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Time step and stepping time: Temporal resolution and Landscape Evolution Modelling with LAPSUS

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The 'Courant-Friedrichs-Lewy (CFL) criterion' is a condition in solving numerical equations that states that, given a spatial resolution or discretization, a time step larger than some computable quantity should not be taken. In LEM LAPSUS, a multi modular reduced complexity model, this criterion is expected to be violated, since annual or larger time-steps are chosen above ideal re-sedimentation budgets that might slow down considerably computation speed in complex landscapes.
In this LEM experiment we simulate the effect of changing the temporal resolution (time-step) on various landscapes, without changing any of the other LEM formulations or conditions. Consequently model results tell us something on the stability of our model formulations and whether the above mentioned assumptions indeed justify the violation of the CLF criterion.