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RUSLE2 computes sheet and rill erosion, not concentrated flow erosion

6% @ 200 ft. 25% of area 8% @ 200 ft. 20% Area

5% @ 250 ft 15% of Area 4% @ 250 ft 40% Area





Ephemeral gully channels end RUSLE2 hillslopes (AH 703)



To make use of LiDAR topotraphic sources a 2-D version of RUSLE2

- RUSLE2 runoff event sequences
 Slope length calculated from runoff ratios
- GIS tools to identify raster flow network and channel locations
- Linkage with a concentrated flow (ephemeral gully) erosion model



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http://www.ars.usda.gov/Research/docs.htm?docid=20222

RUSLE2 Version 2.0.4.0 (Jul 23 2010)	X
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Enhancing RUSLE to include runoff-driven phenomena

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Shell GIS program combines cells into profiles that end at channels

RUSLE2 Simulation Units

- One Simulation Unit ("Profile") for each Channel Cell
- Defined based on drainage patterns (flow directions)
- Input Layers: Flow Directions and Channel Cells

Shell program:

sequences cells

calls RUSLE2 DLL

Cell sequencing algorithm:

- Start from channel cell
- Find cells draining into current cell
- If a contributing cell was found, move analysis to that cell and repeat search
- ID No-Inflow cells; assign number
- Inspect cells in downslope direction
- Save cell connectivity in auxiliary data structure



Slope length calculated as ratio of runoff leaving to runoff generated within cell



Rusle2 tracks runoff and erosion from cell to cell. Sediment loads and characteristics leaving each cell are stored and used in the sediment transport computations of the subsequent cell.

Example: Treynor WS 11 (AH 703)



HISTORY
CT 1975-1997
Hedges established starting 1992
NT 1997-2002



Scenarios to be Presented

Profile 2 vs measured runoff and sediment yield
Distributed erosion predictions

with initial channels and topography
with initial channels but steepness reflecting 50 years of tillage and water erosion
with channels and steepness reflecting 50 years of tillage and water erosion















 RUSLE2 is a hybrid field-scale conservation planning tool

RUSLE2 is being optimized to create distributed erosion estimates based on LiDAR data

Representative runoff event sequence outputs are suitable for linkage with an ephemeral gully model

Improved GIS tools are needed before feedback will create realistic topographic patterns

Questions?

