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Dynamics of feedback effects of vegetation in ephemeral channels

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Floods in semi-arid channels often result in major modifications to channel morphology and can leave a long-term effect on hydraulics and the direction of subsequent channel changes. Scour of the bed alters the hydraulics such that erosion continues within the same section of the channel during subsequent events. The positioning of these areas of net erosion is largely controlled by variations in unit stream power and sediment supply. Vegetation also alters the hydraulics and resistance of channels. Densely vegetated zones will have a greater tendency to trap sediments, leading to the development of areas of net deposition and a greater accentuation of cross-profile variations. This will also have a starving effect on the supply of sediments to reaches downstream, resulting in a tendency for erosion to occur within these reaches. Feedbacks between process of erosion/deposition, channel morphology and hydraulics operate and may contribute to the development of sedimentation and transport zones. The dynamics of these feedback effects over short and long time scales within ephemeral channels in SE Spain are discussed.