

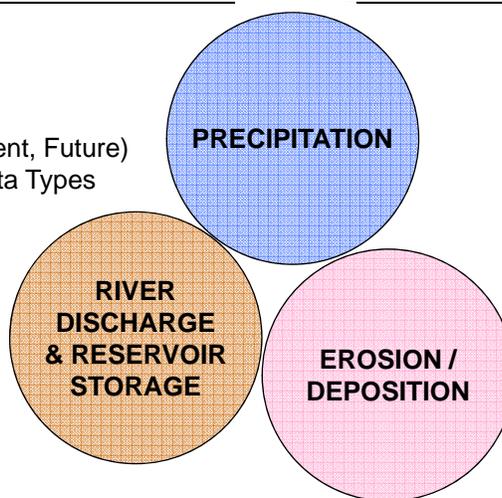
Technical Overview of a Very Wet Year - Oklahoma 2007  
**A "Hurricane" of a Year**

**Objectives**

- Provide 2007 Data Summaries
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- Draft Map w/ Interdisciplinary Data Types

**Stewardship of the Oklahoma Landscape:**

- Meteorology
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- Civil and Hydrologic Engineering
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*Preliminary Data - Subject to Revision*

# Identifying “Hotspots” in the Oklahoma Landscape

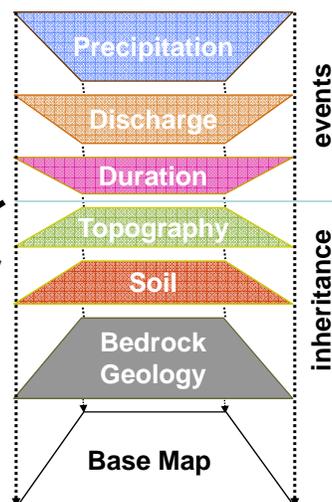
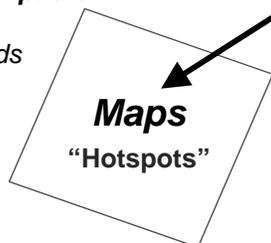
## Approach to Recognizing “Hotspots”

### **Mapping “Hotspots” (GIS)**

...intersection or coincidence of conditions favoring the occurrence of erosion / deposition

### **Validation - Inventory of Impacts**

- bridges, pavements
- erosion of agricultural lands
- sediment load
- utilities/pipelines
- flood-control pool levels in reservoirs
- siltation of containment structures
- gage height shift analysis
- others?



Technical Overview of a Very Wet Year - Oklahoma 2007

## **Benefits of Attendance - I**

### Immediate Benefits

- Share data and experiences for WY2007
- Initiate (or rekindle) working relationships
- Learn from one another
- Reflect on agency response with an eye to improvement of process/interaction
- Produce tangible products (compilation of presentations & draft map of “hotspots”)

*Preliminary Data - Subject to Revision*

Technical Overview of a Very Wet Year - Oklahoma 2007

## **Benefits of Attendance - II**

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### **Long-Term Benefits to Oklahoma**

- Our population is growing (living on new parts of the landscape)
- Oklahoma's climate is changing
- Fragile, diverse landscape
- New and emerging tools/techniques and increased capacity for description of the landscape
- Interdisciplinary science is **"hot"**

*Preliminary Data - Subject to Revision*

Technical Overview of a Very Wet Year - Oklahoma 2007

## **Benefits of Attendance - III**

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### **Long-Term Benefits to Oklahoma**

- Oklahoma Comprehensive Water Plan (OWRB) is in progress
- Flood-retention structures are reaching life-expectancies
- Texas covets our water
- People are important (life, safety, property values)
- Sustainable economic development is dependent on a sustainable ecology

