Early Weather Warning System for Saudi Arabia using GIS

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CRP 514: Introduction to GIS

Outlines

- Introduction
- Problem Statement
- Objectives
- Methodology
- Limitation
- Examples of related GIS projects
- Conclusion

Introduction

- Importance of weather data and information:

  Public, military and civilian aviation, businesses, officials

- Current State of PME Early Warning System:

  http://www.pme.gov.sa/warnn.asp

Problem Statement

- The current Early Warning System will issue a warning over a whole province or much wider region than intended for the lack of availability of a suitable geographic system. A thunderstorm warning for an example is needed to be more precise with regards to location in order to better protect life and property.

Objectives

1. Replacing the current Early Warning System with a New geographic warning system using GIS.

2. Including information about the population to give details about population at risk.

3. Helping emergency official to take proper actions.

4. Minimizing loss of life and property.

Methodology

- Converting meteorological data to points, lines and polygons.

- GIS as a Weather Processing System using ESRI prototype GIS/WPS.

- Using GIS compatible programming language like Visual basic and Java.

- A software called Warngen is recommended.

Study Limitation

- Digitized data is not available for all regions in Saudi Arabia.

- PME personals are not familiar with GIS.
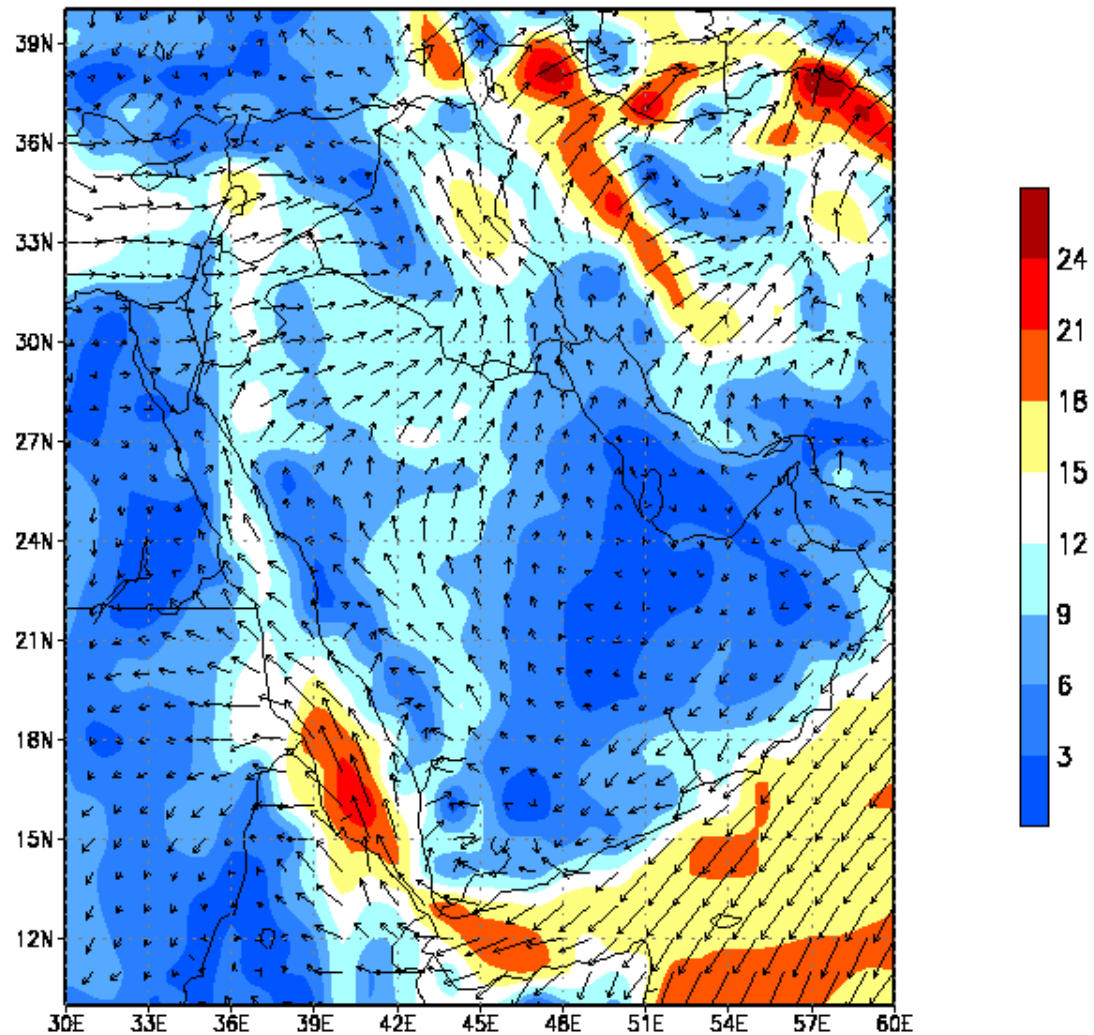
Examples of related GIS projects

