

## MINUTES

### Watershed Planning Advisory Council Meeting Summary Wednesday, June 8, 2011

#### Location:

Metro Waste Authority  
Board Room  
300 E. Locust Street, Ste. 100  
Des Moines, Iowa 50309

#### Member Attendance:

Organization	Member Name or Delegate
House of Representatives Seat 1	Rep. Charles Isenhart (absent)
House of Representatives Seat 2	Rep. Betty DeBoef (absent)
Senate Seat 1	Senator Dick Dearden (absent)
Senate Seat 2	Senator James Hahn (absent)
Iowa Drainage District Association	Vicki Stoller (absent)
Iowa Environmental Council	Linda Kinman
Iowa Soybean Assoc.	Roger Wolf
Department of Natural Resources	Bill Ehm
Iowa Conservation Alliance Seat 1	Jeremy Rosonke (absent)
Iowa Conservation Alliance Seat 2	Rich Meyer (absent)
Iowa Association of Business and Industry	Scott Ickes
Dept. of Agriculture and Land Stewardship	Chuck Gipp (absent)
Iowa Rural Water Association	Emily Piper (absent)
Iowa Corn Growers Association	Gary Edwards
Iowa Farm Bureau Federation	Rick Robinson
Iowa Pork Producers Council	Cody McKinley (absent)
Soil and Water Conservation Districts of Iowa	Darrel Weems
Growing Green Communities	Tom Hadden
Iowa Association of Municipal Utilities	John Dunn (absent)
Iowa League of Cities	Jessica Hyland Harder (absent)
Iowa Water Pollution Control Association	Jay Brady (absent)

Guests: Diane Karnish (USACE Rock Island District), Annette Mansheim (RIO), Duane Sand (Iowa Natural Heritage Foundation), Susan Judkins (RIO), Allen Bonini (DNR), Marty Adkins (USDA-NRCS), Jim Friedrich (Iowa Senate) attended for Senator Hahn, Jim Gillespie (IDALS-DSC) attended for Chuck Gipp, Maryann Ryan (attended for John Dunn)

Presenters: Larry J. Weber (IIHR Iowa Flood Center), and Dr. Richard M. Cruse (ISU)

- I. Call to Order, Tom Hadden, Chair
- II. Welcome & Introductions, Tom Hadden, Chair
- III. Iowa Flood Center Presentation  
Larry Weber, Director of IIHR-Hydroscience and Engineering and co-founder of the Iowa Flood Center (IFC) gave a presentation addressing the issues of how the IFC is working to

ensure that communities, businesses, and individuals are well-informed and well-prepared during flood disaster situations. The IFC was founded in 2009 at the University of Iowa and has received state appropriations for the second year of research in the amount of \$1.3 million, which supports the center's objective of improving flood monitoring and prediction capabilities in the state of Iowa.

The Iowa Flood Center's resources for Iowans begin with efforts focused on Iowa's rivers that are likely to flood and pass through communities with populations of 200 or more. Web-based flood maps are now available for the top 500 Iowa communities to help educate individuals to understand basin boundaries and floodwaters, and can be accessed at [www.iowafloodcenter.org](http://www.iowafloodcenter.org). One priority has been to build a web-based monitoring system to provide up-to-the-minute data on Iowa's streams and rivers. An electronic sensor has been developed to measure stream levels and to transmit data to the IFC. The sensor is placed on bridges and uses sonar to measure distance from the water's surface to the sensor. The IDNR and IFC completed a Pilot project to deploy a network of 50 sensors across the state.

The newly created Iowa Flood Information System (IFIS) website will be a key resource covering the development of aerial LiDAR data to create computer models to predict how a flood wave travels through urban floodplains. The website will also consist of map libraries containing flood condition forecast information within the state, a flood risk calculator for particular locations whether for home or business, and will also include flood inundation maps besides other features with regard to monitoring of specific watersheds across the state.

The IFIS website will be completed and accessible this summer. A statewide webinar will be offered on the use of the new website model to statewide communities and public agencies. A suggestion was provided to have a duplicate IFIS website available for the public so the initial website would not be over loaded with users specifically during a flood disaster situation.

IV. Soil Erosion Presentation – “What will the Future Bring”

Dr. Richard Cruse, professor in agronomy at the Iowa State University, reviewed scientific evidence on three soil erosion studies using three different methods with similar results. Information from the Natural Resources Inventory (NRI) in regards to NRI's data points was addressed. It was mentioned that NRI's data points are updated every seven years.

The following are the conclusions from the soil erosion presentation; soil is eroding faster than it's forming, soil erosion reduces crop yields, rainfall trends strongly suggest that more erosive storms should be expected, high commodity prices economically work against adopting selected conservation practices, and in the coming years an acceleration in soil erosion is likely.

The soil erosion presentation can be accessed at the following website:  
<http://www.iowadnr.gov/wrcc.html>.

V. Watershed Planning Advisory Council (WPAC) Work Plan

Roger Wolf, vice-chair, lead discussion and asked for input about the future organizational structure and work plan of the WPAC committee. Roger distributed a draft work plan for committee review. The following discussion took place.

➤ Vision

- Roger reviewed the draft version of the vision statement. Committee to complete and agree on the vision of WPAC.

➤ Role

- Committee to complete the role of WPAC.
- Committee to agree on an annual work plan – what are the priorities and challenges and how have they changed.

➤ Priorities

- Establish WPAC relationship with WRCC and its members.
- Review of Watershed and supporting program implementation – look at the various programs that interact and interface.
- Establish process for interacting and communicating with stakeholders.
- Establish process for documenting program review synopsis for future topics speakers, and setting schedule.
- Establish process for reaching consensus on recommendation for preparing, finalizing, and delivery of the annual report to Iowa legislature, Governor, and WRCC – put in writing the process for this to happen and who is going to be involved going forward.
- Watershed stewardship – How can we work together on urban and rural watersheds?
- Consider a statewide education and marketing campaign to elevate and enhance environmental awareness and literacy. Possibly target local interest instead of starting with statewide education.
- There is a need for local interest and support to prioritize watersheds.
- Build other partnerships.
- Consider WPAC group to tackle other issues other committees/groups don't tackle.
- How do we target limited dollars?
- Indicators of success and progress.

➤ Proposed Work Plan

- Roger reviewed the proposed work plan structure with the committee. It was recommended the committee identify and agree on priorities, determine the outcomes the committee hopes to achieve, identify the strategies and tasks to achieve those outcomes, and establish responsibilities and timeframes.
- Suggestion – Look at 2 or 3 year work plan.
- Suggestion – It could be beneficial to drill down to address a couple priorities a year for the annual report that would be presented to the legislature.

➤ Work Plan Additional Comments

- How does each committee member anticipate the vision for the watershed, and how do they determine those issues within their own visions for WPAC to work on as a group? If money and people were not an issue what would you see taking place on the landscape to improve water quality, soil erosion, practices, and policies in the watershed?
- Is a WPAC visioning session recommended to know what each organization is doing as far as implementation?
- Advisory vs. implementation? - Advisory is a key element, everyone is working on implementation with diligence, and to bring people together to think about common visions of watersheds and providing recommendations to the WRCC and to the State Legislature is a great opportunity. Our state needs more thoughtful recommendations for our legislators to think about, discuss, debate, and hopefully act on. Looking at it from all the different perspectives might help to bring some of the issues forward.
- How do we continue and focus this discussion on prioritizing our resource concerns? How do we target limited resources (dollars)? Is it by watershed, resource, risk?

VI. WPAC Annual Report Timeline

- Sept./Oct. - Begin writing annual report
- Nov. – Review draft report
- Dec. – Final report completed
- Jan. 2012 – Present annual report to the Legislature

VII. Future WPAC Meetings – Going forward WPAC will meet monthly on the second Wednesday of the month. All meetings will be held at Metro Waste Authority.

VIII. Next WPAC Meeting

- Wednesday, July 13, 2011  
10:00 a.m. – 2:00 p.m.  
Metro Waste Authority Board Room  
300 E. Locust Street, Ste. 100  
Des Moines, Iowa, 50309  
515-244-0021

## Wolf's WPAC Straw Man – Work Plan

### **The makeup of WPAC**

Who is involved ....

### **Introduction**

Legislative Charter ...

### **The Vision**

To provide quality stakeholder-based and consultation advice to the Iowa Legislature, Governor, WRCC, Stakeholders and general public on the effectiveness of applying a watershed approach to Iowa's water management challenges.

### **The Role**

Provide a structured forum for review, discussion and recommendations of ...

Develop and agree on annual plan of work that sets the current and major priorities and challenges relative to effective use of watershed management approach and relationship with legislative charges.

Develop an annual report ....

