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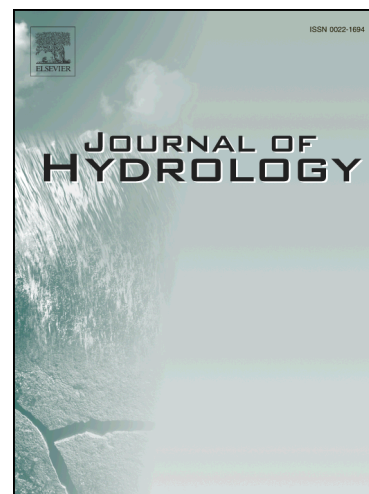
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Ecohydrological effects of biological soil crust on the vegetation dynamics of restoration in a dryland ecosystem

Running title: Ecohydrological effects of biocrust in drylands

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Abstract

When restoring dryland ecosystems, growing biological soil crust (biocrust) may greatly change the redistribution of rainfall in layered soils. However, ecohydrological modelling studies generally ignore biocrust and thus, the ecohydrological effects of biocrust on restorations remain largely unexplored. Using a long-term restoration case (located in the southeast edge of the Tengger Desert, northern China), we developed an ecohydrological model with explicit consideration of the infiltration in three layered soils (biocrust, shallow and deep sand layers) to investigate influences of biocrust on restoration dynamics in drylands. The proportion of infiltration that reaches ‘annual grass’ (including biocrust and shallow sand layers, 0 – 30 cm) and ‘shrub’ layers (30 – 150 cm) with biocrust significantly increased and decreased relative to the values without biocrust, respectively. Meanwhile, biocrust significantly decreased soil water

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