## Technical Overview of a Very Wet Year - Oklahoma 2007

# Precipitation 2007

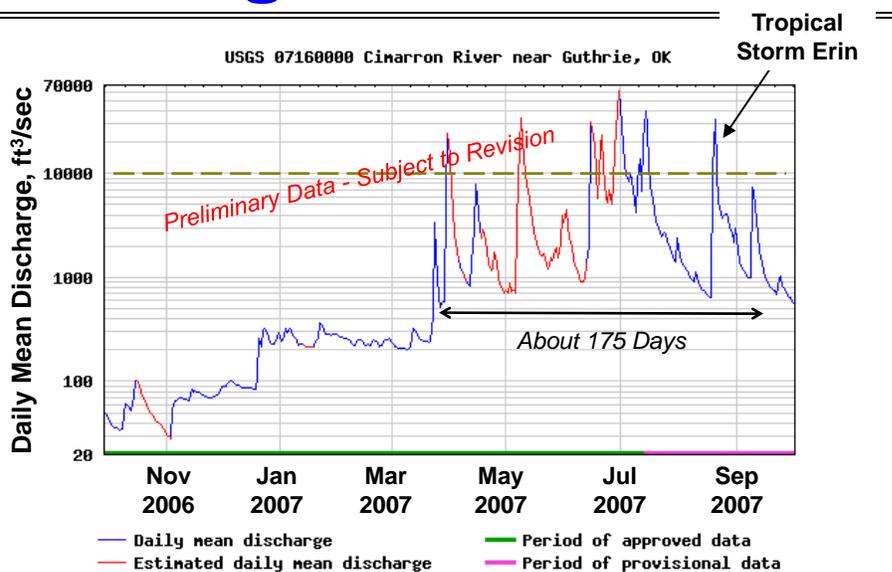
Dissipating Tropical Storm Erin, August 19, 2007



NOAA WSR-88D radar in Oklahoma City

## Technical Overview of a Very Wet Year - Oklahoma 2007

# Discharge 2007



Technical Overview of a Very Wet Year - Oklahoma 2007

# Discharge 2007

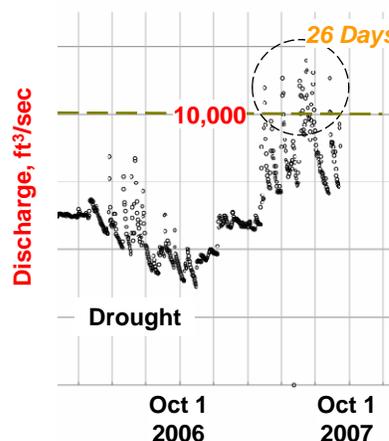
Cimarron River at Coyle River Bridge



July 5, 2007

*Preliminary Data - Subject to Revision*

Cimarron River, Guthrie Gage  
Daily Mean Discharge



Technical Overview of a Very Wet Year - Oklahoma 2007

# Drought 1950s

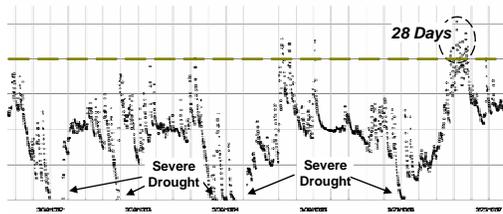
## 33,000 Eastern Oklahomans Get Emergency Food

Officials Forecast Winter to Boost Load Near 60,000

At least 33,000 persons are receiving emergency relief food in 23 eastern Oklahoma counties due to three years of drought and winter months will bring the total to more than 60,000 state officials declared Saturday.

