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## A geomorphic process law for detachment-limited hillslopes

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Geomorphic process laws are used to assess the shape evolution of structures at the Earth's surface over geological time scales, and are routinely used in landscape evolution models. There are two currently available concepts on which process laws for hillslope evolution rely. In the transport-limited concept, the evolution of a hillslope is described by a linear or a non-linear diffusion equation. In contrast, in the threshold slope concept, the hillslope is assumed to collapse to a slope equal to the internal friction angle of the material when the load due to the relief exists the material strength. Many mountains feature bedrock slopes, especially in the high mountains, and material transport along the slope is limited by the erosion of the material from the bedrock. Here, I suggest a process law for detachment-limited or threshold-dominated hillslopes, in which the erosion rate is a function of the applied stress minus the surface stress due to structural loading. The process law leads to the prediction of an equilibrium form that compares well to the shape of many mountain domes.