

The Iowa Watershed Approach

Iowa Water Center

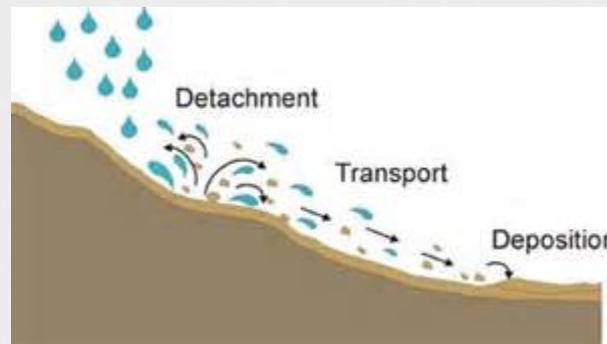
ISU Extension and Outreach

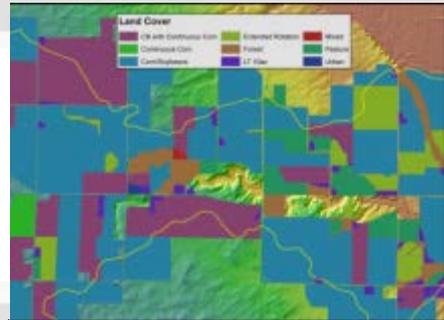
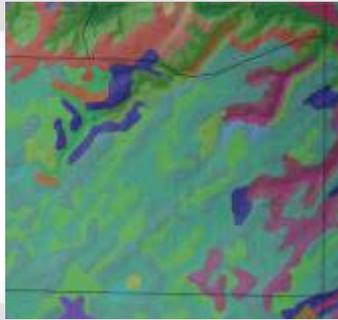
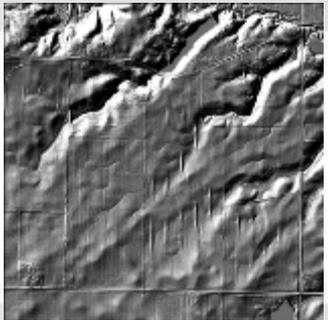
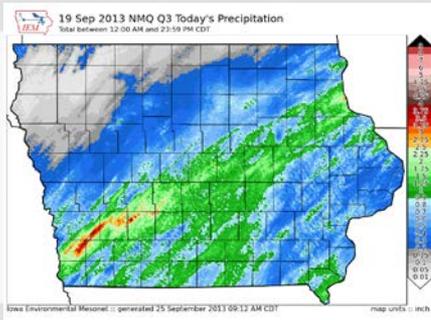
Iowa Nutrient Research Center



DAILY EROSION PROJECT

- Estimate daily mass of soil transported from hillslopes across Iowa and sections of other selected Midwestern states
- Report these soil erosion values daily and publicly at the HUC 12 spatial resolution.





