

# Data Tools: Helpful for Both Emergency Management and Adaptation Planning

Session: Understanding the Problem –  
The Overlap Between Hazard Mitigation  
and Adaptation

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National Adaptation Forum, Denver, CO  
April 2, 2013

# Multi-Hazard Context

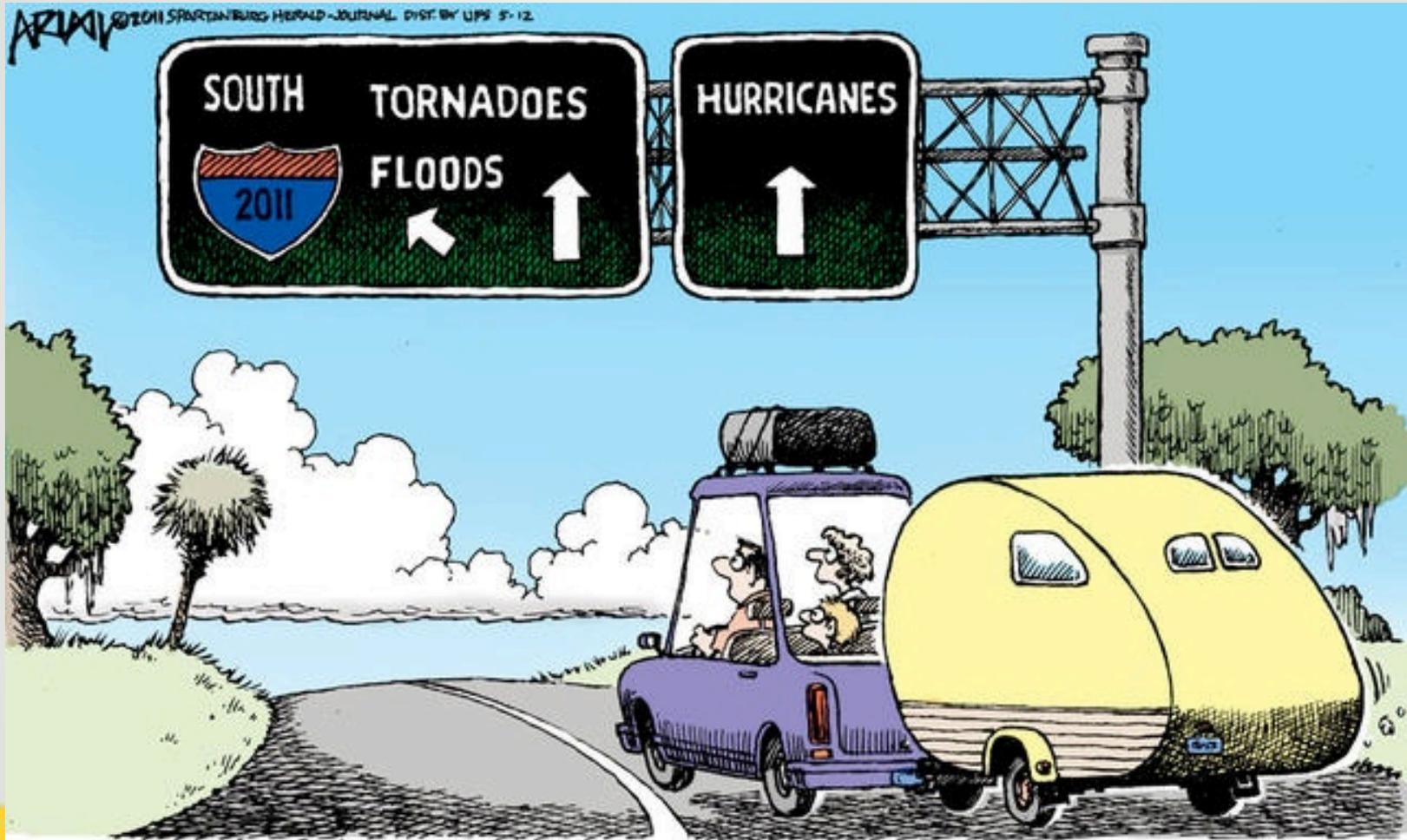




Photo: Von Castor & Fox23 Tulsa



Photo: NWS-Tulsa

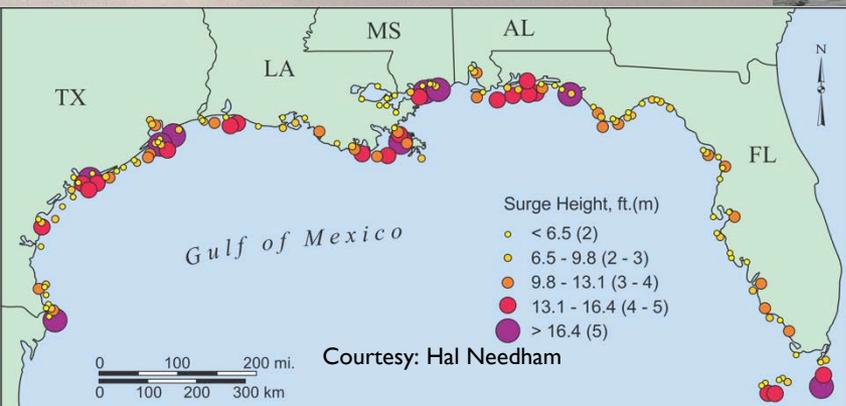


Photo: Kevin Burns



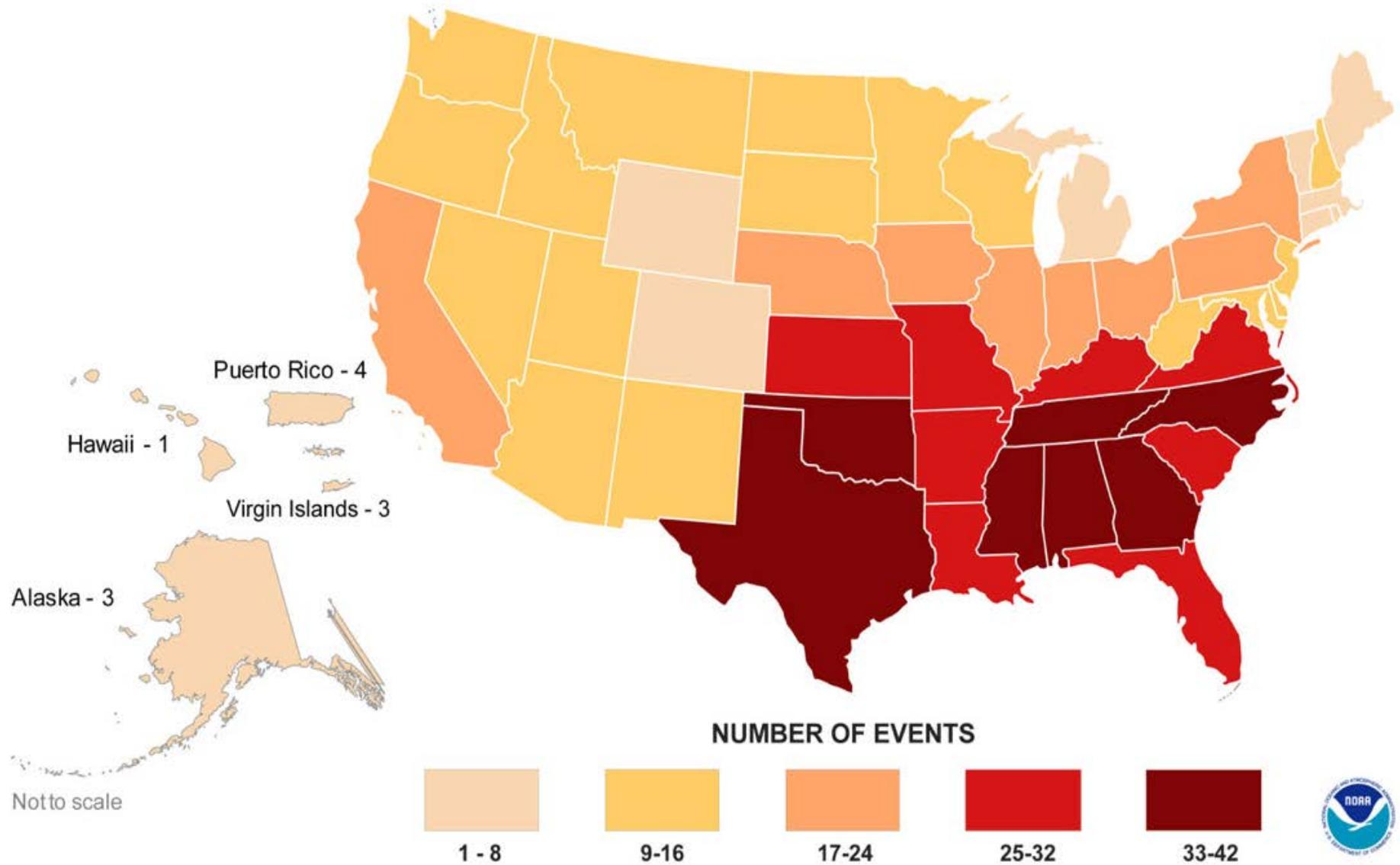
Source:  
<http://animal.discovery.com/features/katrina/rita/photos/aftermath2/aftermath2.html>