1. 1996 ESRI ArcInfo 7.0.3 and Arc View 2.0 Graphical User Interfacr (GUI) toolkits ESRI ARC Macro Language (AML)

2. US National Weather Service Offices across the Southern Region:

   Fort Worth, TX

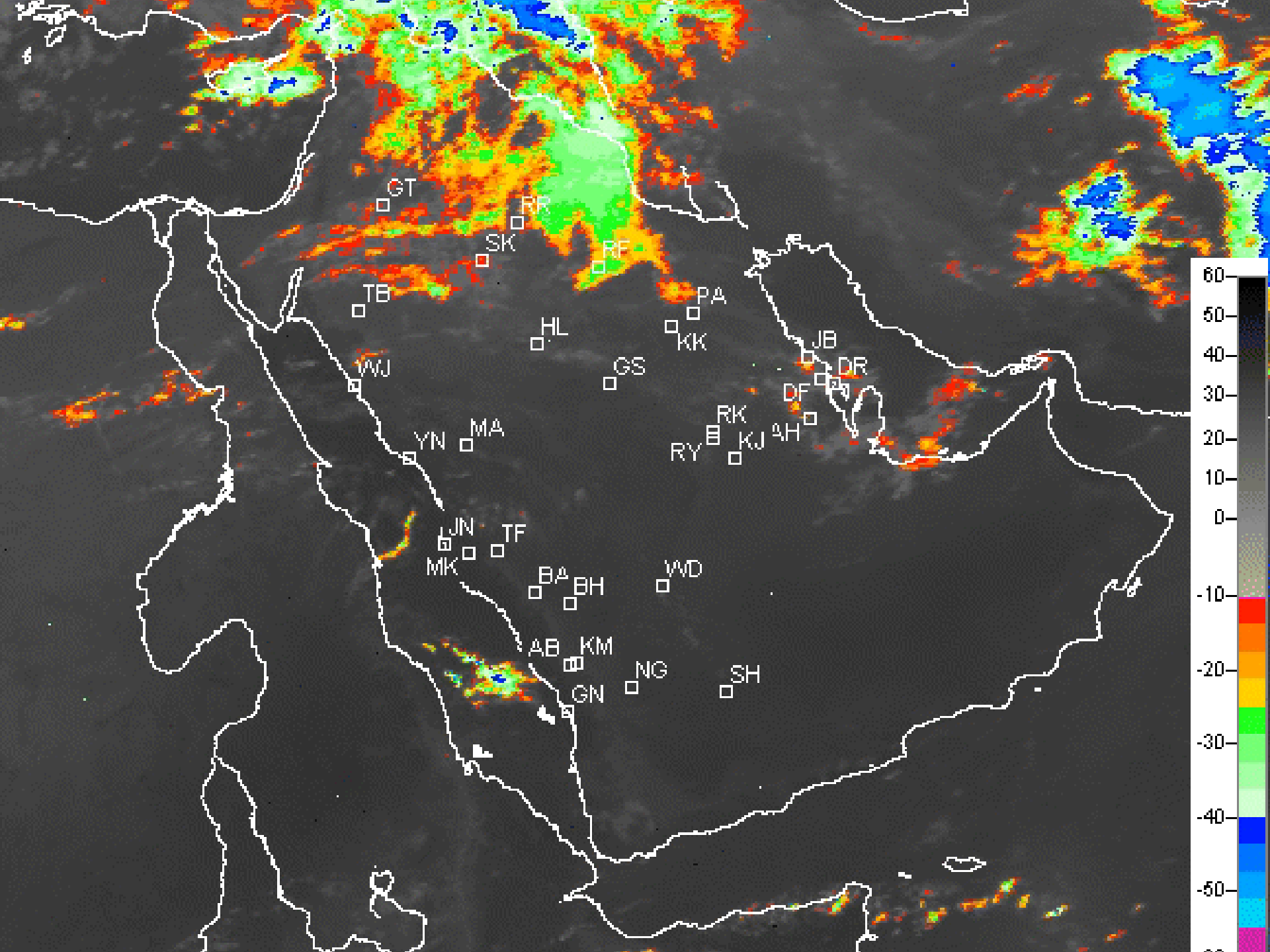3. COMMET program using GIS: http://meted.ucar.edu/qpf/urbanf/tab2ftc.htm

Conclusion

- Integrating GIS to the current Early Warning System will enhance benefits to public and officials.