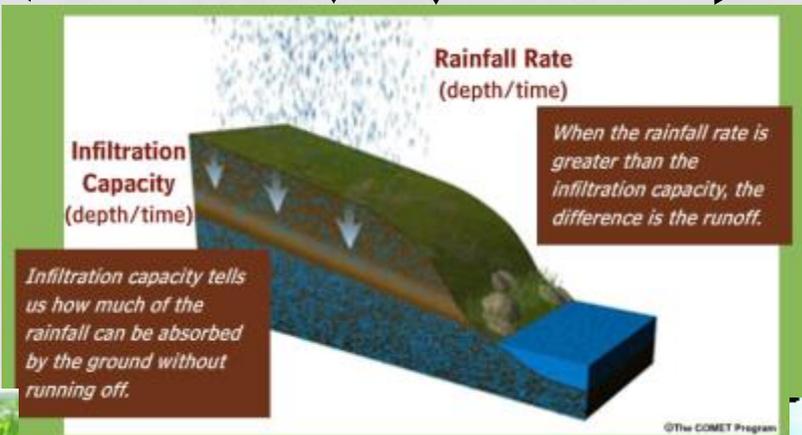
NEXRAD
Precip

LiDAR
Elevation

gSSURGO
Soils

Field-scale
Land-use &
Management

WEPP



DEP Database

- 1,647 HUC12 watersheds
- 36,900,000+ Acres

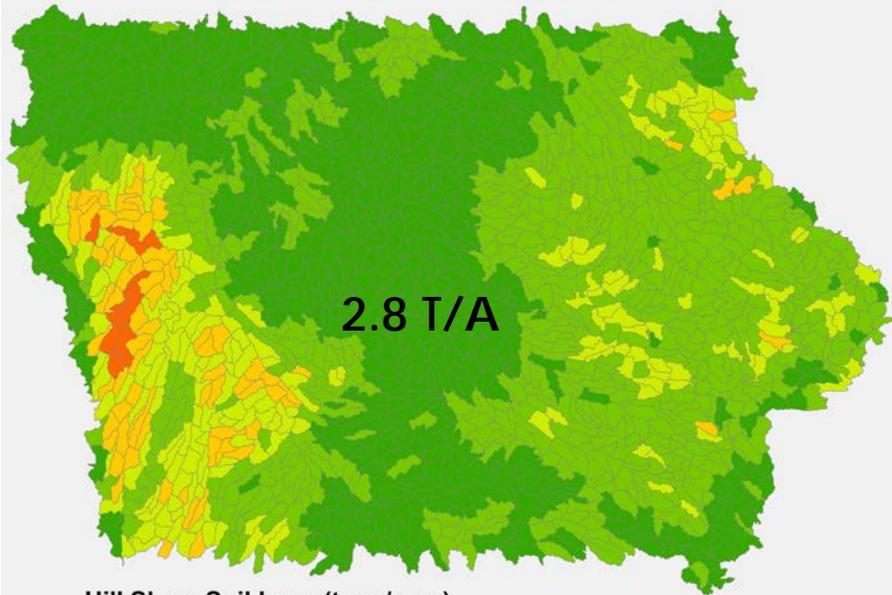
Major Geo-Spatial Components by HUC12

- Soils - gSSURGO – 10m raster
- Land Use - 2008-2013 NASS Crop Data Layer
- Elevation - LiDAR-based, 2m resolution
- 2009 crop-specific field boundaries



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2007 Hill Slope Soil Loss

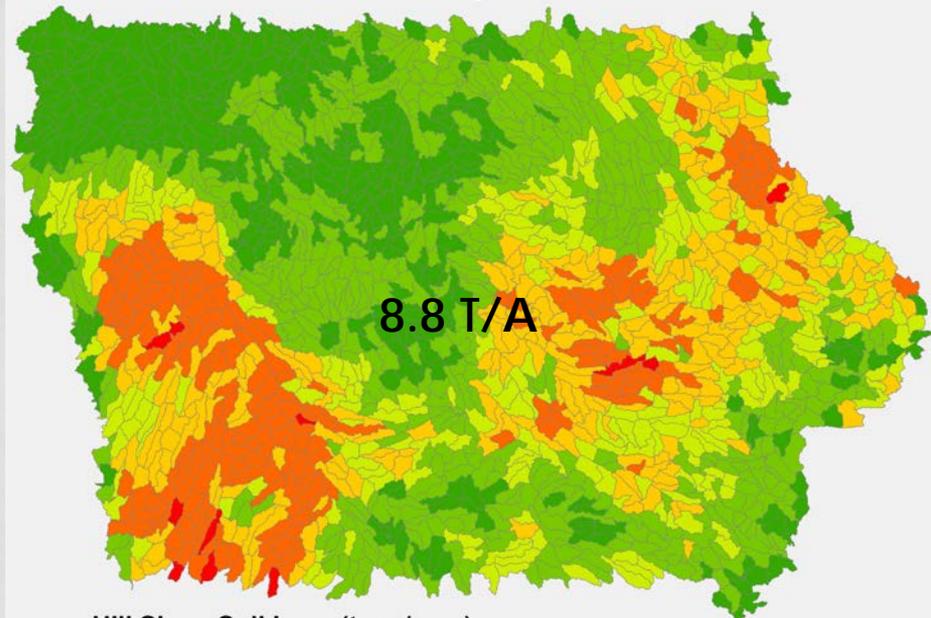


2.8 T/A

Hill Slope Soil Loss (tons/acre)