### **The Priorities and Challenges (Focus for 6/8/11 WPAC meeting)**

The major work priorities for WPAC 2011 - 2012 are:

- Establish WPAC relationship with WRCC and its members
- WPAC review of watershed and supporting program implementation
- Establish WPAC process for interacting and communicating with stakeholders
- Establish WPAC process for documenting program review synopsis (topics, speakers, schedule)
- Establish WPAC process for reaching consensus on recommendations and preparing and publishing annual report
- Prepare and deliver annual report to Iowa legislature, Governor and WRCC
- Others... relative to legislative charges or current situation/priorities

**Outcomes and Strategy – 1 Year Work Plan**

**(Suggest this work to be completed by subcommittees for WPAC review and approval via conference call webex to occur in July 2011)**

<b>Establish WPAC relationship with WRCC and its various members</b>				
<b>Strategy/Task</b>	<b>Outcome</b>	<b>Performance Measures</b>	<b>Person Responsible</b>	<b>Time Frame</b>
Develop a working agreement (MOU) that establishes contacts and expectations	<p>Ensure a solid relationship exists between the WRCC and WPAC</p> <p>The WRCC receives timely and constructive advise on watershed management programs</p> <p>The advise and recommendations are derived after review, discussions and deliberation of the WPAC members</p>	Documentation record	WPAC and WRCC Chairs	July 2011

<Insert Priority – Challenge>

Strategy/Task	Outcome	Performance Measures	Person Responsible	Time frame

*Soil Erosion – What will the  
future bring?*

Rick Cruse

Iowa State University









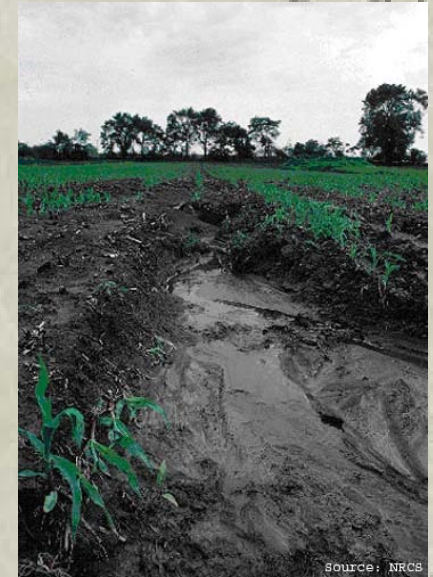
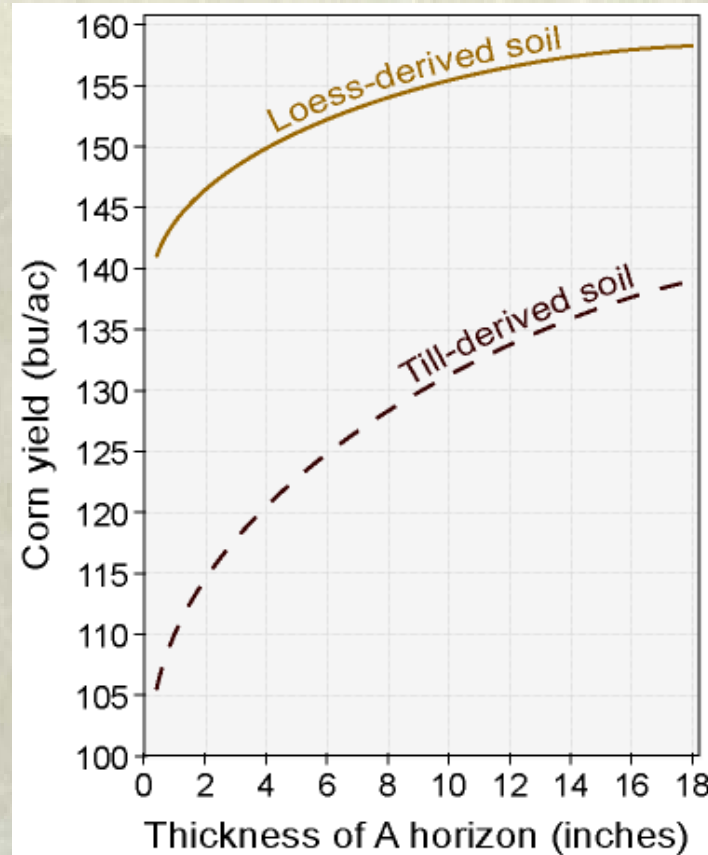
# *Soil Erosion*

- ❖ Sediment - Iowa's #1 water quality problem
- ❖ Loss in U.S. productivity > \$25 billion\*
- ❖ Off site U.S. costs \$17 billion\*
- ❖ Annual world wide > \$400 billion\*



\*Jones, A. J., R. Lal, and D. R. Huggins. 1997. Soil erosion and productivity research: A regional approach. *Am J of Alter Agri* (12): 185-192.

# *Does soil erosion affect crop yield?*



Kazemi, Masoud, L.C. Dumenil, and T.E. Fenton. 1990. Effects of accelerated erosion on corn yields of loess-derived and till-derived soils in Iowa. Final report for Soil Conservation Service, Agreement No. 68-6114-0-8, Des Moines, IA.

# *What is tolerable soil loss and why is it important?*

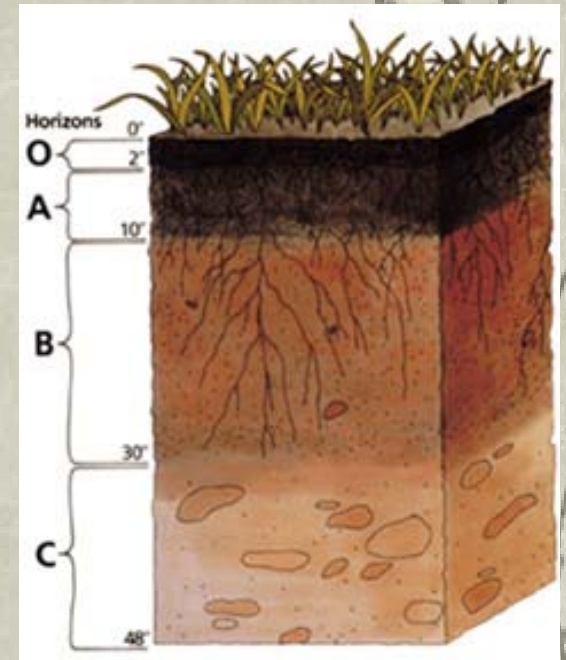
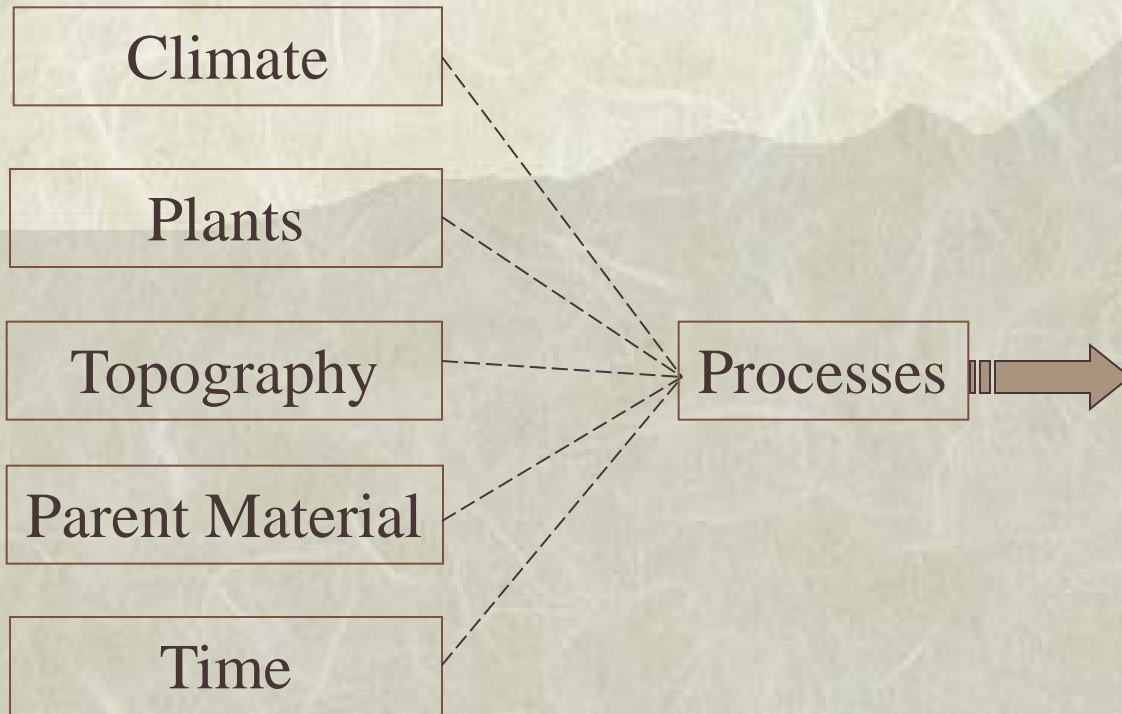
- ❖ The soil loss tolerance rate (T) is the maximum rate of annual soil loss that will permit crop productivity to be sustained economically and indefinitely on a given soil.

