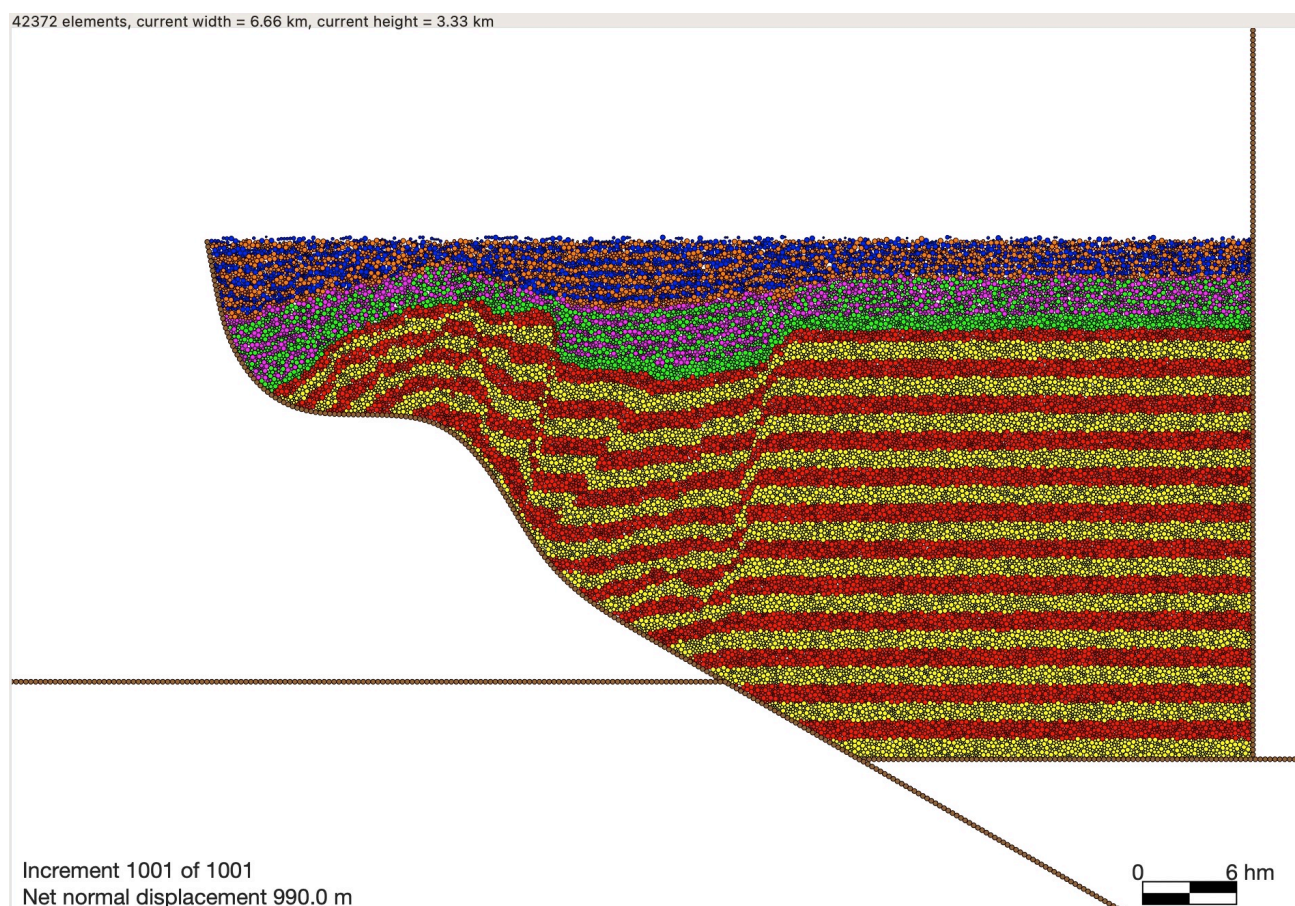


This is a kilometer scale (unit\_length 125.0 m<sup>1</sup>), very high resolution (very\_high\_res 1) simulation of an irregular normal fault (fault\_sculpt 1, irregular\_fault 1, displacement\_sign -1.0). The displacement at the fault is modelled as a mylar sheet (mylar\_sheet 1). At the base of the fault (fault\_xloc 30.0 units, 3750 m), the fault has a dip of 30 degrees (faultdipdegrees 30.0), and up section the fault is defined by the file faultdefinition.txt. The first line in this file is the number of fault vertices. The lines afterwards are the x and y coordinates of the vertices starting from the base. The first vertex must have the same coordinates than the fault at the base. All the layers are frictional cohesive and have the same properties. All walls but the fault wall have friction (frictionless\_fault 1).

After equilibration, the mylar sheet is pulled down along the fault. New sediments deposit during faulting (include\_sedimentation 1), and the base level is static (static\_baselevel 1). The display increment is 2.0 m (display\_metres 2.0). The total displacement is 990 m, over 1001 increments, the first 11 of which are equilibration. In my iMac Pro, the time between increments was 2 minutes, and the run took 2 days. The figure below shows the last increment.



**Figure 1.** Last increment of rampflatgrowth simulation as displayed in cdem. The green-purple strata were deposited in the first half of the run, and the orange-blue strata in the second half of the run.

<sup>1</sup> Parameters mentioned here are those of the runtime.txt file.