

Predicting ephemeral gully erosion with RUSLER and EphGEE

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Abstract Ephemeral gully erosion is not included in predictions made with the Revised Universal Soil Loss Equation, version 2 (RUSLE2). A new distributed application called RUSLER (RUSLE2-Raster) predicts distributed soil loss and its output can be linked with the new Ephemeral Gully Erosion Estimator (EphGEE). These models were applied to a 6.3 ha research watershed near Treynor, Iowa, USA, where runoff and sediment yield were measured from 1975 to 1991. Using a 3-m raster DEM, results indicate that ephemeral gully erosion contributed about one-third of the amount of sheet and rill erosion, and that considerable deposition of sediment originating from both sources occurred within the grassed waterway. For ambient conditions, predicted annual average watershed sediment yield was 17.5 Mg ha⁻¹ year⁻¹, 20% greater than the measured value of 14.6 Mg ha⁻¹ year⁻¹.

Key words erosion; ephemeral gully erosion; sediment; sedimentation; waterway