

This is a meter scale (unit_length 10.0 m ¹), ultra high resolution (ultra_high_res 1) simulation of assembly collapse. The lower 20 layers (varfrict_bottom 1, varfrict_top 20) have no friction (include_variable_friction 1, friction_layers 0.0), and half the viscosity (damping) than the layers above (include_variable_viscosity 1, var_viscosity_adaptor 0.5). The base of the model is frictionless (frictionless_base 1).

After assembly equilibration, the left and right walls are removed (open_tilted_wall 1, both_walls 1), and the model is tilted clockwise 3 degrees (sudden_tilt 1, tilt_angle 3.0). The display increment is 1.0 m (display_metres 1.0). The time step is small (0.001 s) and the time between increments is much longer (100 s). Therefore there are many (100,000) time steps between increments. In my iMac Pro, every increment took 15 minutes. The number of increments is small though (61, and the first 11 are solely equilibration ²), and therefore this model took not too long (15 hours). The results are very cool as the figure below shows.

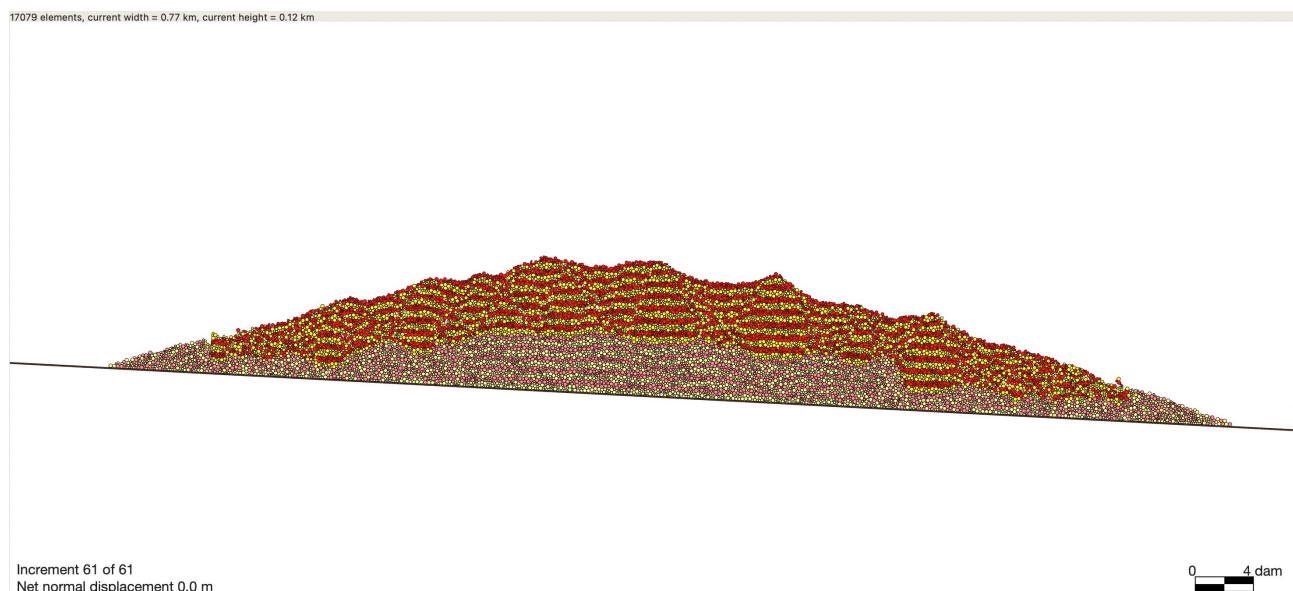


Figure 1. Last increment of highrescollapse simulation as displayed in cdem. The semitransparent bottom layers have no friction and half the damping than the layers above.

¹ Parameters mentioned here are those of the runtime.txt file.

² From the modelparameters.txt file