



***“Mitigating and Adapting  
to Global Sea Level Rise  
in the Gulf of Mexico”***

**For the 9<sup>th</sup> INTERCOL Conference  
June 7, 2012  
By Val Marmillion**





***The world must move from a notion  
that sustainability is abstract.***

***Our success cannot be measured in terms of  
consequence planning and actions to mitigate  
only.***

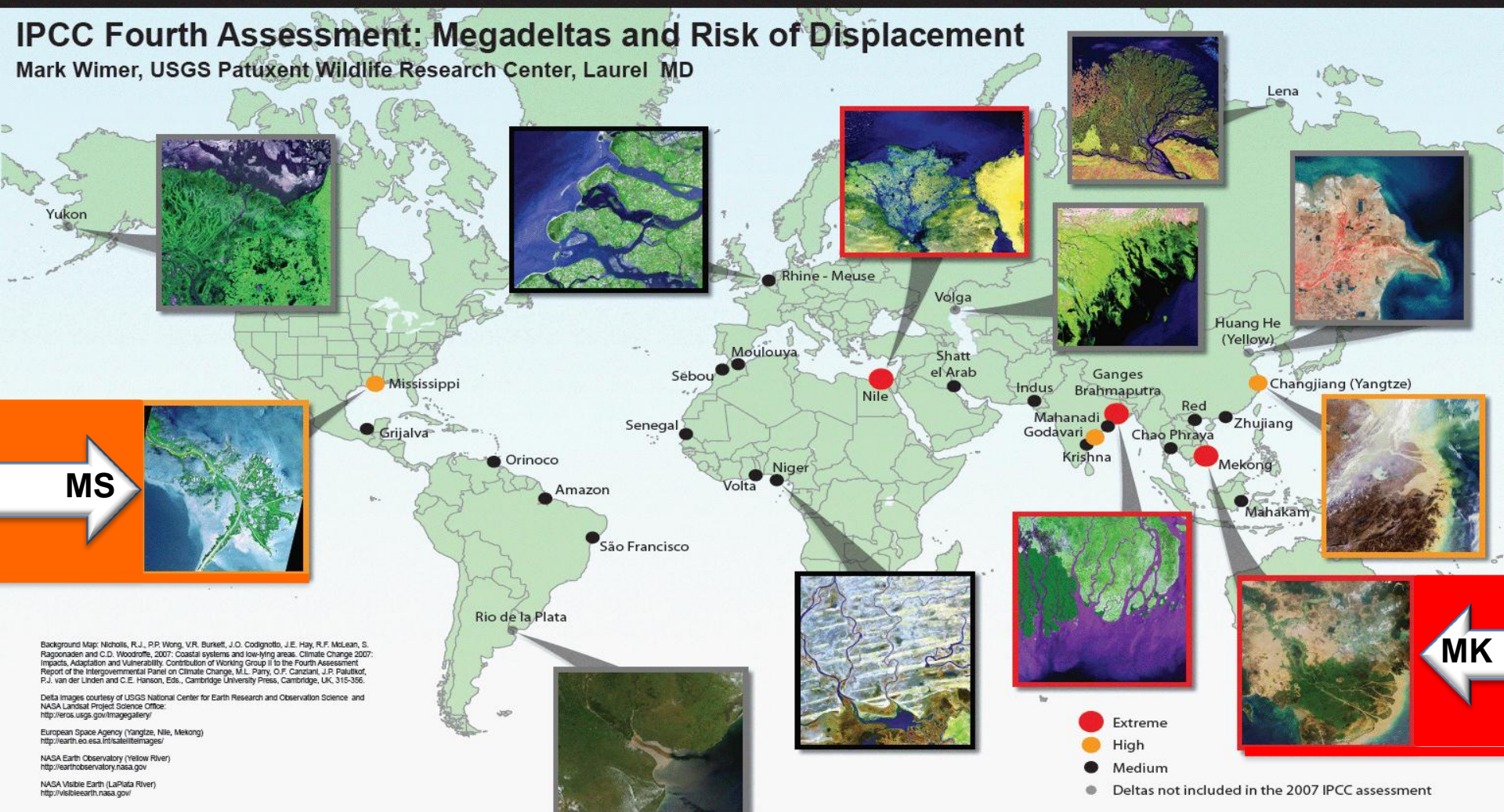
***To adapt, we must move immediately to restore  
the natural environments and communities  
they serve.***

**“NEW DAY” REALIZATION**

# WORLD DELTA HOT SPOTS

## IPCC Fourth Assessment: Megadeltas and Risk of Displacement

Mark Wimer, USGS Patuxent Wildlife Research Center, Laurel MD



Background Map: Nicholls, R.J., P.P. Wong, V.R. Burkett, J.O. Codignotto, J.E. Hay, R.F. McLean, S. Rajaguru and C.D. Woodroffe, 2007. Coastal systems and low-lying areas. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 315-356.