Photo: Hal Needham

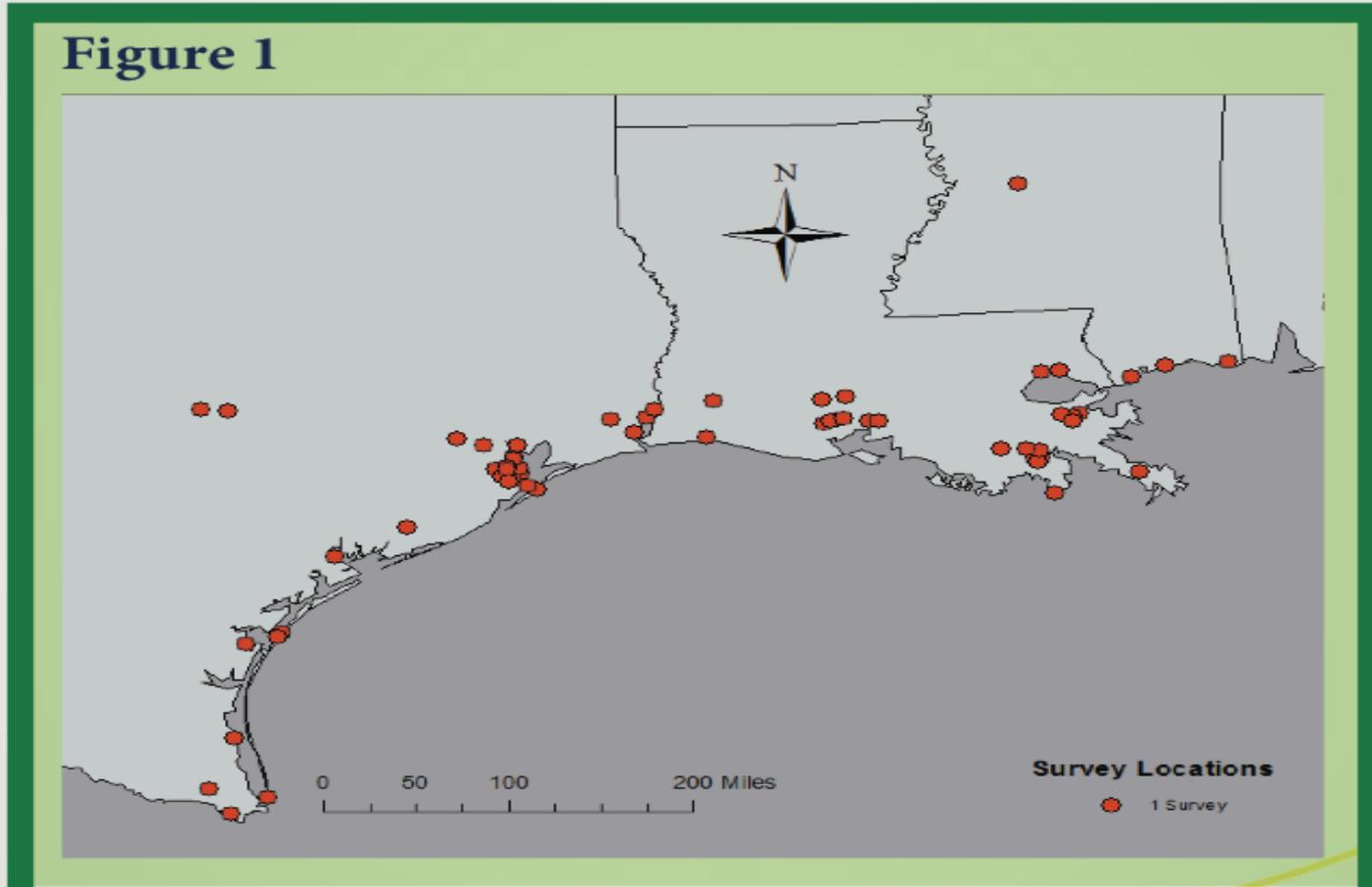
# Billion Dollar Weather/Climate Disasters

1980 - November 2011



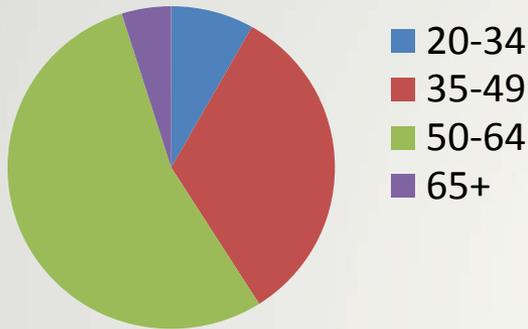


# Survey Locations

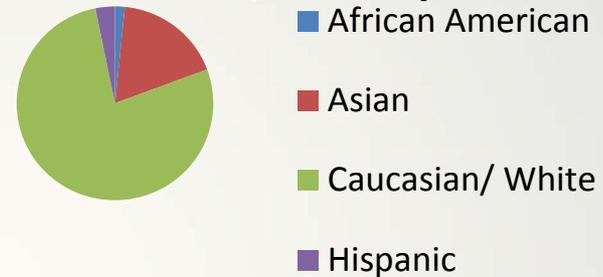


# Demographics

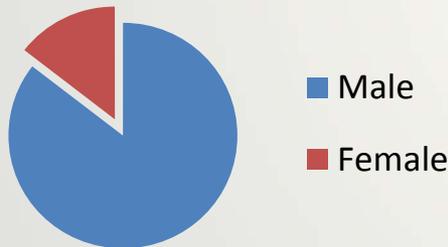
## Age



## Race/ Ethnicity



## Gender



Education: 22-29% each

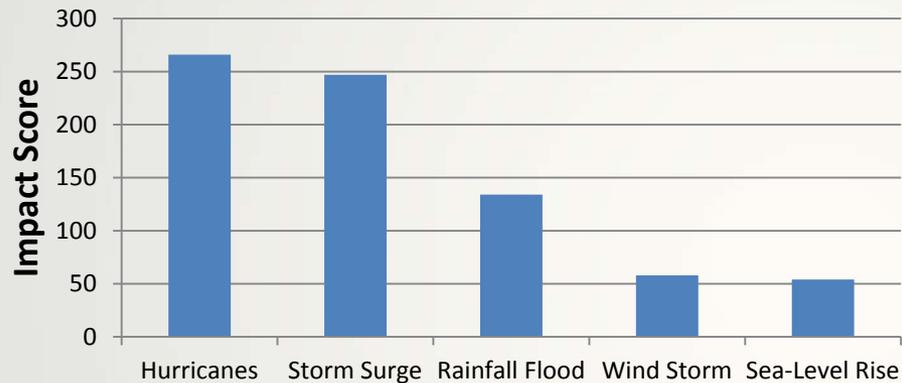
- 4-year college
- High School
- Master's degree

**Professional Sectors: 13 total**

- 29% Emergency Mgmt/Homeland Sec/ Ops
- 16% Planners
- Ex: agriculture, fishing, permitting, local gov't, environment, coastal resources, healthcare, etc.