Clarion soil T = 5 tons/acre/year

Nicollet soil T = 5 tons/acre/year

Webster soil T = 5 tons/acre/year

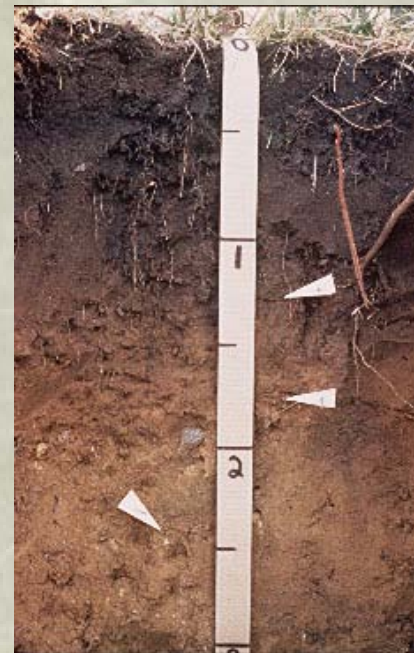
# Soil Formation



# *Soil Development – Northern Iowa/Southern Minnesota*



14,000 Years



# *Are T values correct?*

C-N-W soils about 36" deep\*

C-N-W soils about 14,000 years old.

Each year how many tons of soil developed?

$$= 36 \text{ in}/14,000 \text{ years} = 0.003 \text{ in/year}$$

Acre of soil 1" deep = 333,333 lbs.

$$\frac{333,333 \text{ lbs}}{\text{in}} \times \frac{0.003 \text{ in}}{\text{yr}} = 1,000 \text{ lbs/yr}$$

\*Thomas A. Dewitt. 1981 Soil Survey of Cerro Gordo County, Iowa. USDASCS.



# *Are T values correct?*

A study of rates of mineral soil formation in 18 watersheds around the world (parent materials were glacial till, schist, granite, and other noncarbonate rock) concluded average rates of soil formation were closer to

**0.24 tons per acre per year, with a range  
of 0.01 to 0.8**

Alexander, E.B. 1988. Rates of soil formation: Implications for soil-loss tolerance. *Soil Sci.* 145:37-45

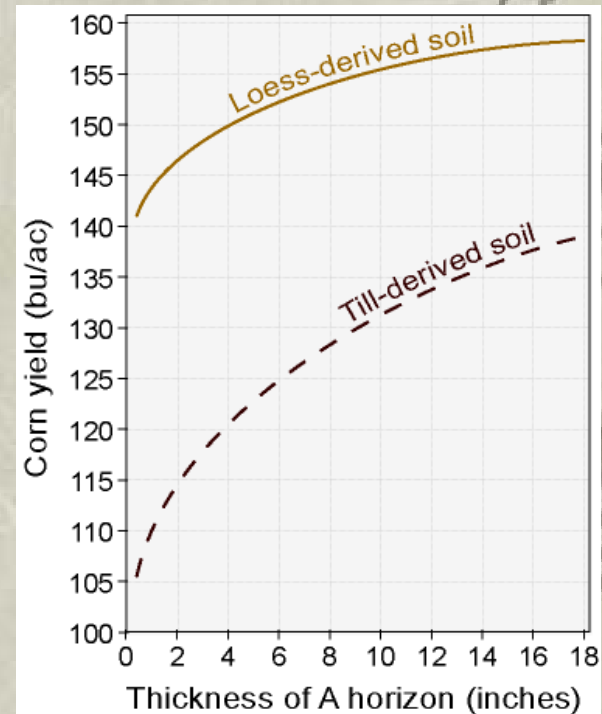
# *Are T values correct?*

**“Data drawn from a global compilation of studies quantitatively confirm the long-articulated contention that erosion rates from conventionally plowed agricultural fields average 1–2 orders of magnitude greater than rates of soil production, erosion under native vegetation, and long-term geological erosion.\***

\*David Montgomery. 2007. Soil erosion and agricultural sustainability. Proceedings of the National Academy of Science. 104:13268 - 13272

# *Scientific Evidence*

- ❖ Three studies
- ❖ Three different methods
- ❖ Similar results



*How much soil erosion occurs?*



# *NRI Estimated Statewide Average*

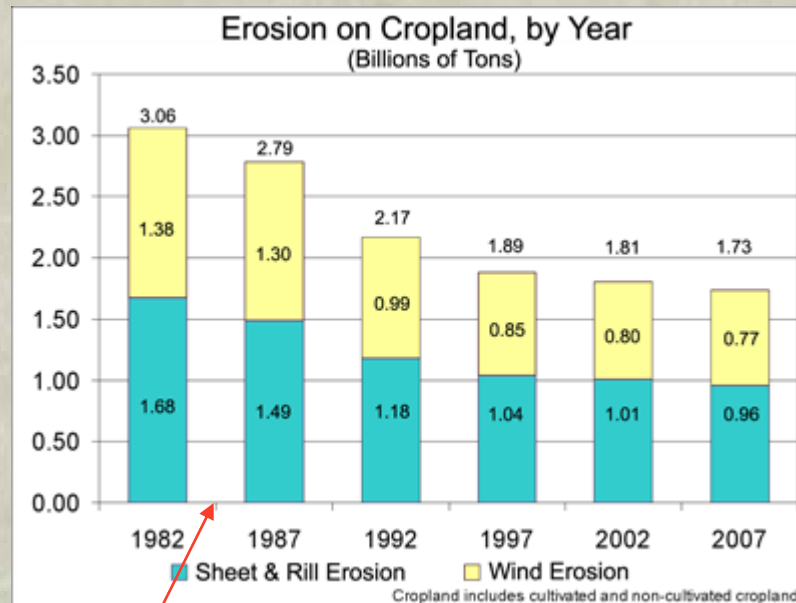
**1982**

❖  $7.7 \text{ T A}^{-1} \text{ YR}^{-1}$

**2007**

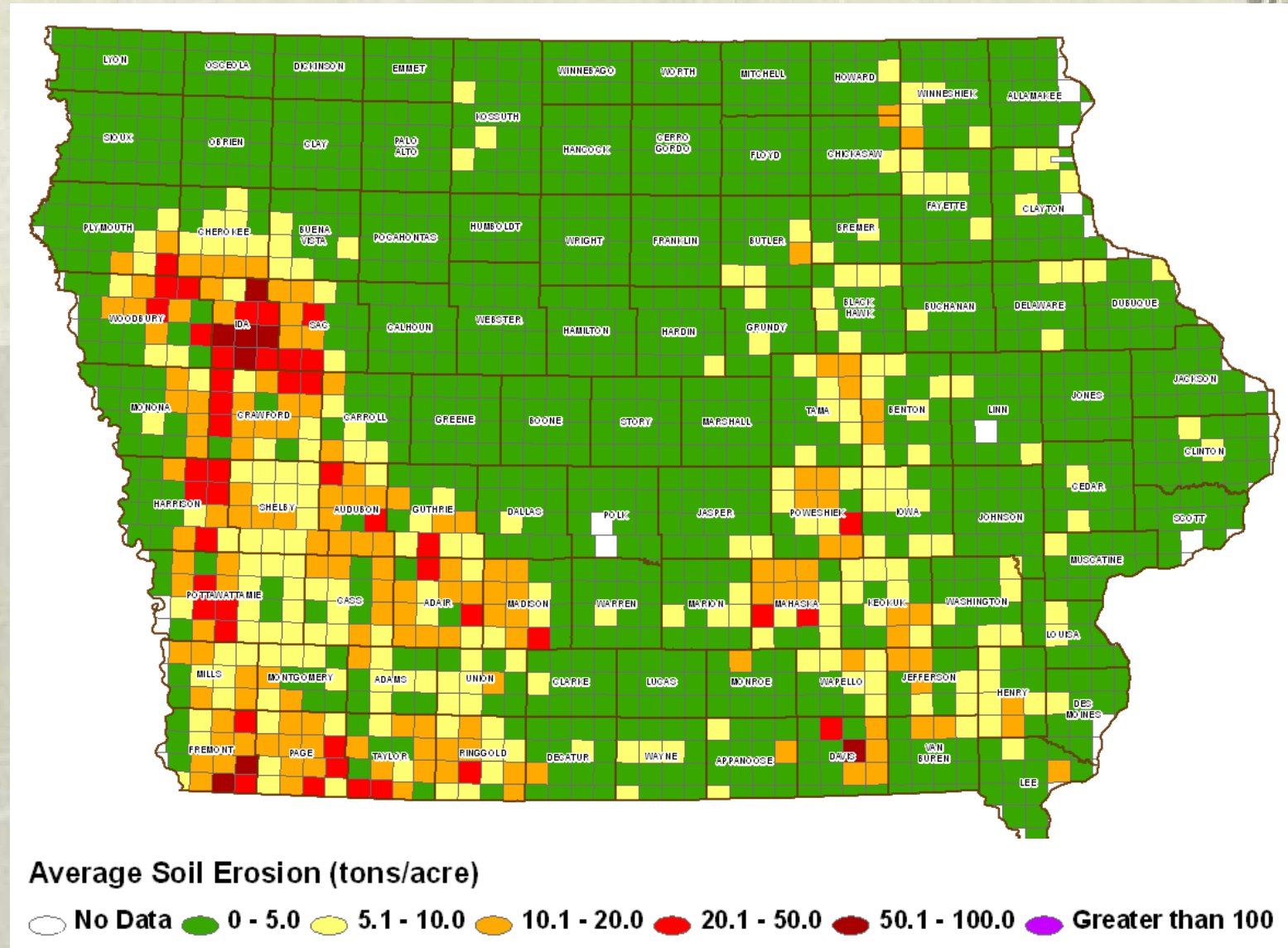
❖  $5.2 \text{ T A}^{-1} \text{ YR}^{-1}$