0 to 1 1 to 5 5 to 10 10 to 20 20 to 50 > 50

2008 Hill Slope Soil Loss

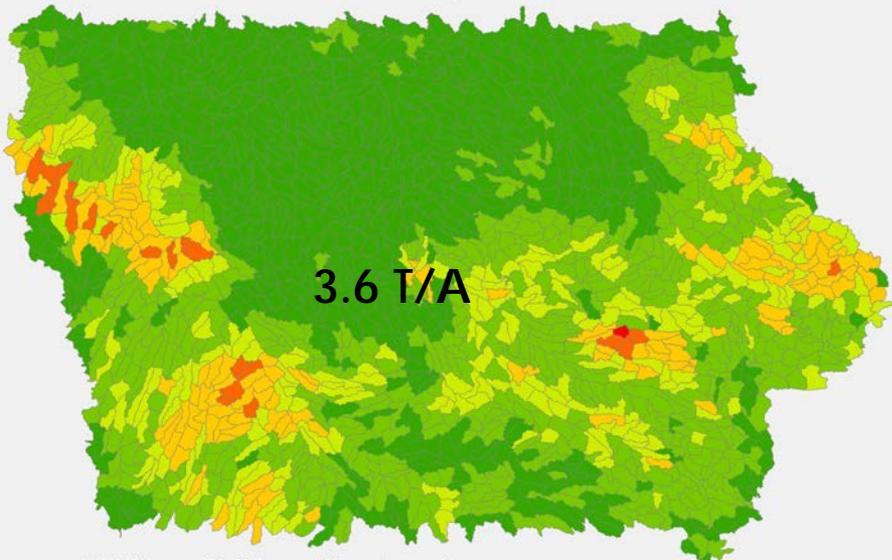


8.8 T/A

Hill Slope Soil Loss (tons/acre)

0 to 1 1 to 5 5 to 10 10 to 20 20 to 50 > 50

2009 Hill Slope Soil Loss

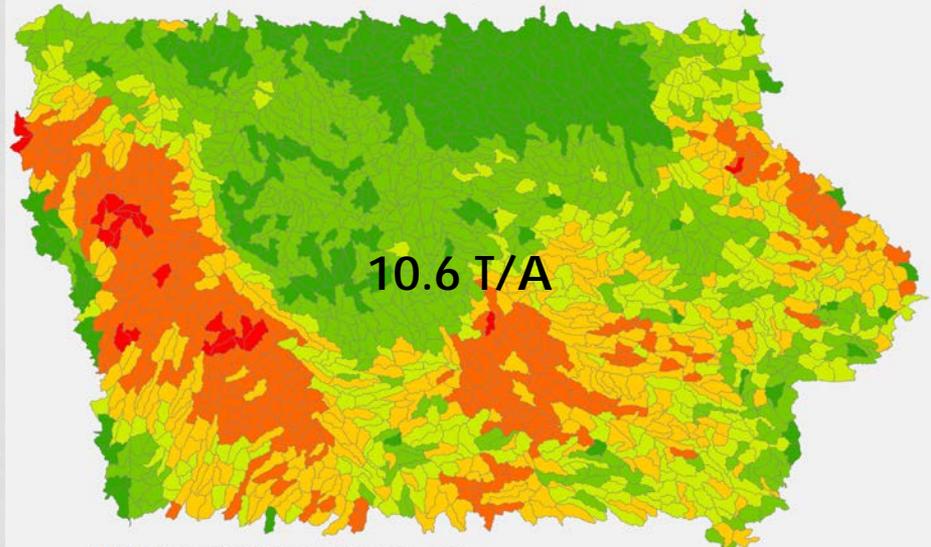


3.6 T/A

Hill Slope Soil Loss (tons/acre)

0 to 1 1 to 5 5 to 10 10 to 20 20 to 50 > 50

2010 Hill Slope Soil Loss



10.6 T/A

Hill Slope Soil Loss (tons/acre)