# RQ 1: Today's climate-related issues: Top 5

## Cumulative Hazard Ranking (Present)



**94% Interested in Examples**  
of responses for similar issues  
from other communities

## Rank Hazard Points

1. Hurricanes 266
2. Storm Surge 247
3. Rainfall Flood 134
4. Wind Storm 58
5. Sea-Level Rise 54

# RQ 2: How does weather and climate information impact your decision-making?

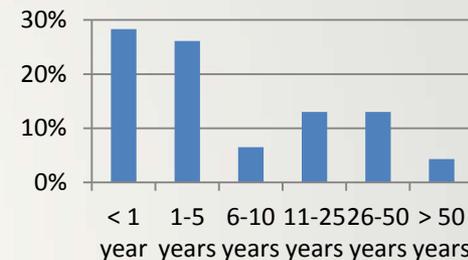
## A variety of responses include:

- Highlighting the risk of local and regional natural hazards.
- Specific hazard preparation and response planning.
- Used to optimize productivity, cultivation, and harvest choices

## How far ahead do you plan?

- At least 25% < 5 years or less than 1 year
- Some longer term responses – up to 50 years related to infrastructure planning

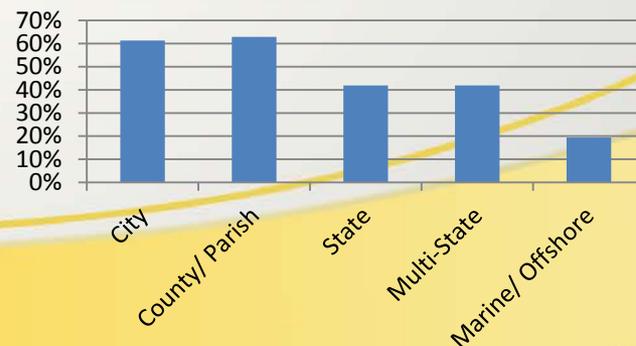
How far ahead do you plan?



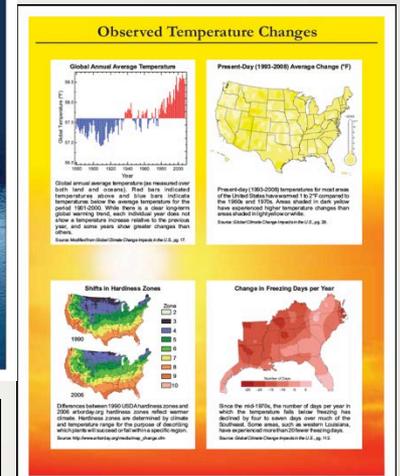
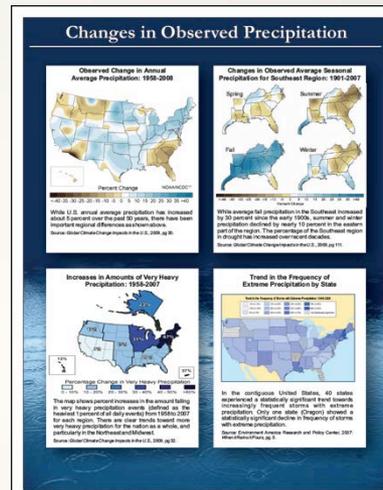
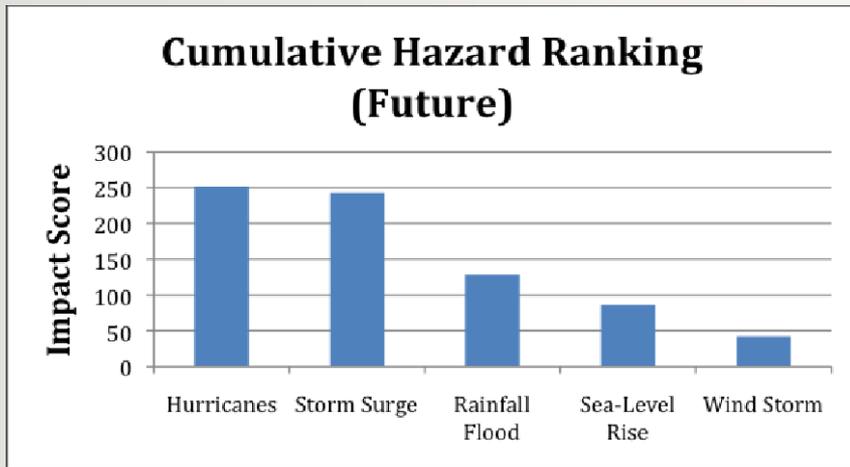
## What spatial scales would be helpful for climate/weather data?

- >60% city or county/ parish
- ~ 42% state and multi-state
- A surprise response: nearly 20% of respondents indicated offshore or marine data

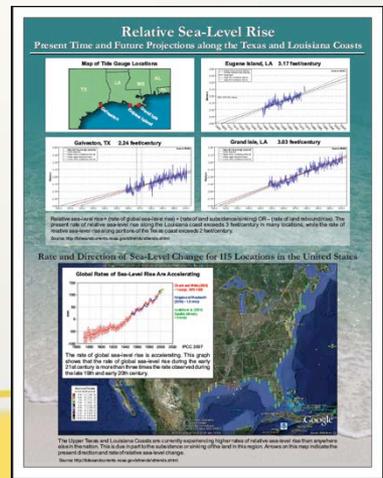
Spatial Scales of Useful Weather/ Climate Data



# RQ3: Most significant future issues AND noticed any long-term changes?



- Rank Hazard points
1. Hurricanes 252
  2. Storm Surge 243
  3. Rainfall Flooding 128
  4. Sea-level Rise 86
  5. Windstorm 42