- Detailed information about population at risk will be critical during emergency.

- Using GIS will support Saudi Government initiative to build an Electronic Government

Thank You!

0000Z SFC SEA LEVEL PRESSURE (MB)
0000Z SFC STATION PLOTS (DEG F)

10 m isotachs (knot) Mon 09Z 13jan2003

الرئاسة العامة للأرصاد وحماية البيئة

نظـــــام التحذيــــــرات الآنيــــــة

مراحل التحذير

تحذير	تنبيه	مراقبة

معلومات آنية

IAD : Sterling, VA

Legend

- ✓ Wsr88_lo.dbf
  - ▲ (pink triangle)
- ✓ Wfo.dbf
  - ● (orange dot)
- ✓ S_radar.shp
  - ■ 0 - 1
  - ■ 1 - 2
  - ■ 2 - 3
  - ■ 3 - 4
  - ■ 4 - 5
  - ■ 5 - 6
- ✓ Usa_cln_river
- ✓ Cnty
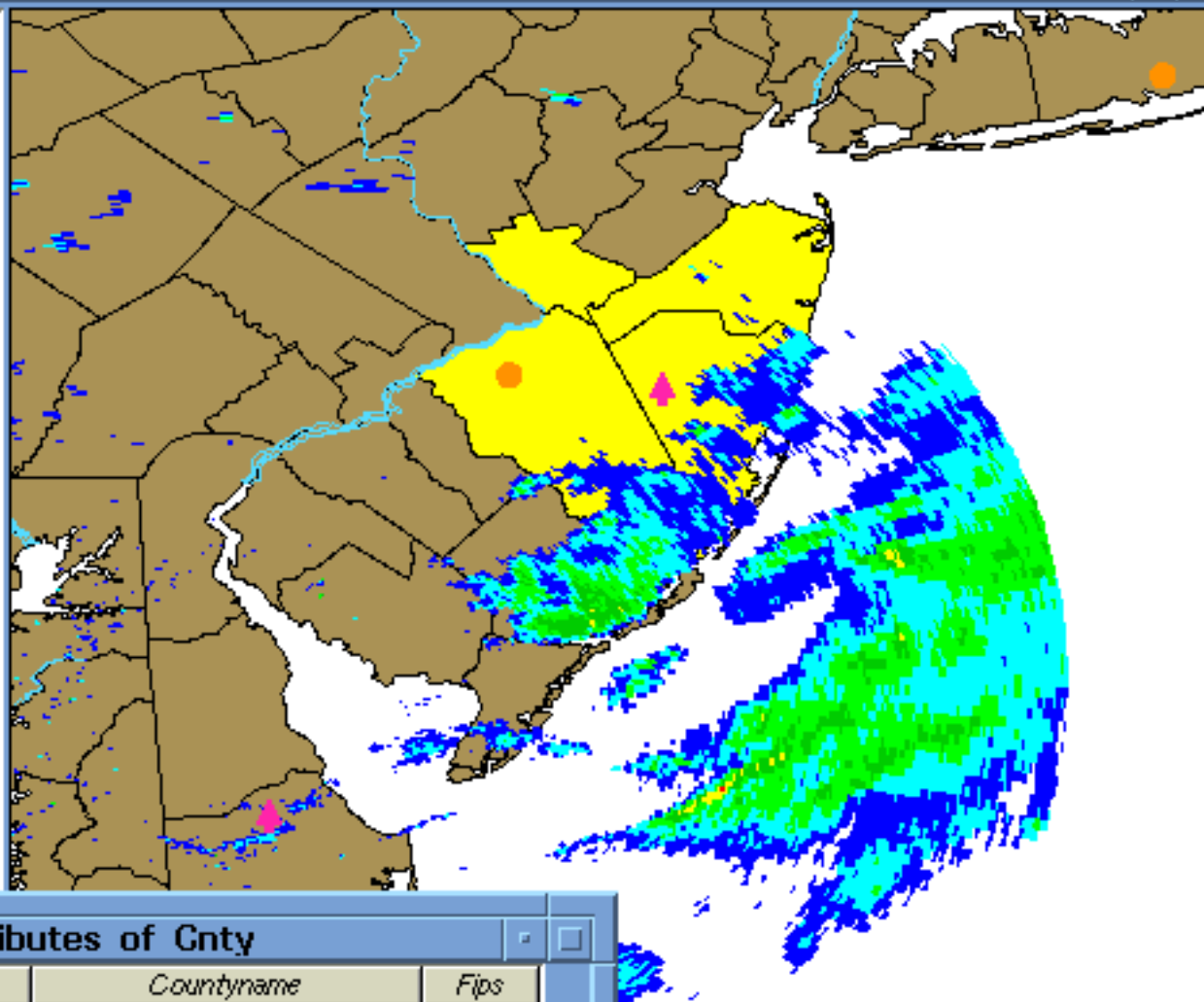
Attributes of Cnty