Delta images courtesy of USGS National Center for Earth Research and Observation Science and NASA Landsat Project Science Office.  
<http://searth.usgs.gov/images/>

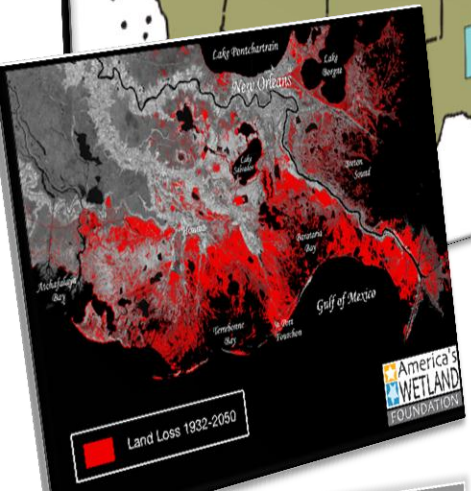
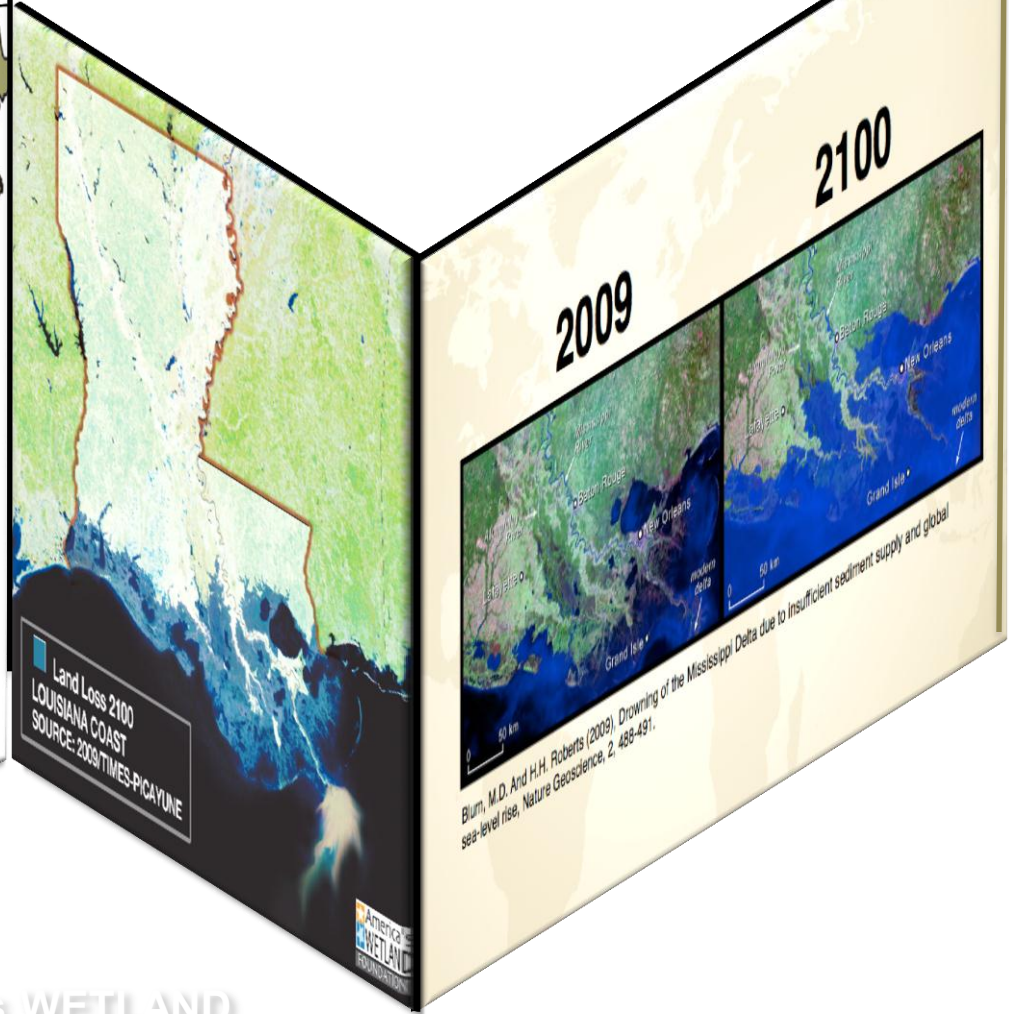
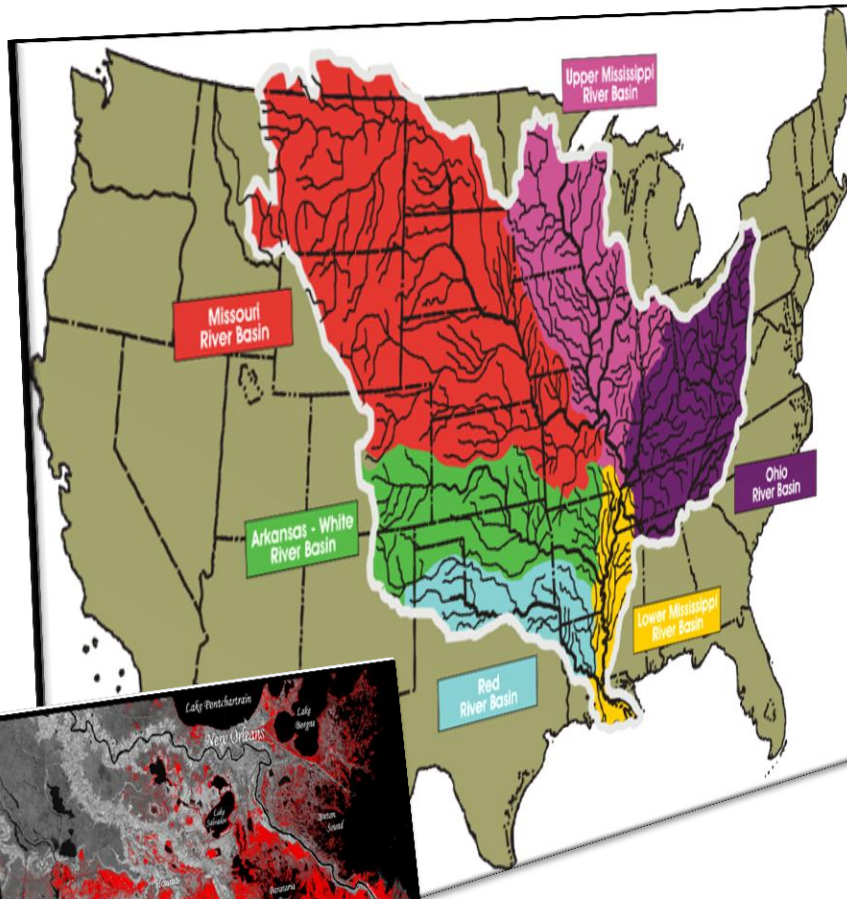
European Space Agency (Yangtze, Nile, Mekong)  
<http://earth.esa.int/vis/earthimages/>