# RQ 4: Perceived Research Needs and Gaps AND

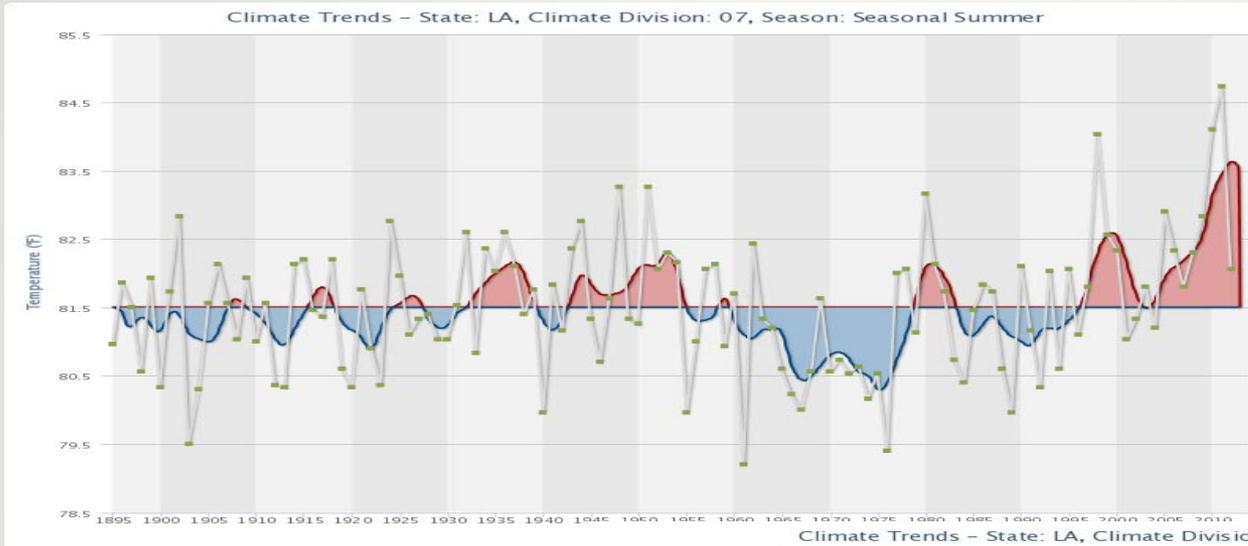
## Do you use climate information in planning now?

- Perceived research needs/gaps. Do you have enough information?
  - Just over ½ felt they had all the information they needed.
  - Just under ½ identified specific information that would be helpful.
  - Most of the requested information was quite location specific.
- Have you already or have you considered including climate information into planning efforts?
  - 8 respondents said ‘yes’ but many of those were seasonal or 1 year projection – not climate projections
  - 2 respondents actually utilized long-range projections for sea-level rise
- **Unexpected responses:**
  - **Many folks found the Assessment information in the handouts really informative and useful so were more interested in the assessment effort**
  - **While not yet utilizing long-term projections, many suggested ways that they might use such information if it would address their concerns and be delivered in a useful, understandable, and easy-to-access and apply way.**
- Barriers:
  - Some identified specific barriers that would need to be overcome to utilize climate projections in planning efforts
- **Suggested tools and visualizations:**
  - **85% of respondents identified some tool or visualization that would be helpful**
- **Using Climate Model Data:**
  - **Just over ½ said they might be interested in using climate outputs but their timeframes were much shorter than the 25 and 100yr outputs**
  - **They were specific about format of use to them and that included: graphical/visual, paper, internet**
  - **Many of the examples were for extremely specific and local information in the output**

# Types of Information Needed

- What has already happened . . . What are you actually already dealing with? Historical climate
- What is likely/possible to come next . . . What you will need to be dealing with. Future climate/projections
- What are the options for responses . . . What are others doing in similar situations? Example actions

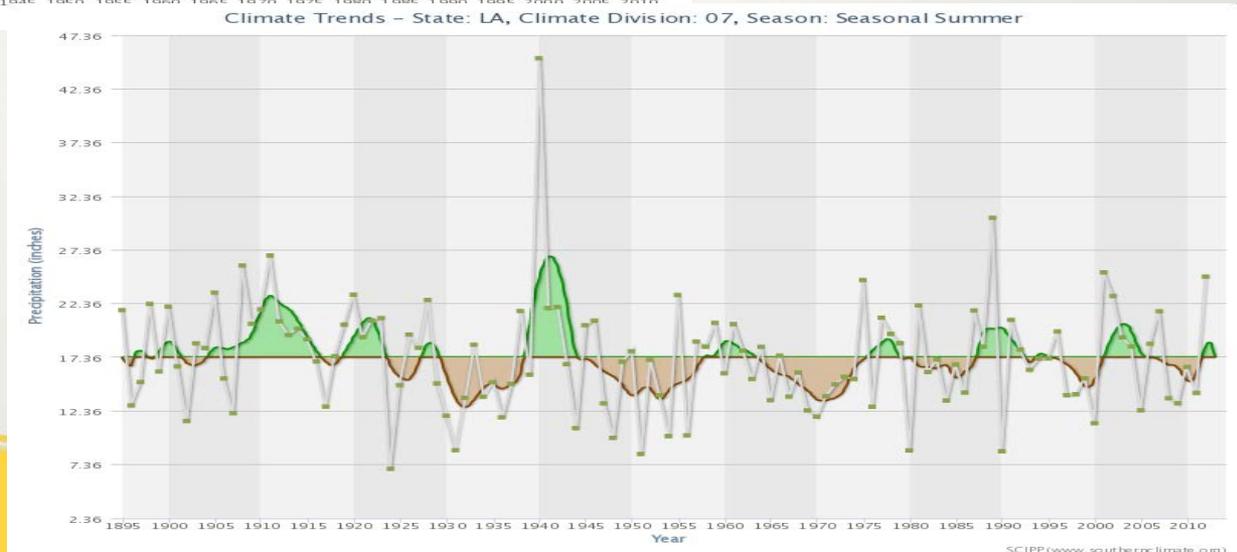
# Local Long Term Changes: temp and precip



