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Event based connectivity assessment at subcatchment scale under different land use scenarios.

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With the aim of characterizing the temporal event-based evolution of connectivity patterns in a semiarid landscape a two year field experiment was designed. The study area was located in Carcavo Basin, a semiarid catchment in SE Spain (Murcia Region). A Three Step method was applied for the generation of base cartography (geomorphological mapping) and event-based connectivity maps. The three steps are: (1) land use and field configuration mapping, (2) erosion, transport and sedimentation features mapping and (3) GIS map production and analysis. The analysis was applied to three main locations (tributaries) comprising 6 subcatchments from 10 to 352 hectares. Land use varied from established reforestations to natural shrubland (headwaters) and from olives & almonds to abandoned fields (valley floors). The repeated mapping after rainfall events of connectivity pathways allowed determining the main source, transport and deposition areas and discussing differences in patterns. It was also assessed the frequency of activity/response for pathways and features. Different thresholds were found for runoff generation throughout the analysed time series. Results suggest that connectivity at subcatchment scale is influenced by interactions between the spatial vegetation arrangement and abiotic factors at the spatial scale. Along the time series other factors such us cumulated net rainfall, soil moisture and vegetative state play a control role in runoff and erosion generation.