## National Trend



CRP Established

# Six million acres eroded at twice the “sustainable” rate in 2007.

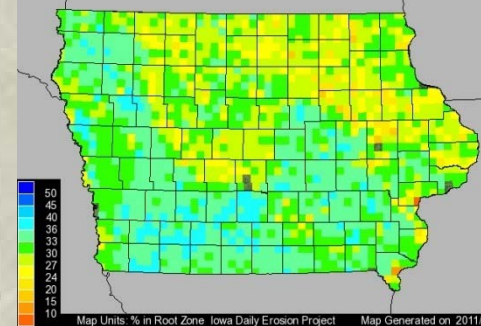
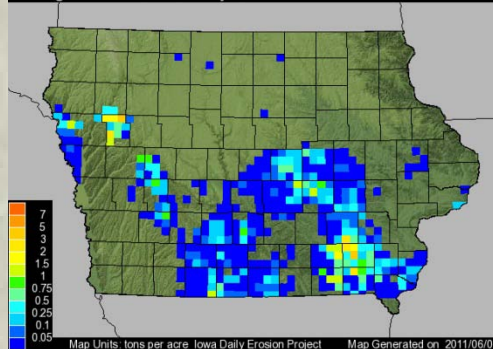
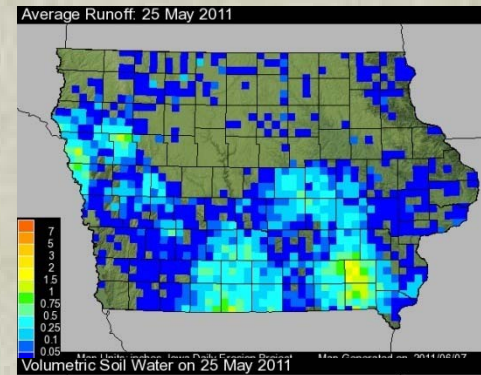
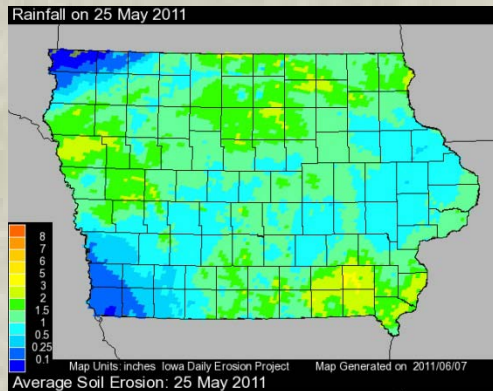


Cox, Craig, Andrew Hug, and Nils Bruzelius. 2011. Losing Ground. Environmental Working Group. Available at: [http://static.ewg.org/reports/2010/losingground/pdf/losingground\\_report.pdf](http://static.ewg.org/reports/2010/losingground/pdf/losingground_report.pdf)

# How were these estimated?



+ 17,848 NRI  
+ Agricultural Points  
in Iowa



# *Why the Difference*

## **NRI**

- ❖ Rainfall erosivity static
  - Based on average weather conditions
- ❖ Resolution – state average

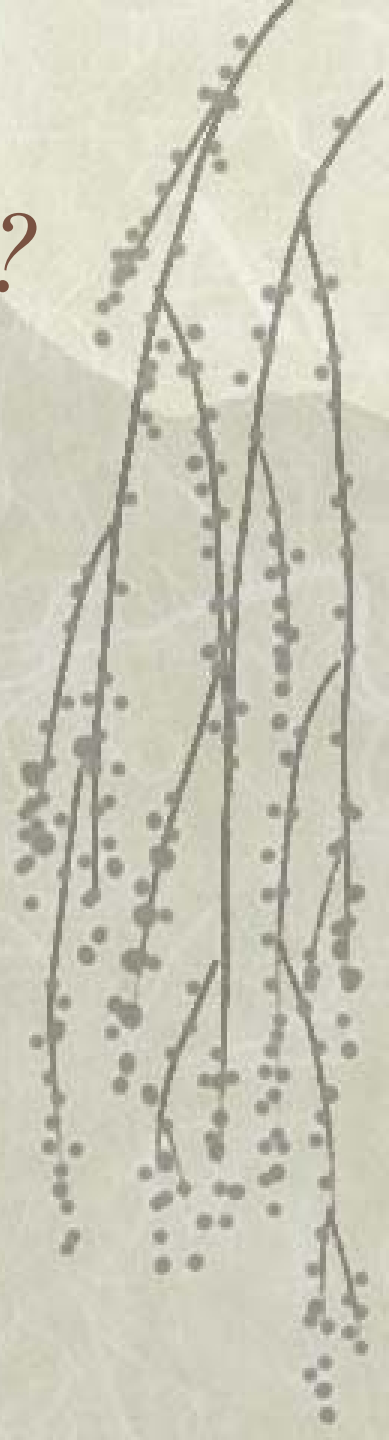
## **IDEP**

- ❖ Vary by 15 minute intervals
  - Real time weather
    - Temporally
    - Spatially
- ❖ Resolution - township



# *What Is Being Estimated?*

- ❖ Sheet
- ❖ Rill
- ❖ **THAT'S ALL**



# *What Is Not Estimated?*

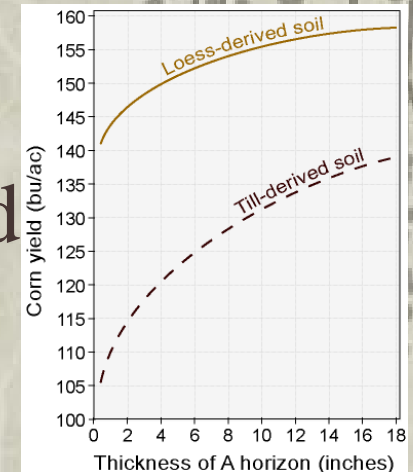


*“If you can see erosion, it is not included in most erosion estimates.” John Laflen.*



# *What Will the Future Bring Transition: Surplus → Shortages*

- Food shortage and price implicated in political unrest (2008 & 2010)
- Commodity price increases during harvest
- Record commodity prices
- Low stocks to use ratio
- Soil resource continually degraded



Mississippi River flood abates, but toll far from over: Thousands of acres of crops, timber and catfish farms still under murky water. MSN 6/4/2011

**Newsweek**

## High Prices Sow Seeds of Erosion

WILLIAM NEUMAN

Published: April 12, 2011 NY Times

## Are You Ready for More?

*In a world of climate change, freak storms are the new normal. Why we're unprepared for the harrowing future.*

## Temperature Rising A Warming Planet Struggles to Feed Itself. By JUSTIN GILLIS

Published: June 4, 2011 NY Times

*Editorial*

## Washing Away the Fields of Iowa

Published: May 4, 2011 NY Times

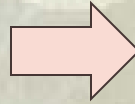
Russia swelters in heatwave,  
many crops destroyed. Fri Jul 16, 2010  
Reuters.

David B. Lobell, Wolfram Schlenker, and Justin Costa-Roberts. 2011. **Climate Trends and Global Crop Production Since 1980**. Published online 5 May 2011 [DOI:10.1126/science.1204531].