SW - LA

Summer  
Temperature

southernclimate.org -  
data products



Summer Precipitation - inches

# Southern US Drought tool

State

Date

2013-03-21

Map Layers

Time Period

FAQ

### 30-Day Precip For LA - Feb 19, 2013 through Mar 20, 2013

Climate Division	Total Rainfall	DFN	% of Normal	Driest Rank	Driest on Record	Wettest on Record	SPI	Similar Season In Last 30 yrs (Score)
CD 1	1.51	-2.81	35	7/121	0.20(1916)	9.98(2001)	-1.55 D2	1996(9.59)
CD 2	2.12	-3.17	40.1	13/121	0.28(1916)	10.73(2001)	-1.30 D2	1998(9.04)
CD 3	3.45	-2.29	60.1	29/113	0.61(1918)	11.09(1961)	-0.59 D0	1989(8.75)
CD 4	2.15	-2.71	44.2	19/118	0.00(1916)	11.55(1913)	-1.03 D1	1986(9.13)
CD 5	3.88	-1.17	76.8	40/121	0.50(1918)	11.01(1903)	-0.28	1991(9.15)
CD 6	5.94	0.57	110.7	83/121	0.75(1918)	15.63(1961)	0.44	2005(8.89)
CD 7	2.88	-1.16	71.2	38/121	0.15(1916)	12.51(1903)	-0.41	2011(9.27)
CD 8	5.5	1.28	130.3	89/121	0.31(1916)	10.98(1894)	0.64	2009(8.74)
CD 9	4.76	0.04	100.9	83/143	0.41(1967)	15.46(1948)	0.21	1993(8.94)

Legend for Average Rainfall:

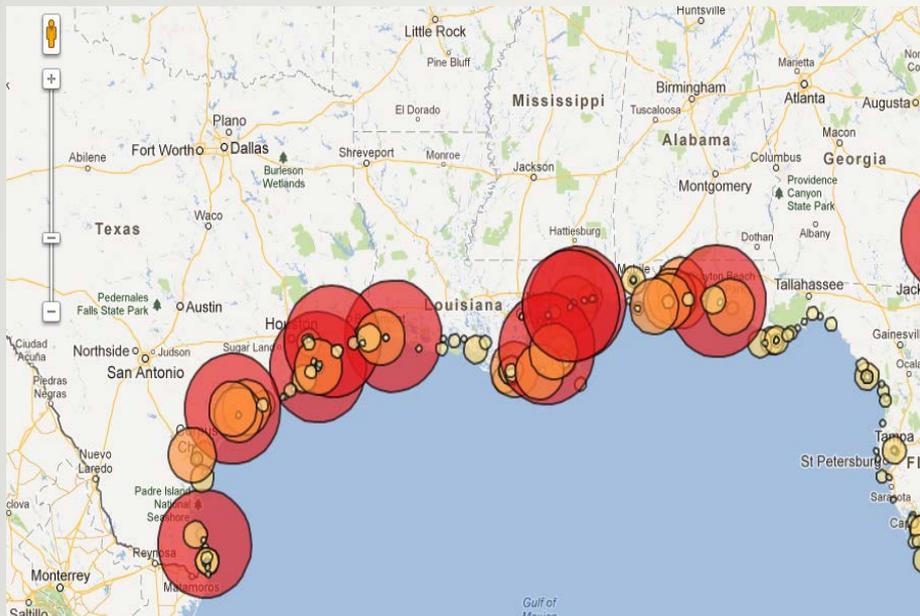
- under 2.14
- 2.14 - 2.78
- 2.78 - 3.41
- 3.41 - 4.04
- 4.04 - 4.67
- 4.67 - 5.31
- over 5.31

### Average Rainfall

Map data ©2013 Google, INEGI - Terms of Use

Powered by **ACIS** Regional Climate Centers

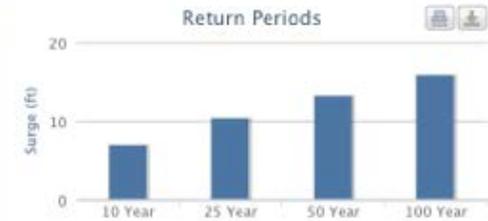
# Historical Gulf Coastal Surge Map and Blog (SURGEDAT)



Rank	Storm	Year	Surge (ft)	Storm Tide (ft)	Location
1	Katrina	2005	18.7		SE St. Bernard Parish - Near Alluvial City
2	Rita	2005		17.8	Cameron Parish
3	New Orleans	1915		17	Southeast LA
4	Unnamed	1893		16	Cheniere Caminada
5	Camille	1969	16		Venice
6	Betsy	1965		15.7	Bohemia- East Landside
7	Grand Isle	1909		15	Seabreeze, Lafourche Parish
8	Isaac	2012		14.41	Outside levee -Pointe a la Hache Boat Harbor
9	Unnamed	1947		14	Chandeleur Light
10	Audrey	1957		13.9	Oak Grove Ridge
11	Flossy	1956		13	Ostrica Lock
12	Unnamed	1926		12.5	Terrebonne Par. Coast behind Isle Derniere
13	Gustav	2008	12.5		NE Bay Gardene
14	Ernesto	1957	12.4		Cameron
15	Lili	2002		12.3	Crewboat Channel near Calumet
16	Unnamed	1886		12	Cameron Parish
17	Ike	2008		11.7	Cameron Parish
18	Carmen	1974		11.64	Cocodrie
19	Galveston	1915		10.9	Cameron Parish
20	Andrew	1992		10.17	Bay Couteau, Terrebonne Parish

