



## **Rangeland Hydrology and Erosion Model**

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Soil loss rates on rangelands are considered one of the few quantitative indicators for assessing rangeland health and conservation practice effectiveness. An erosion model to predict soil loss specific for rangeland applications has been needed for many years. Most erosion models were developed from croplands where the hydrologic and erosion processes are different, largely due to much higher levels of heterogeneity in soil and plant properties at the plot scale and the consolidated nature of the soils. The Rangeland Hydrology and Erosion Model (RHEM) was designed to fill that need. RHEM is an event-based model that estimates runoff, erosion, and sediment delivery rates and volumes at the spatial scale of the hillslope and the temporal scale of a single rainfall event. It represents erosion processes under normal and fire-impacted rangeland conditions, it adopts a new splash erosion and thin sheet-flow transport equation developed from rangeland data, and it links the model hydrologic and erosion parameters with rangeland plant communities by providing a new system of parameter estimation equations based on 204 plots at 49 rangeland sites distributed across 15 western U.S. states. Recent work on the model is focused on representing intra-storm dynamics, using stream-power as the driver for detachment by flow, and deriving parameters for after-fire conditions.