Statename	Countyname	Fips
NEW JERSEY	MERCER	34021
NEW JERSEY	MONMOUTH	34025
NEW JERSEY	BURLINGTON	34005
NEW JERSEY	OCEAN	34029
MONTANA	SHERIDAN	30091

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit   Dell Home   SurfSaver

Address http://www.srh.noaa.gov/fwd/gwarn/nwswarning.html   Go

Links   NCTCOG GWARN   GPS IPW   HPC WWE   SREF Ensemble Fcst   OCGS Cam   Google   SRH Data   NDS   Intranet   USOS   SPLNs SFC

Google   Search Web   332 blocked   AutoFill   Options

www.srh.noaa.gov

National Weather Service Forecast Office
Fort Worth, TX

NOAA

Site Map   News   Organization   Search Enter Search Here   Go

EXPERIMENTAL **North Texas Graphical Warnings** EXPERIMENTAL

A joint venture between the North Central Texas Council of Governments and the National Weather Service.

CURRENT AND RECENT WARNINGS FOR NORTH TEXAS

No Warnings in Effect

Type	Number
Tornado	0
Severe Thunderstorm	0
Flash Flood	0

4/19/2004 1:08:39 AM CDT   Mode: Precip

WARNING		TIMING			IMPACT	
Name	Status	ID	Date	Issued	Expires	Counties	Persons#	Area

Done   Internet

National Weather Service - NCTCOG Severe Weather Graphical Warnings - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit   Dell Home   SurfSaver

Address http://www.dfwinfo.com/weather/graphicalwarnings/warnanalysis.asp?msgid=WFUS54+KFWD+060029+200304&status=X

Links NCTCOG GWARN   GPS IPW   HPC WWE   SREF Ensemble Fcst   OCGS Cam   Google   SRH Data   NDS   Intranet   USOS   SPLNs SFC

Google   Search Web   342 blocked   AutoFill   Options

1:18:37 PM   Monday   April 19, 2004

National Weather Service WFUS54 KFWD 060029 200304 Warning Profile

TORNADO WARNING

| Issued: | Saturday 4/5/2003 6:27:00 PM | Expires: | Saturday 4/5/2003 7:30:00 PM |
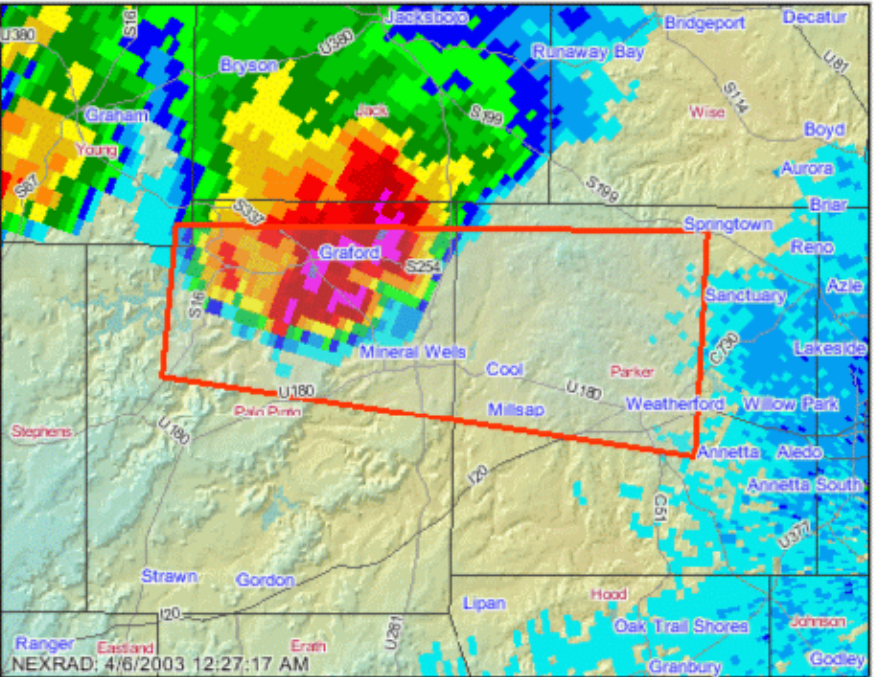
Status	WARNING
Event	Tornado
Area	680.60 Sq. Miles
Counties	Palo Pinto Parker
Storm Motion	East At 30 Mph.