# Storm Surge Return Period Calculator

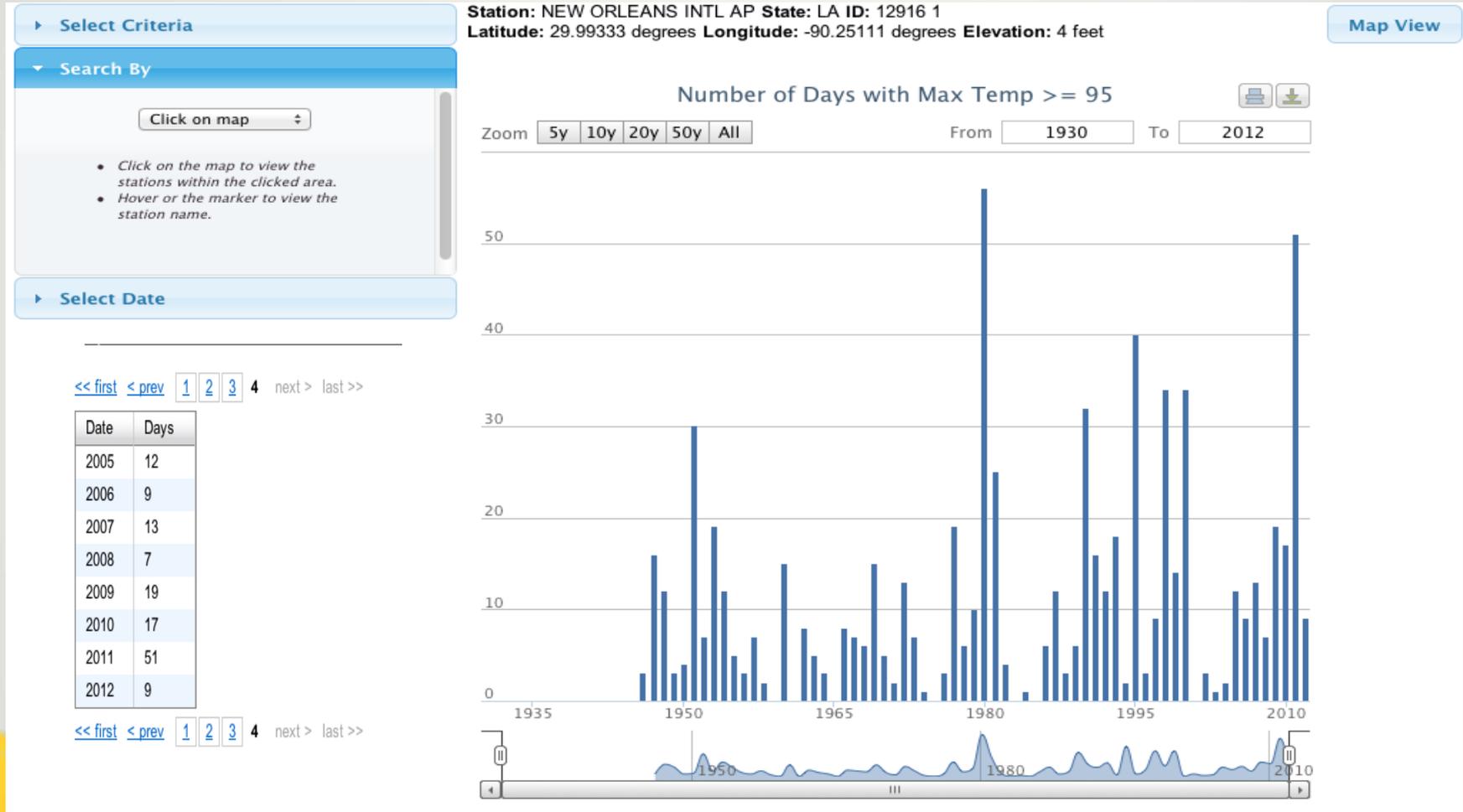
## Return Frequency Analysis



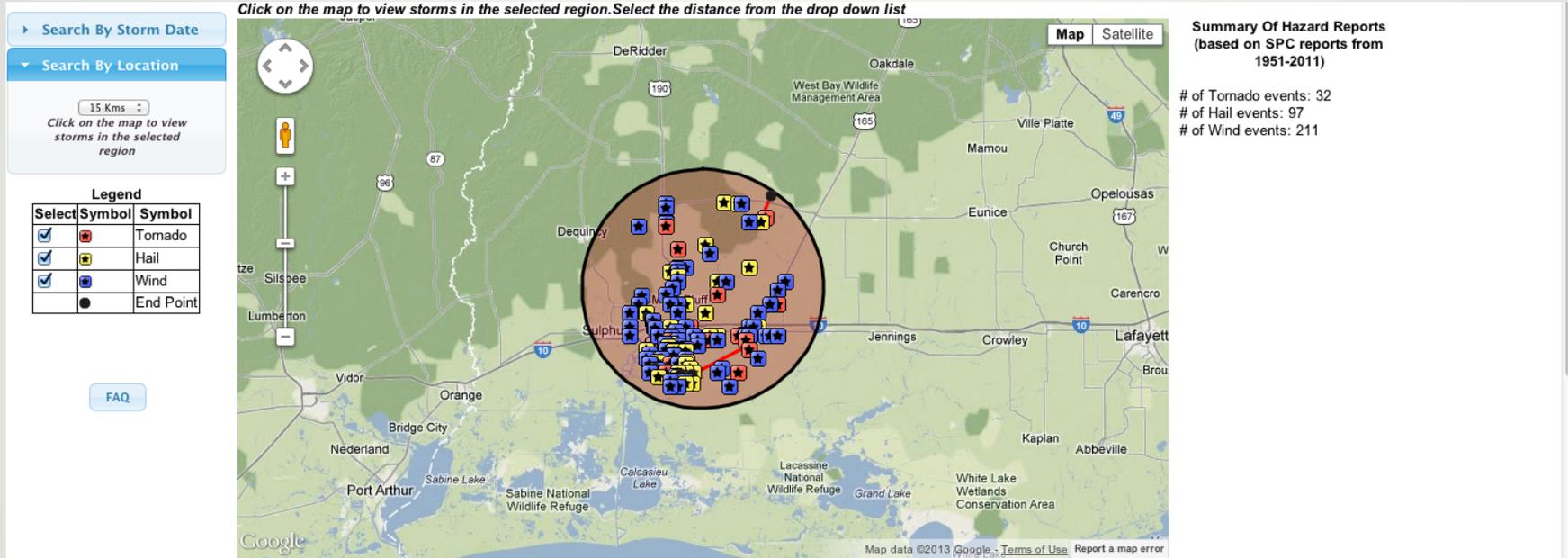
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Storm Name	Year	Longitude	Latitude	Storm Tide(ft)	Storm Tide(m)	Surge(ft)	Surge(m)	Location	Basin	State
Frances	1998	-94.7883	29.2850	7.1				Galveston Pleasure Pier	U.S. Gulf Coast	TX
Galveston	1915	-94.7894	29.2889	15.5	4.72			GLS Seawall	U.S. Gulf Coast	TX
Cindy	1963	-94.7933	29.3100	4.6				Pier 21 - Galveston Channel	U.S. Gulf Coast	TX
Alicia	1983	-94.8258	29.2811	9.5				Galveston (Gulf Side)	U.S. Gulf Coast	TX