0 to 1 1 to 5 5 to 10 10 to 20 20 to 50 > 50

CLIMATE AND EROSION

- Increasing storm frequency and intensity when soils are most vulnerable
- Elevated soil erosion & water runoff rates unless we
 - Increase perennial vegetation
 - Build soil health



IWC ROLES (BESIDES DEP)

- Estimating historical loss of soil from HUC 12s and its impact on water retention in the uplands
- Information dissemination via Iowa Water Conference and other IWC channels
- WMAs of Iowa



Extension and Outreach

- For each watershed project watershed:
 - Develop education and outreach plans with integrated communication plans
 - Develop practice-specific outreach materials

The Iowa Watershed Approach
Reducing Flooding and Advancing Water Quality with Ponds

What is a pond?
A pond is a body of water that can be constructed using either an earthen or concrete pond or a grassed waterway. The earthen and concrete ponds are typically constructed and are at least 10 feet deep. The grassed waterway is a shallow channel that is 10 to 20 feet deep and is used to collect and store runoff from the watershed. Ponds can reduce phosphorus loads by 80% to 90% and sediment loads by 50% to 75%. They also provide a habitat for wildlife and can be used for recreation.

Ponds and Flood Reduction

THEIR IMPACT:

1. Ponds reduce runoff.
2. Ponds reduce water flow rate.
3. Ponds provide a habitat for wildlife.

Ponds and Water Quality

THEIR IMPACT:

1. Ponds reduce phosphorus loads.
2. Ponds reduce sediment loads.
3. Ponds provide a habitat for wildlife.

85% P

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The Iowa Watershed Approach
Reducing Flooding and Advancing Water Quality with Water and Sediment Control Basins

What are water and sediment control basins?
Water and sediment control basins (WSCBs) are an important water quality improvement practice in the Iowa Watershed Approach. They are designed to collect and store runoff from the watershed, reducing the amount of runoff that enters the water body. WSCBs can reduce phosphorus loads by 80% to 90% and sediment loads by 50% to 75%. They also provide a habitat for wildlife and can be used for recreation.

Water and Sediment Control Basins and Flood Reduction

THEIR IMPACT:

1. WSCBs reduce runoff.
2. WSCBs reduce water flow rate.
3. WSCBs provide a habitat for wildlife.

Water and Sediment Control Basins and Water Quality

THEIR IMPACT:

1. WSCBs reduce phosphorus loads.
2. WSCBs reduce sediment loads.
3. WSCBs provide a habitat for wildlife.

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Applying Woodchip Bioreactors
for Improved Water Quality

What is a woodchip bioreactor?
A woodchip bioreactor is a structure that is used to collect and store runoff from the watershed. It is designed to collect and store runoff from the watershed, reducing the amount of runoff that enters the water body. Woodchip bioreactors can reduce phosphorus loads by 80% to 90% and sediment loads by 50% to 75%. They also provide a habitat for wildlife and can be used for recreation.

WOODCHIP BIOREACTOR

BENEFITS OF A WOODCHIP BIOREACTOR:

1. Reduces runoff.
2. Reduces water flow rate.
3. Provides a habitat for wildlife.

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Extension and Outreach

- Develop training opportunities for the IWA coordinators at the Iowa Watershed Academy
- Coordinate field days, workshops, and outreach events with project partners



Extension and Outreach

- Collaborate with ISU Research Farms and Extension Specialists to link IWA projects with new or existing on-farm demonstrations projects
- Establish data collection protocols for practice evaluation



Iowa Nutrient Research Center

- Incorporate research findings into project messaging strategies
- Collaborate with INRC project PIs to develop additional outreach materials

Iowa Nutrient Research Center IWA Projects

- Monetizing the Benefits of Conservation Practices Based on the Iowa Watershed Approach
- Scenario Development to Achieve Iowa Nutrient Reduction Strategy Goals
- Hydrometeorological Impacts on Water Quantity and Quality across Iowa's Streams
- The Impact of Climate Variability and Land Management Practices on Water Quality in Iowa at the Watershed Scale.

Project Assessments and Evaluation

- Create field day and event evaluations for all projects to utilize
- Conduct mid-project assessments with each watershed project
- Conduct an end of project evaluation