## *How Do Farmers Respond to ↑ prices?*

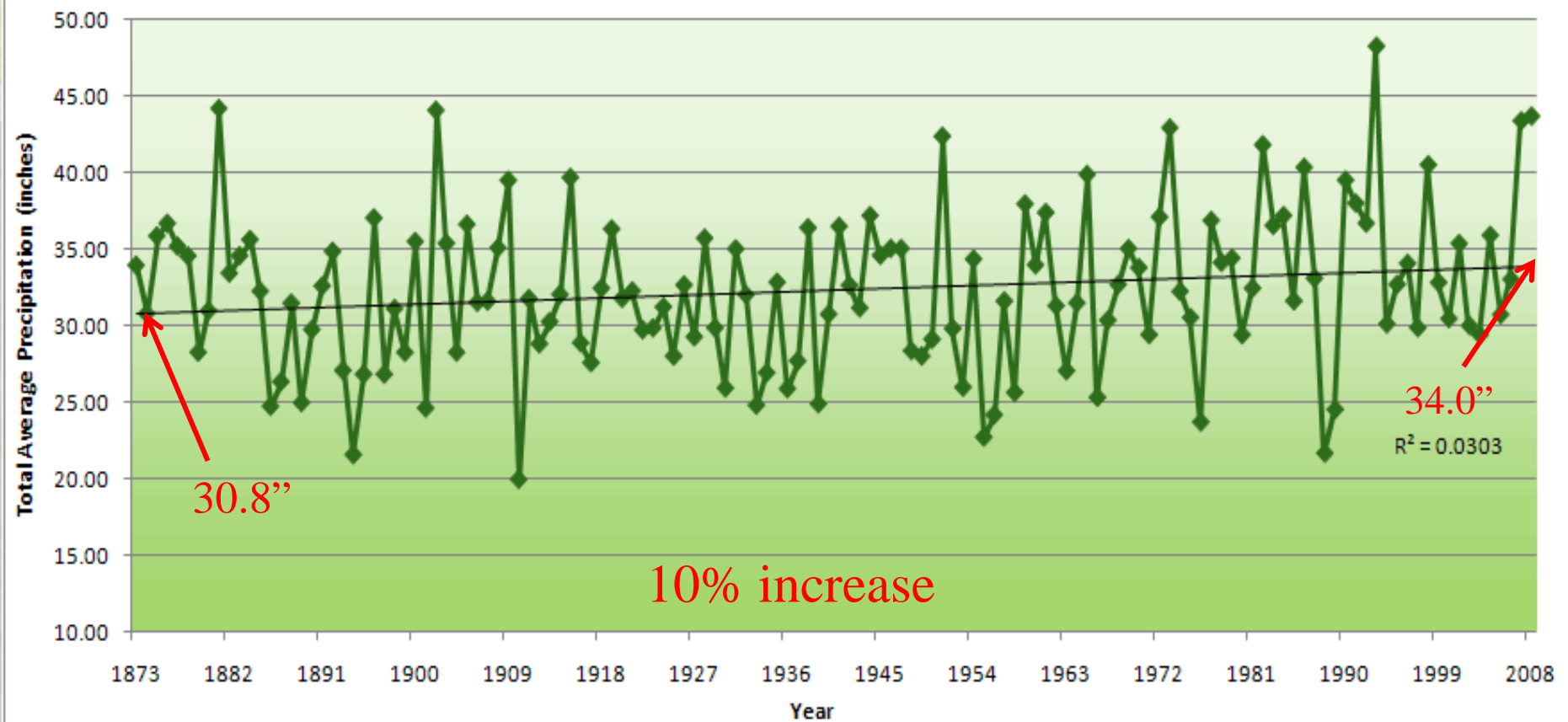
- ❖ Add more grass buffers?
- ❖ Bid in more CRP?
- ❖ Plant more diverse crop rotations?
- ❖ Eliminate tillage?
- ❖ Add riparian conservation practices?
- ❖ All of the above?
- ❖ None of the above?

# *Evidence?*



# Iowa State-Wide Average Data

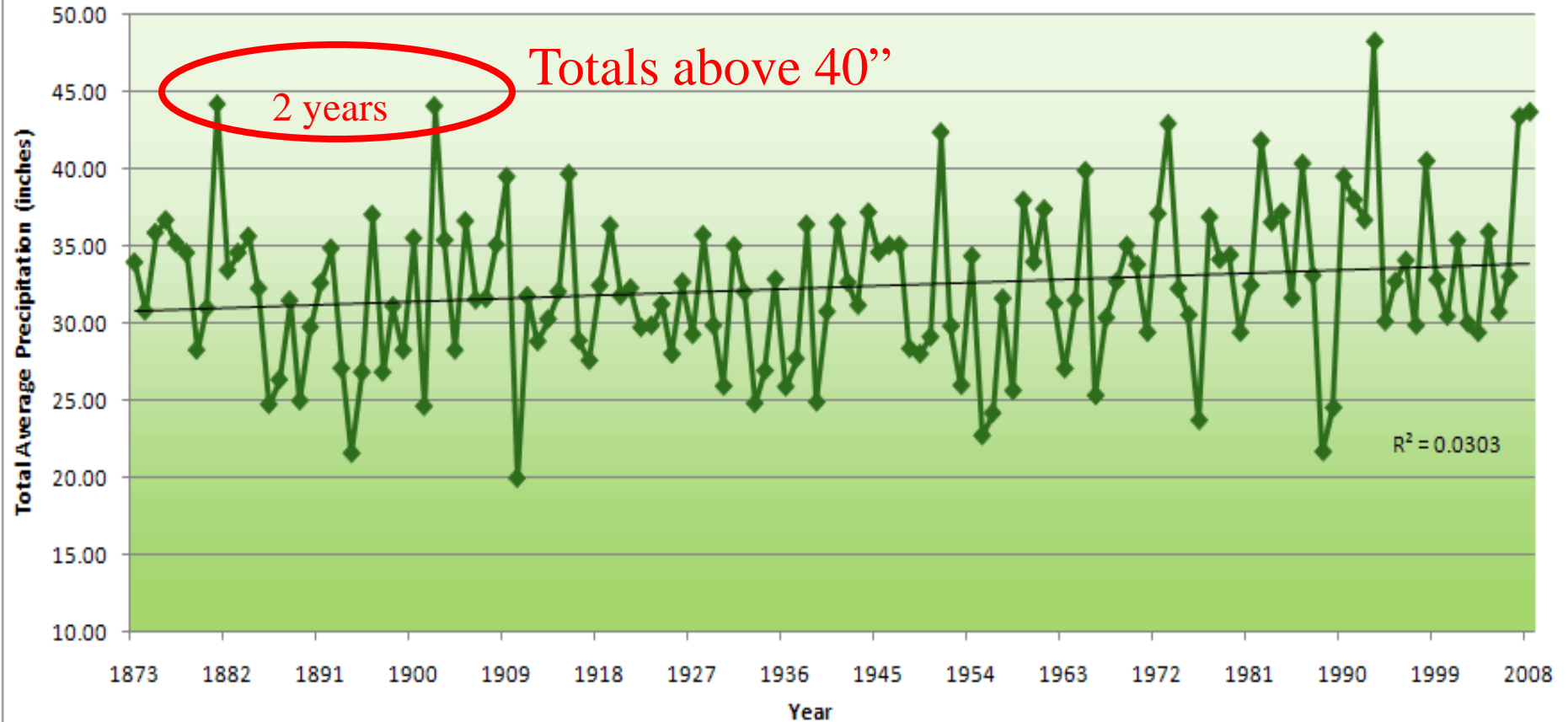
## Total Annual State-Wide Average Precipitation (inches)