# Hazard tool: snow, rain, temps w thresholds



# Hazards: tornado, wind, hail



Detailed Hazard Reports (From:1950-2011 Source: <http://www.spc.noaa.gov/wcm/#data>)

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Storm	Date	Time	Zone	State	State FIPS	Scale	Injuries	Fatalities	Loss (\$)	Crop Loss (\$)	Start Lat	Start Lon	End Lat	End Lon	Length (mi)	Width (yd)	States Affected
Wind	1997-12-03	06:02:00	CST	LA	22	0 kt	0	0	1500000.0	NA	30.23	-93.2	0	0	0	0	0
Wind	1964-06-24	10:15:00	CST	LA	22	0 kt	0	0	NA	NA	30.28	-93	0	0	0	0	0
Wind	1965-01-22	10:00:00	CST	LA	22	0 kt	0	0	NA	NA	30.18	-93.28	0	0	0	0	0
Wind	1965-01-22	11:15:00	CST	LA	22	0 kt	0	0	NA	NA	30.18	-93	0	0	0	0	0
Wind	1965-02-11	15:30:00	CST	LA	22	0 kt	0	0	NA	NA	30.18	-93.18	0	0	0	0	0
Wind	1969-09-07	17:25:00	CST	LA	22	0 kt	0	0	NA	NA	30.18	-93.28	0	0	0	0	0
Wind	1997-09-03	20:40:00	CST	LA	22	0 kt	0	0	NA	NA	30.23	-93.2	0	0	0	0	0
Wind	1964-04-26	15:39:00	CST	LA	22	65 kt	0	0	NA	NA	30.18	-93.18	0	0	0	0	0

# Future Conditions Tool

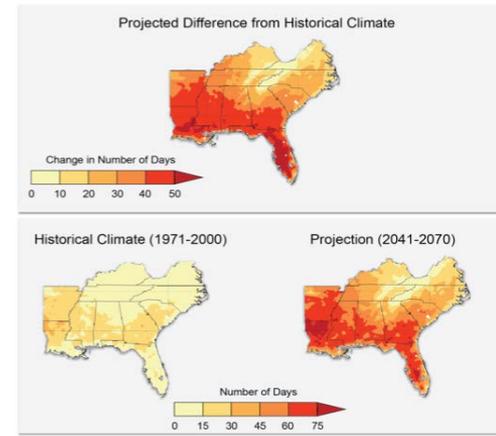
- Considering a number of options
  - Partnering with CCRUN (another RISA team) to deliver county level temperature and precipitation projections with increases in extremes
  - Finding a way to deliver the NARCCAP projections and/or other projections developed and used in the US National Climate Assessment
  - Looking at developing qualitative descriptions
  - We are consulting with EMs and planners on what they would want and how it should look

What can we expect locally?

	2020's	2050's	2080's
 Average Annual Precipitation	-5% to +5%	-10% to +5%	-10% to +5%
 Sea Level (inches)	+2 to +4	+6 to +10	+11 to +19
 Sea Level-Rapid Ice Melt Possibility (inches)	+4 to +8	+18 to +27	+41 to +55
 Average Annual Temperature (F°)	+1.5° to +2.0°	+2.5° to +4.5°	+3.5° to +7.0°

*Average sea levels and temperatures are expected to rise.*

Projected Change in Number of Days Over 95°F





**SCIPP**  
Southern Climate Impacts Planning Program

- **Southern Climate Impacts Planning Program:** a NOAA/RISA team, LSU and OU, State Climatologists, Southern Regional Climate Center (website: [www.southernclimate.org](http://www.southernclimate.org))
- Stakeholder-driven research: regionally relevant scientific research that results in critical information, products, tools, and education
- Engagement: partners, decision makers, and other stakeholders-
- Southern U.S.: TX, OK, MS, LA, AR, TN
- Focus multi-hazard preparedness: severe storms, droughts, floods, hurricanes, extreme temperatures, etc., and coastal impacts of climate change and variability.

# Thank You

Lynne Carter: [lynne@srcc.lsu.edu](mailto:lynne@srcc.lsu.edu)

SCIPP website: [southernclimate.org](http://southernclimate.org)

click on data products