NASA Earth Observatory (Yellow River)  
<http://earthobservatory.nasa.gov/>

NASA Visible Earth (LaPlata River)  
<http://visibleearth.nasa.gov/>



# MISSISSIPPI DELTA VULNERABLE





Loss of America's WETLAND  
Tied to Health & Sustainability of Mississippi River System







## Unique Positioning

- **Five Gulf States:** Four energy producing states: Texas, Louisiana, Mississippi, Alabama, as well as Florida - collectively known as America's Energy Coast.
  - **Diverse Task Force of over 100 major businesses and industries, national environmental and conservation organizations, scientists and researchers, landowners and other coastal interests.**
  - **Network of local, state and federal elected and administrative leaders.**
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# AMERICA'S ENERGY COAST

## National & Local Voices

- **AEC Industry Council** – consists of industry representatives from the Gulf Coast region.
- **Honorary Leadership Council** – a growing coalition of over 150 federal, state and local officials from the four states.
- **AEC Task Force** – comprised of over 100 leaders of government, industry, academia, NGOs, landowners from the region.



# AMERICA'S ENERGY COAST

## National & Local Voices



- **Experts and Research Leaders** – Best minds assembled to collect most relevant data.
- **Elected & Administrative Officials** – Non partisan elected representatives provide full participation.



- **Developed cooperative accord and released an action framework for new economic and ecological sustainability of the region.**
- **Issued five resolutions and the Secure Gulf Report that included recommendations on sustaining economic and ecological assets of the Gulf region in the wake of the Deepwater Horizon spill.**

- **Testified at hearings, shared findings with EPA Gulf Coast Ecosystem Restoration Task Force and agency officials.**
- **Convened eleven “BLUE RIBBON RESILIENT COMMUNITIES: *Envisioning the Future of America’s Energy Coast*” Leadership Forums in Texas, Mississippi, Louisiana, and Alabama.**



**Balanced Dialogue** – Broadening participation on energy and environmental issues;

**Executive Briefings & Public Events** – Informing the Obama Administration, policy and legislative leaders; engaging citizens through information dissemination, media activities and high-profile events such as DELTAS2010 and DELTAS2013VIETNAM:World Delta Dialogues and the Blue Ribbon Resilient Communities initiative;