Impacted Population:	58,859
In Homes:	75.26%
In Multi-Family Units:	5.29%
In Mobile Homes:	19.45%
English Spoken Well:	98.41%
English Not Spoken:	1.59%
Urban:	54.88%
Rural:	45.12%
Not Living in Texas in 1995:	4.83%
Source: 2000 Census	

NEXRAD: 4/6/2003 12:27:17 AM

DESCRIPTION

* At 627 PM CST... Trained Weather Spotters Reported A **Tornado** 18 Miles West Of Mineral Wells Or 3 Miles East Of Possum Kingdom Lake... Moving East At 30 Mph.
In Addition To Tornadoes, **Hail** To The Size Of Softballs And Damaging Winds To 80 Mph Are Likely With This Storm. Do Not Leave Shelter To Use Your Car To Outrun A Tornado. Cars Are Easily Tossed And Crushed By Tornado Winds.
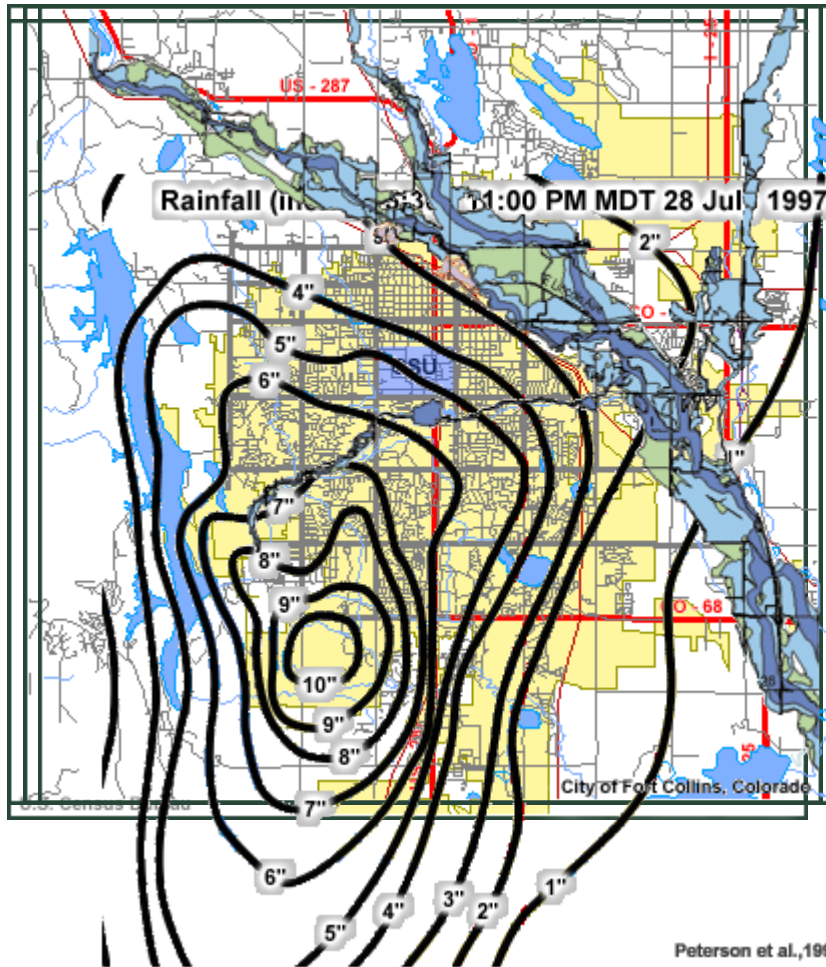
TIMING