*The Oklahoman*  
September 19, 1954, p. 88

Cimarron River, Guthrie Gage, 1952 - 57



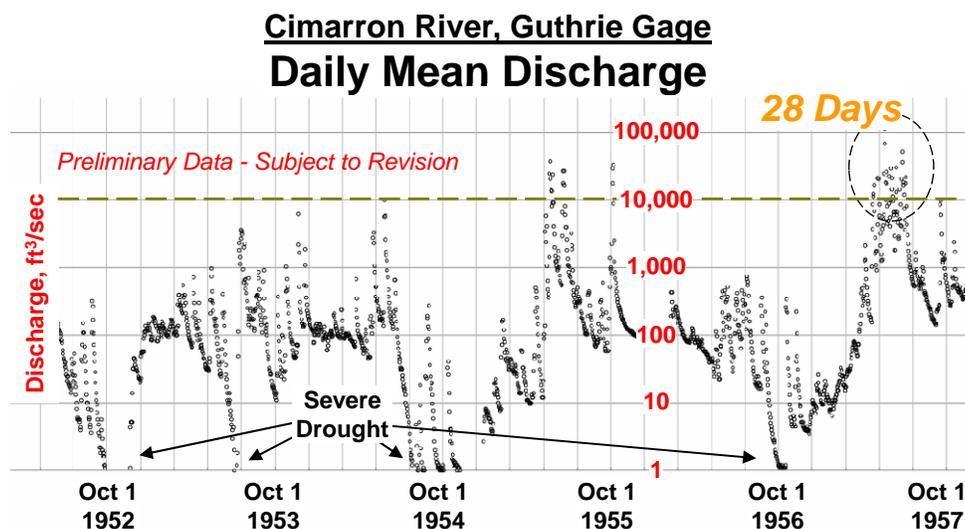
Daily Mean Discharge, ft³/sec

*Preliminary Data - Subject to Revision*



Technical Overview of a Very Wet Year - Oklahoma 2007

# Drought 1950s



Technical Overview of a Very Wet Year - Oklahoma 2007

# Drought / Land Stewardship

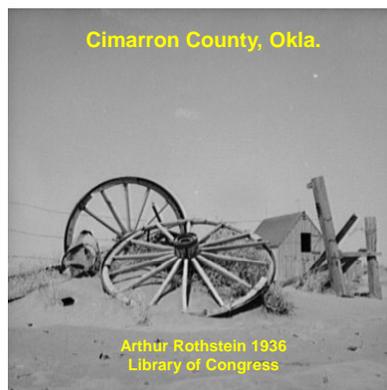
**MARTIAL LAW  
IN DUST BOWL  
IS DEMANDED**

*The Oklahoman,  
April 23, 1937, p. 1*

Guymon Meeting Will  
Take Action Today.

**THEY ASK FOR SPEED**

Emergency Is Cited In  
Wire to President.



# Technical Overview of a Very Wet Year - Oklahoma 2007

## A Fragile, Diverse Landscape



Steve Sisney, *The Oklahoman*, May 31, 2004



Steve Sisney, *The Oklahoman*, May 31, 2004



Red Permian bedrock is the foundation for 60% of Oklahoma's land surface

*Preliminary Data - Subject to Revision*



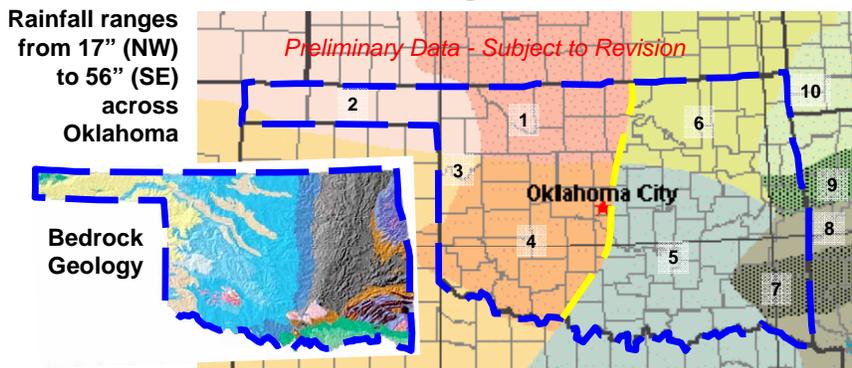
*The Oklahoman*, December 12, 2006

# Technical Overview of a Very Wet Year - Oklahoma 2007

## A Fragile, Diverse Landscape

Oklahoma landscape → Product of climate, bedrock geology, and people

### Ecoregions - Provinces



Oklahoma: a natural laboratory for the United States in America's heartland

Technical Overview of a Very Wet Year - Oklahoma 2007

# Erosion 2007



Technical Overview of a Very Wet Year - Oklahoma 2007

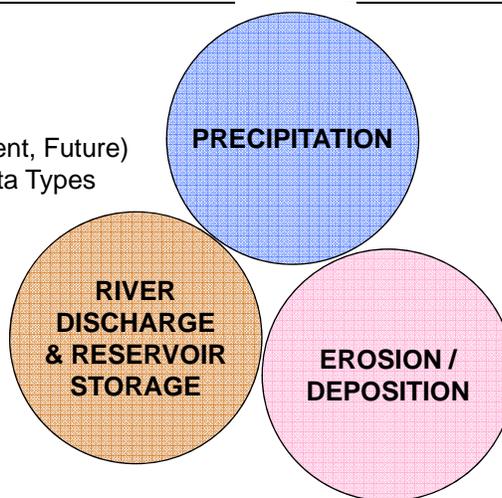
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**AGENDA**

**AGENDA**

**WEDNESDAY, NOVEMBER 14, 2007**

- INTRODUCTORY REMARKS**
- IMPRESSIONS FROM RESIDENTS**
- PRECIPITATION**
- RIVER DISCHARGE AND RESERVOIR STORAGE**
- ECONOMIC / SOCIAL IMPACTS**
- WORKING LUNCH**
- EROSIONAL / DEPOSITIONAL ISSUES**

