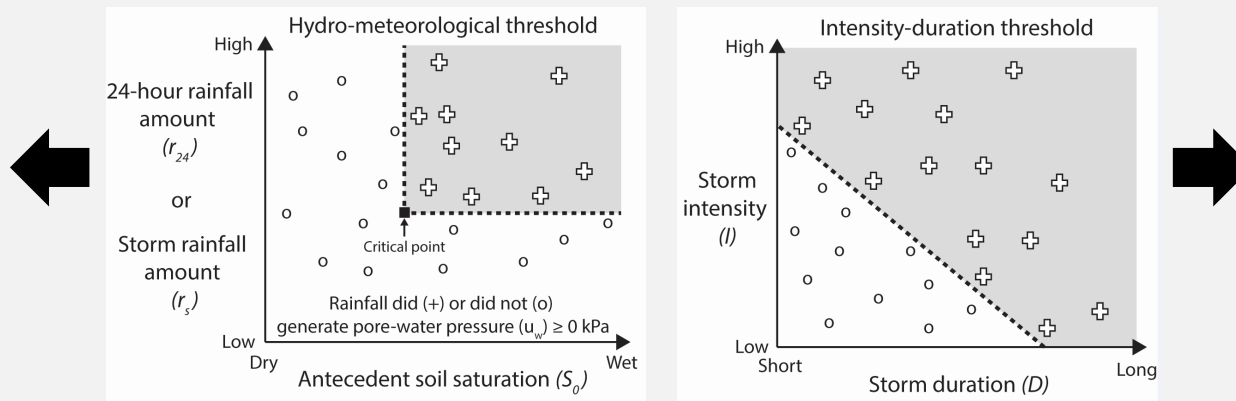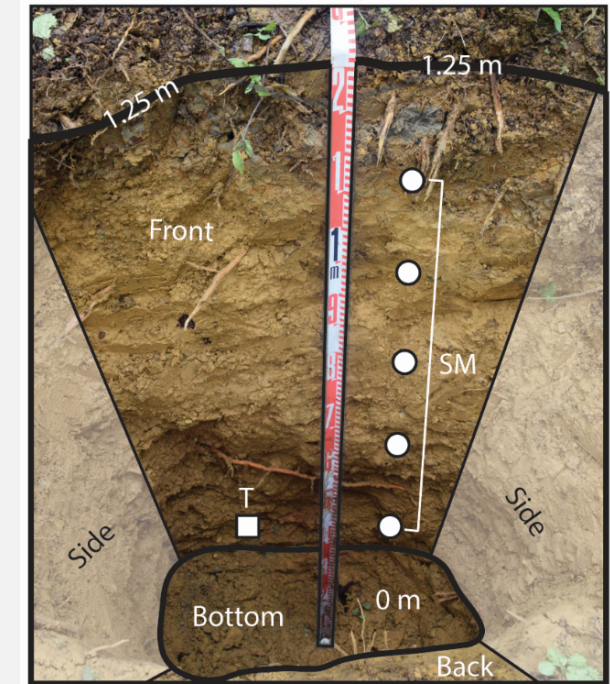
# New conceptual model for landslide potential in Puerto Rico guides the development of tools geared for hazard warning



Site 1

Site 2

Thomas et al. (in review), *HP*: Variability in soil-hydraulic properties is the dominant factor that modulates the relative importance of antecedent soil moisture for our landslide-relevant thresholds.

# Integrating satellite-based soil moisture into landslide science and hazard assessment products

Our science would benefit if satellite-based soil moisture were…

- resolved at timescales that are commensurate with the peak rainfall intensities associated with landslide-generating storms.

- able to capture the dynamics of seasonal and intra-storm wetting/drying for the total soil profile.

- resolved at spatial scales that can identify topographic-driven patterns in soil moisture across a given catchment.

- able to capture the effects of variability in soil-hydraulic properties on regional-scale trends in soil moisture.

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