**Development of a web-based interactive landslide simulation**

Inspired by the societal impact of landsliding on development and transportation in the Cincinnati area, this project will develop an online, interactive educational simulation of landsliding processes. The working model for the simulation follows those at http://phet.colorado.edu, wherein sliders and toggles are mapped to parameters in the physical equations that describe hillslope modes of failure. Education research has shown that these types of simulations encourage experimental learning and increase student understanding of the underlying physics. However, there is no such simulation available for landsliding processes. The application will have several modes, appropriate for the general public, as well as learning activities for students at various levels.

***Application description:***

For each basic scenario (a very unstable hillslope, a conditionally stable hillslope, an unconditionally stable hillslope) the application will:

* Take as input the slope, soil thickness, effective cohesion (plus or minus root strength; allowing variable material properties), precipitation rate as a time series derived from measurement history, infiltration and drainage rates (function of material property and any modified drainage).
* Calculate for a time series of precipitation and above conditions the factor of stability, and display the current FS in a time series.
* Allow user toggling of several parameters in real time, by buttons and sliders, as the simulation runs. These include factors such as such as vegetation cover, soil thickness, adding fill, installing drainage, etc., which modify the simulation parameters and output on the fly.
* Allow the user to speed/slow time, in which case effects like re-vegetation could be simulated over longer timescales.
* Display a graphical simulated state of the landscape as modifications are applied, including a fun failure animation.

The application will be developed using HTML5-compliant web standards and open-source distribution policies.