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The effects of different initial Palaeo-DEMs in landscape evolution: examples of LAPSUS modelling

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How LEM simulation results are influenced by one of the largest unknown modelling variables: the initial topography or DEM? Here a sensitivity study is presented on how much this initial DEM is controlling LAPSUS results for a case study area in Southern Spain. Numerous different initial topography or palaeo-DEM settings were constructed for the same landscape. In other words catchment area and initial number of contributing grids to the drainage network are the same. What actually changes are the slopes and height differences, indirectly controlling the initial potential drainage network density and connectivity. Modelling results show numerous solutions of final landscape configuration. In addition, simulation time largely controls the tendency of the landscape to reach a steady state, although this resulting steady state between scenarios may vary considerably.