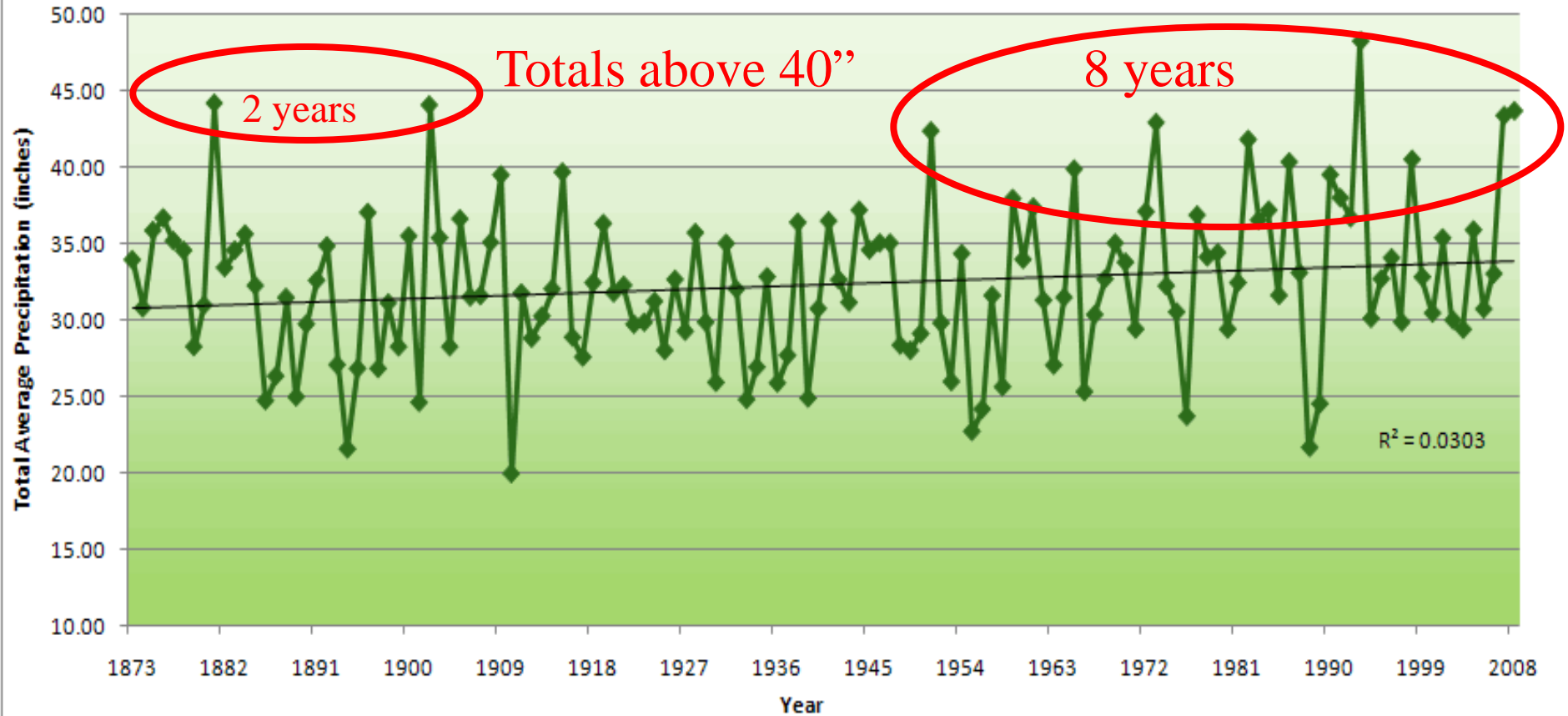
# Iowa State-Wide Average Data

## Total Annual State-Wide Average Precipitation (inches)



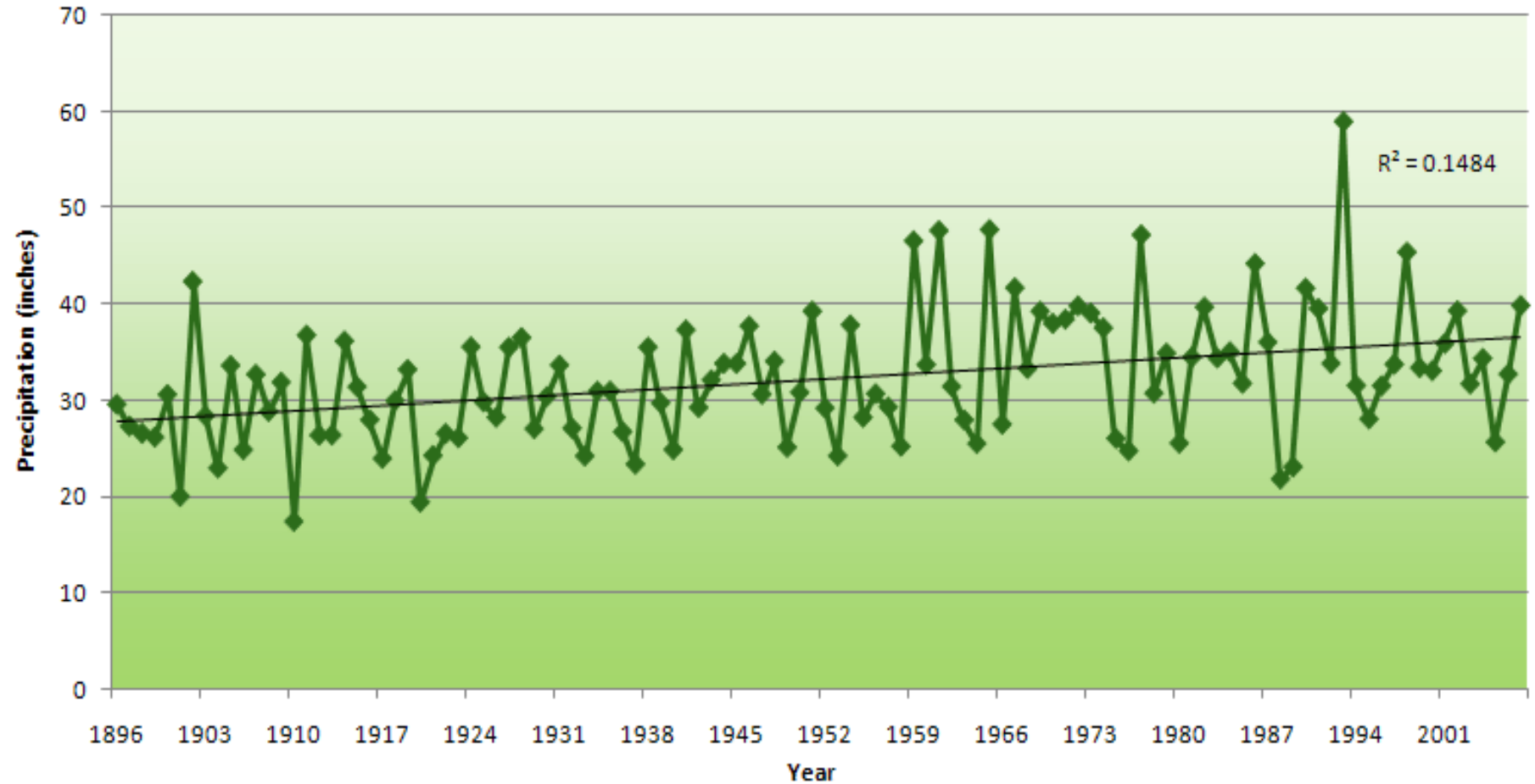
# Iowa State-Wide Average Data

Total Annual State-Wide Average Precipitation (inches)