* THE TORNADO IS EXPECTED TO BE NEAR... MINERAL WELLS AROUND 650 PM CST WEATHERFORD AROUND 715 PM CST
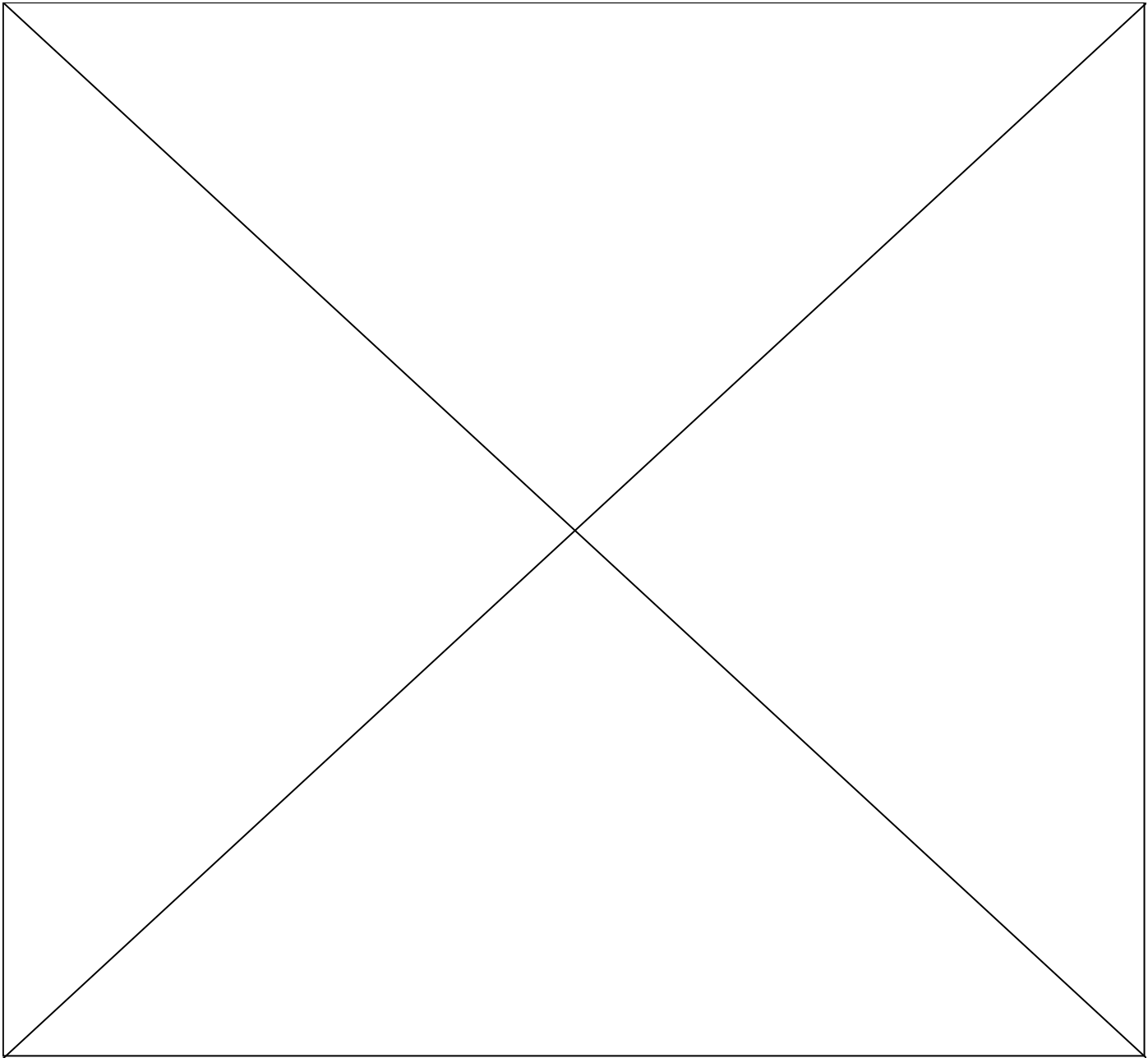
Fort Collins Overlay Map

Click the check boxes to show or hide map features

Railroads
Streets
Ditches, creeks, rivers, and reservoirs
    Show labels

Stormwater basins
Floodplains
Rainfall 7/28/97

Legend

- Floodway
- 100-year floodplain
- 500-year floodplain