**THURSDAY, NOVEMBER 15, 2007**

**FIELD TRIP TO BUGGY CREEK, NEAR MINCO**

*8:00 AM - Noon*

Departing from the USGS OWSC office



**AGENDA-I**

**AGENDA-I**

**WEDNESDAY, NOVEMBER 14, 2007**

**INTRODUCTORY REMARKS**

- 8:00 AM Goals / Objectives (Kim Winton, Stan Paxton - USGS)
- 8:20 Real-Time Impressions on the Ground: Comments from Residents
  - Kingfisher-area Resident **Steve Loftis**
  - Miami-area Resident **Julia Mathews**

**PRECIPITATION**

- 9:00 Unusual Rainfall Patterns of 2007 - **Derek Arndt** - OCS
- 9:25 Satellite Precipitation Records for 2007 - **Yang Hong** - OU
- 9:50 Break



AGENDA - II

### WEDNESDAY, NOVEMBER 14, 2007

#### RIVER DISCHARGE AND RESERVOIR STORAGE

- 10:05 Radar Precipitation Monitoring and Flood Detection  
(What was so unusual about 2007?) - **Baxter Vieux** - OU
- 10:30 Stream Discharge and Gage Height Shift Analysis  
**Rachel Esralew** - USGS
- 10:55 Reservoir Storage and Flood Pool Levels: It was a "Hurricane" of  
a Year - **Greg Estep** - USACE
- 11:20 Economic/Social Impacts - **Vince Fernandez** - ARC of Oklahoma
- 12:00 **WORKING LUNCH**  
*175 Days of USGS Stream Gaging, Water Year 2007*  
**Rick Hanlon** - USGS



AGENDA - II

AGENDA - III

### WEDNESDAY, NOVEMBER 14, 2007

#### EROSIONAL / DEPOSITIONAL ISSUES

- 1:00 PM Mother Nature's Fury on Oklahoma's Roads and Bridges -  
**Leslie Lewis** - ODOT
- 1:50 Ice, Snow, Wind, Tornados, Tropical Storms and Floods: Keeping  
the Power Flowing through Extremes - **Sid Sperry** - Oklahoma  
Association of Electric Cooperatives
- 2:20 Extended Break
- 2:45 Using Precipitation Data to Predict Watershed Dam Spillway Flow  
and Estimated Flood Control Benefits -  
**Larry Caldwell** - NRCS
- 3:00 Using Precipitation Data and Storm Frequency and Duration Data  
to Predict Spillway Flows in Watershed Program Project Dams -  
**Jim Henley** - NRCS



AGENDA - III

**WEDNESDAY, NOVEMBER 14, 2007**

**EROSIONAL / DEPOSITIONAL ISSUES (continued)**

- 3:15 Developing Water Budgets for Individual Flood Control Structures to Estimate Flood Control Benefits for Single Storm Events - **Gary Utley** - NRCS
- 3:30 USDA – NRCS Tools and Techniques for Evaluating the Impact of Large Storm Events on Cropland Erosion and Deposition in Caddo County - **Ken Matlock** - NRCS
- 3:45 Next Steps for Draft Composite Map
- 4:00 Follow-Up and Closing Comments
- 4:30 Adjourn

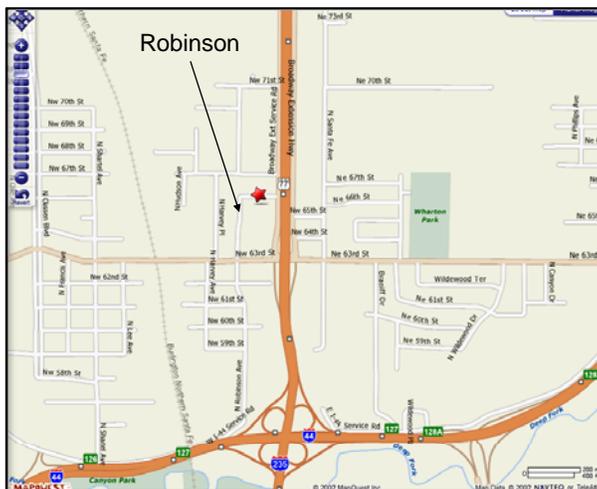
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Map for Field Trip Departure Thursday



USGS Oklahoma Water Science Center  
 202 NW 66<sup>th</sup>, Bldg. 7 (Exit I-235/77 @ 63<sup>rd</sup> St.),  
 North on Robinson off of NW 63<sup>rd</sup>  
 Oklahoma City, OK