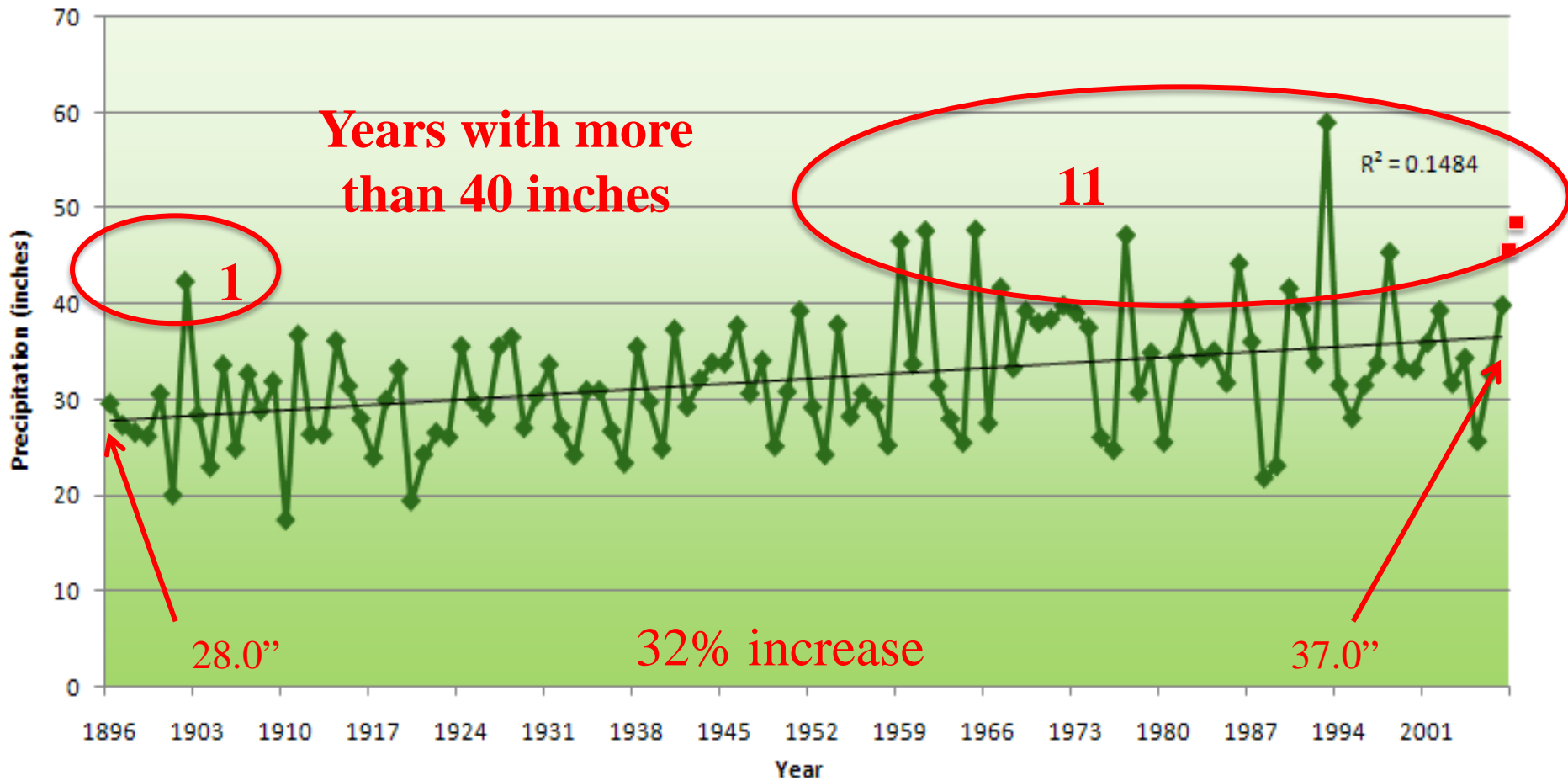
# Cedar Rapids Data

## Total Annual Precipitation (inches)



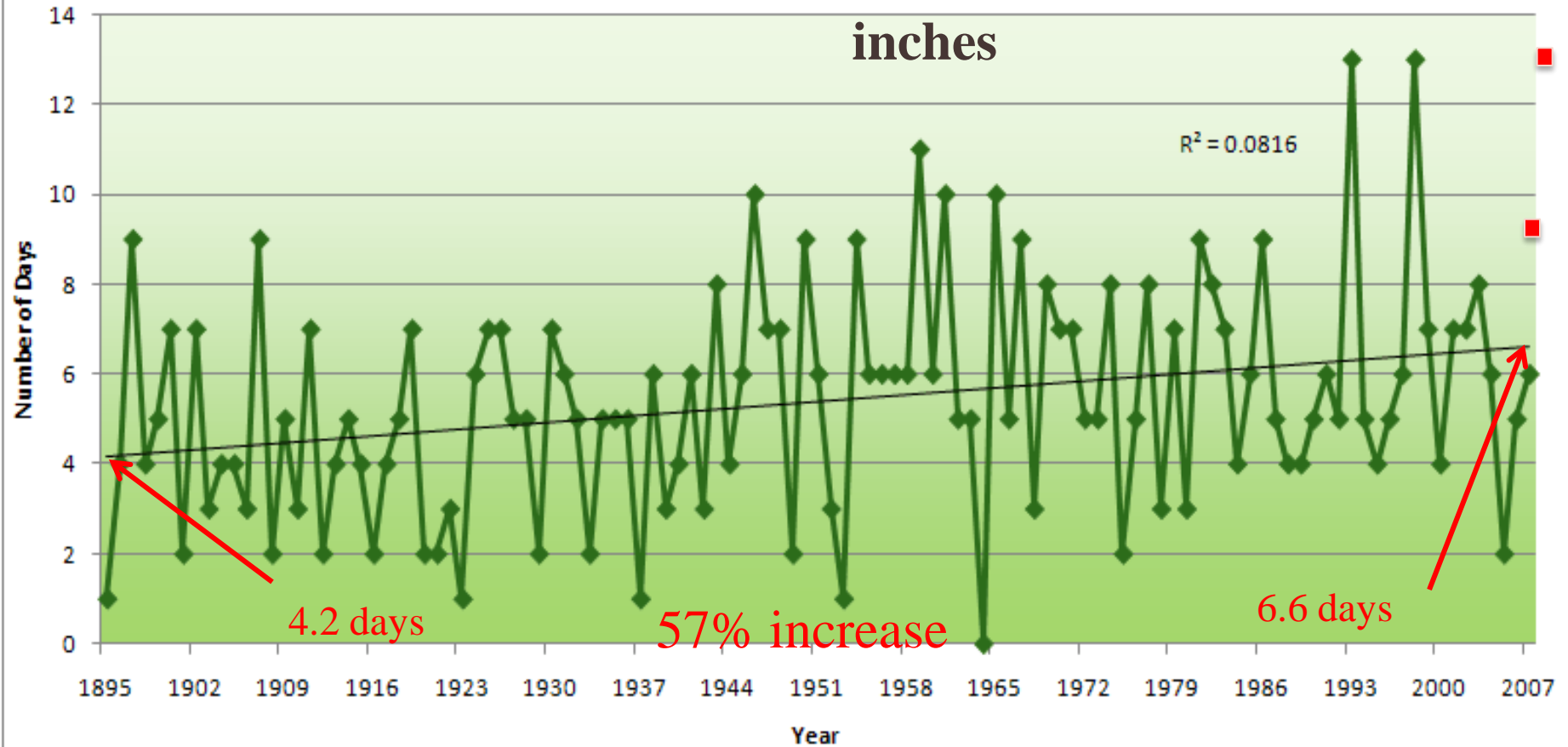
# Cedar Rapids Data

## Total Annual Precipitation (inches)



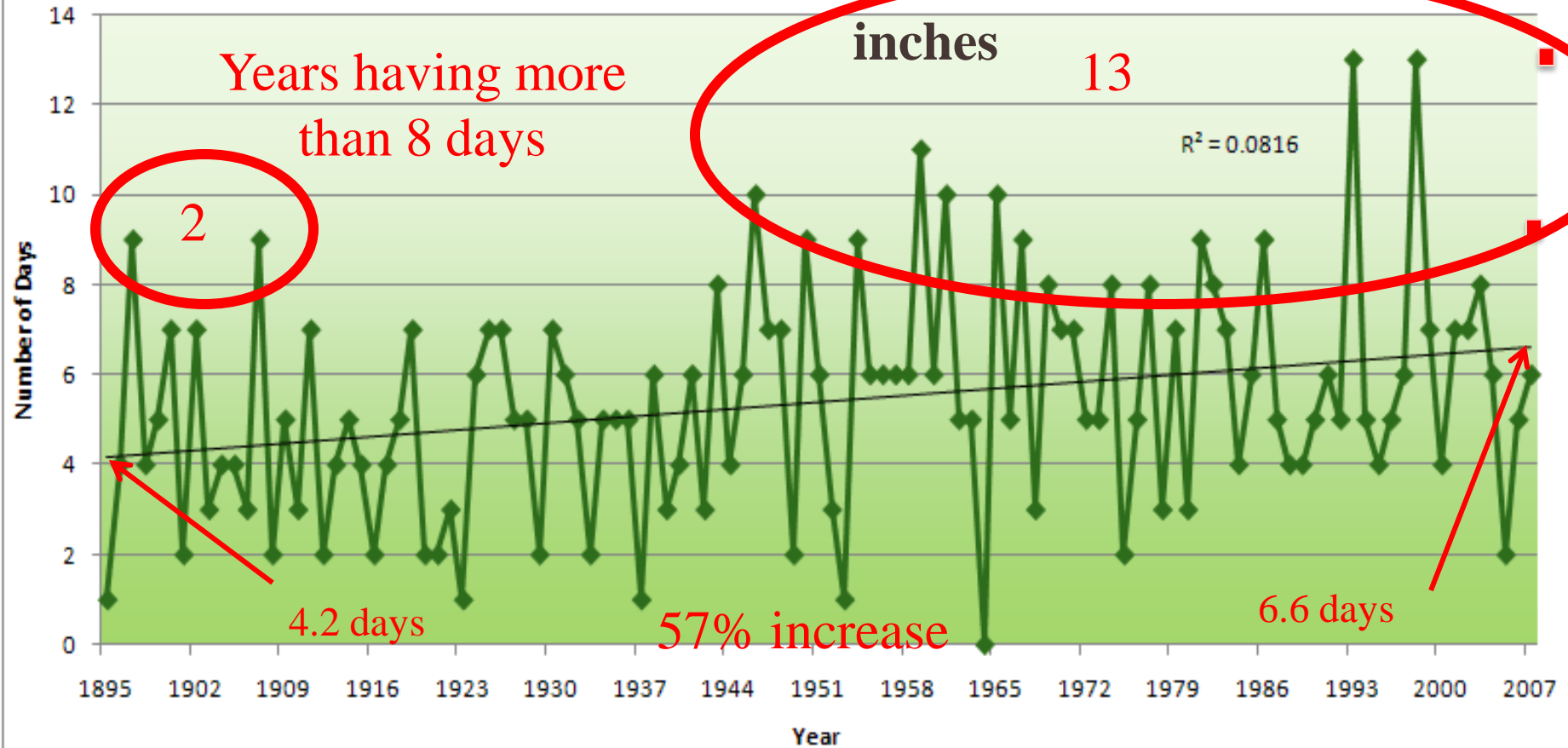
# Cedar Rapids Data

Number of Days With Total Precipitation Greater Than  
or Equal to **1.25**  
inches



# Cedar Rapids Data

Number of Days With Total Precipitation Greater Than  
or Equal to **1.25**  
inches



## Weather and Climate Extremes in a Changing Climate

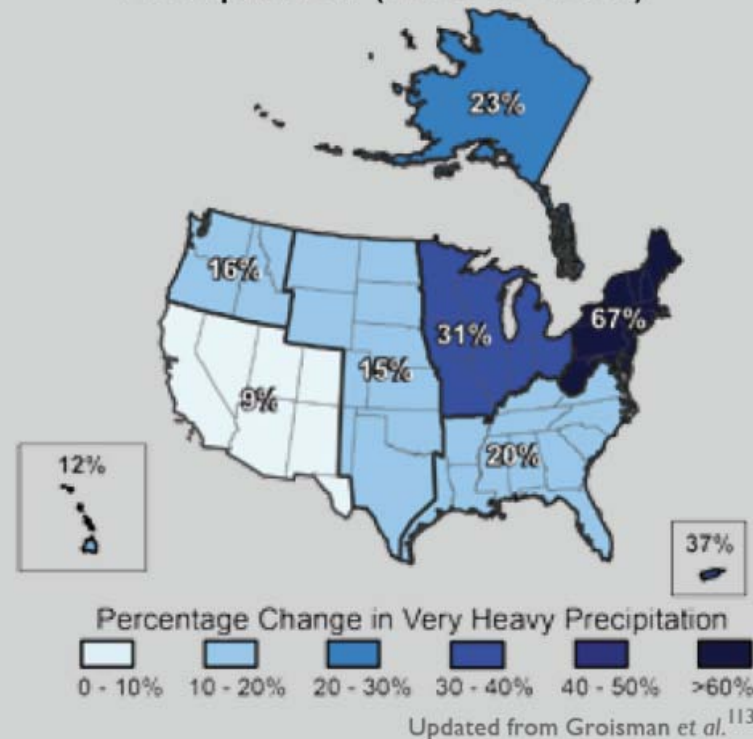
*Regions of Focus:  
North America, Hawaii,  
Caribbean, and U.S. Pacific Islands*

**U.S. Climate Change Science Program  
Synthesis and Assessment Product 3.3**

June 2008

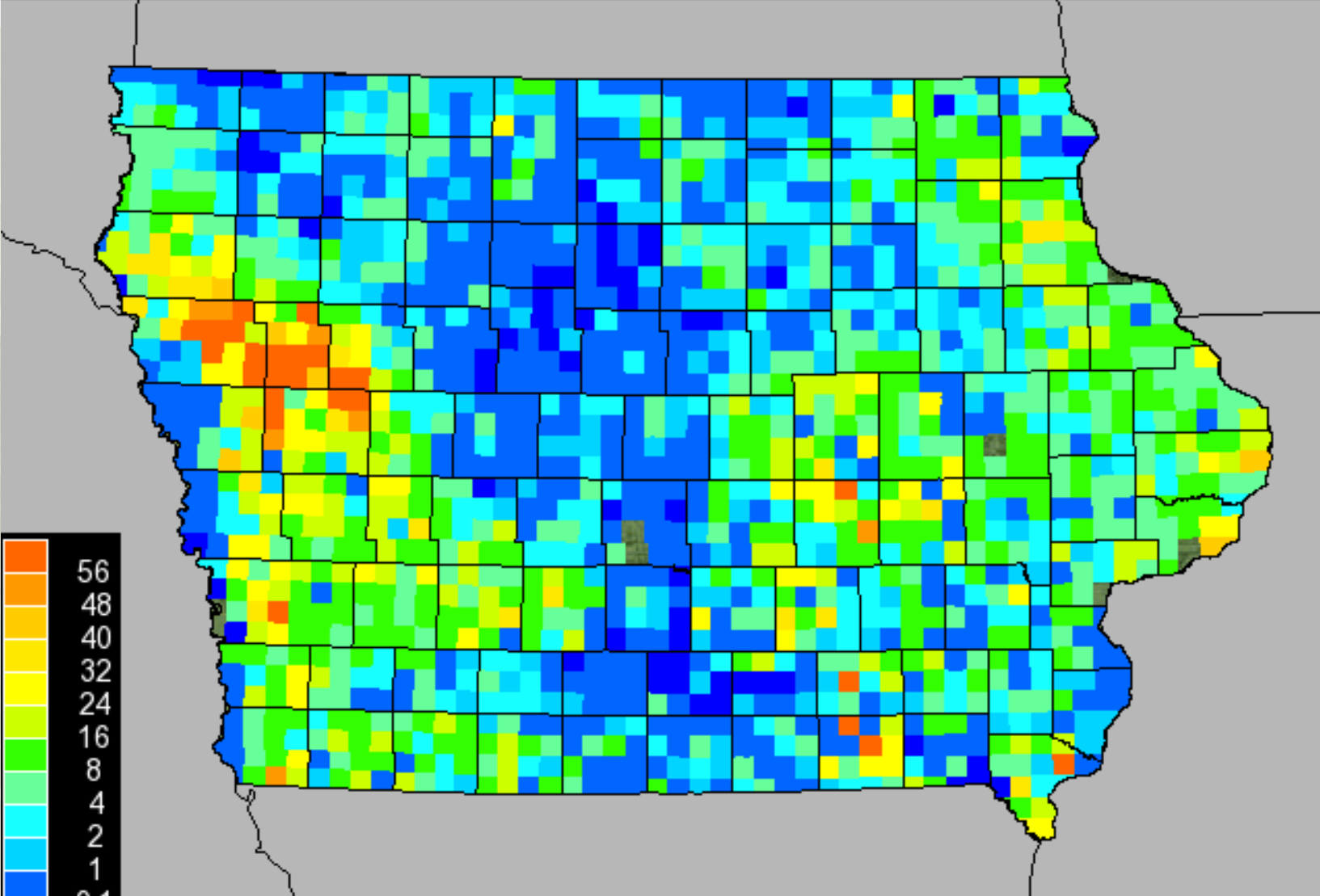
“One of the clearest trends  
in the United States  
observational record is an

Increases in Amounts of Very Heavy  
Precipitation (1958 to 2007)



Karl, T. R., J. M. Melillo, and T. C. Peterson, (eds.), 2009: Global Climate Change Impacts in the United States. Cambridge University Press, 2009, 196pp.

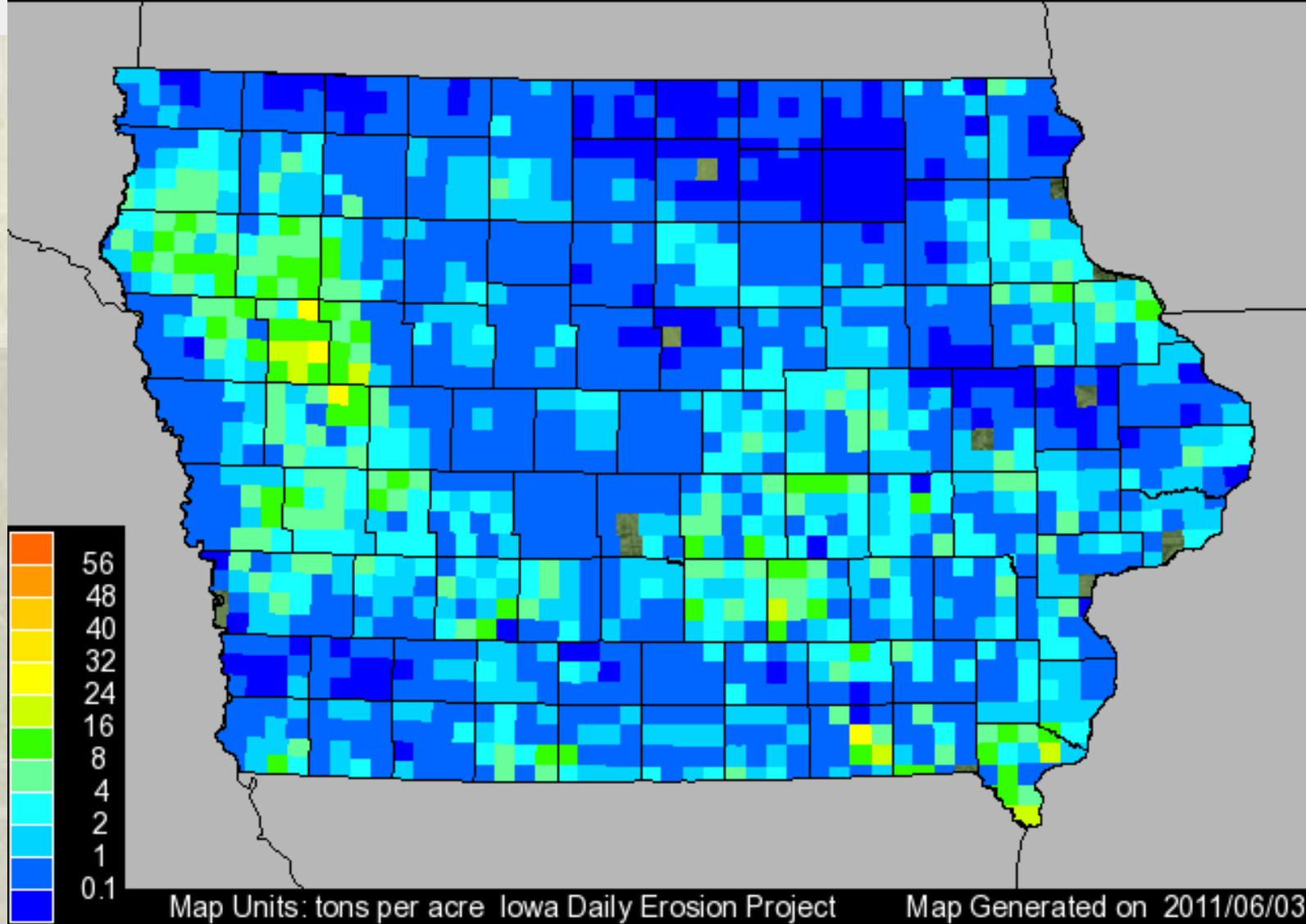
# Average Soil Erosion: [2009-01-01 - 2009-12-31]



Map Units: tons per acre Iowa Daily Erosion Project Map Generated on 2011/06/03

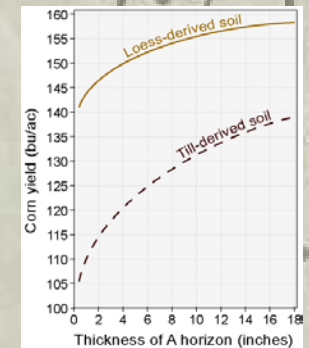


# Average Soil Erosion: [2010-01-01 - 2010-12-31]



# Conclusions

- ❖ We are eroding soil faster than it is forming
- ❖ Soil erosion reduces crop yield
- ❖ Cruse catches BIG fish



# *Conclusions*

- ❖ Rainfall trends strongly suggest more erosive storms should be expected
- ❖ High commodity prices economically work against adopting selected conservation practices.
- ❖ An acceleration in soil erosion is likely.