**Response to Crisis** – Creating a rational dialogue to support economic and energy sustainability, while safely managing ecological assets of a working coast;

**Growing Intellectual Capital in the Region** – Establishing best practices, capacity building and technology transfer to enhance the economy of America's Energy Coast;



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**Leadership Position** – Strengthening the regional energy coast voice and brand positioning; and

**Global Cooperation** – Fostering international coalitions in critical energy and environmental regions of the world.

# America's Energy Coast Leadership Forums



*A National Project of the  
America's WETLAND Foundation*





# BLUE RIBBON RESILIENCY

## Leadership Forums of Americas Energy Coast

- ✓ ***Respond to vulnerabilities along the Gulf Coast in the wake of coastal land loss, degrading landscapes and coastlines***
- ✓ ***Disasters define the future without planning, adaptation and investment in resilience***
- ✓ ***New data on infrastructure vulnerabilities based on science show advanced degradation***



# BLUE RIBBON RESILIENCY

## Leadership Forums of Americas Energy Coast

- ✓ *DELTA2010: World Delta Dialogues recommendations support the building of local solutions*
- ✓ Convene non-partisan, balanced regional dialogue on local coastal issues
- ✓ Identify specific vulnerabilities of communities who comprise America's Energy coast from Texas – Florida



# BLUE RIBBON RESILIENCY

## Leadership Forums of Americas Energy Coast

- ✓ Bring in unique expertise to address the issues
- ✓ Honor core values and build local pride
- ✓ Serve as a catalyst for empowerment of individuals and communities







# **BLUE RIBBON RESILIENCY**

## Leadership Forums of Americas Energy Coast

### **Pre-Forum**

- **Environmental scan**
- **Meeting with local policy leaders**
- **Individual interviews**
  - **Focus group with diverse stakeholders**





# BLUE RIBBON RESILIENCY

## Leadership Forums of Americas Energy Coast

### Forum

- Research findings & expert presentations
- Working sessions

### Post Forum

- Solicitation of public input
  - Report of Findings
- Follow-up on recommendations for action



# AWF/ENTERGY GULF COAST Adaptation Study



**Objective:** Develop a comprehensive, objective, consistent fact base to quantify climate risks in the U.S. Gulf Coast and inform economically sensible approaches for addressing this risk

**First comprehensive analysis of climate risks and adaptation economics along the U.S. Gulf Coast**

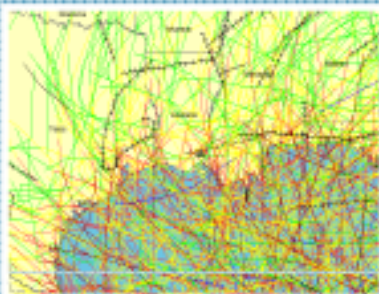
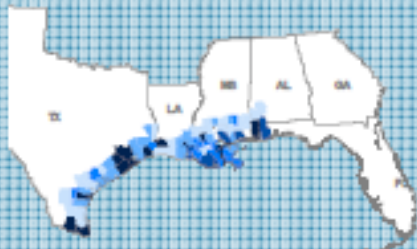


Illustration of hurricane paths/ intensities

- **Granular, “bottom-up” analysis using a risk framework:**
  - Modeled **23** asset classes across residential, commercial, infrastructure, oil, gas and utility
  - Modeled **800** zip codes across **77** counties
  - Simulated **~10,000** hurricane “years” across multiple climate scenarios
  - Modeled over **50** adaptation measures



Engaged with experts across the Gulf Coast

- **First time broad range of Gulf Coast stakeholders and experts engaged**
  - **Discussed with over 100** global, regional academics, government officials, industry experts and NGOs
  - **Used credible, publicly available sources** (e.g., IPCC climate scenarios, FEMA, BEA, DOE EIA, MMS, Energy Velocity,)



# AWF/ENERGY GULF COAST Adaptation Study

## Hazards

## Brief overview

## Effect of climate change



Wind related damage

- **Damage can occur across the Gulf Coast region and in areas further inland**

- **Potential increase in wind speed of 1.4-2.9% in 2030 (2.1 - 10.2% in 2100) due to warmer sea surface temperatures**



Sea level rise (gradual)

- **Key risk is along the coastline**
- **The Louisiana gulf coast already experiences significant deltaic land loss/subsidence<sup>1</sup>**

- **Relative sea level may rise by 5-6 inches in 2030 (2.5 - 5 feet by 2100)<sup>2</sup>**



Storm surge

- **Risk is along the coastline, linked to hurricane events**

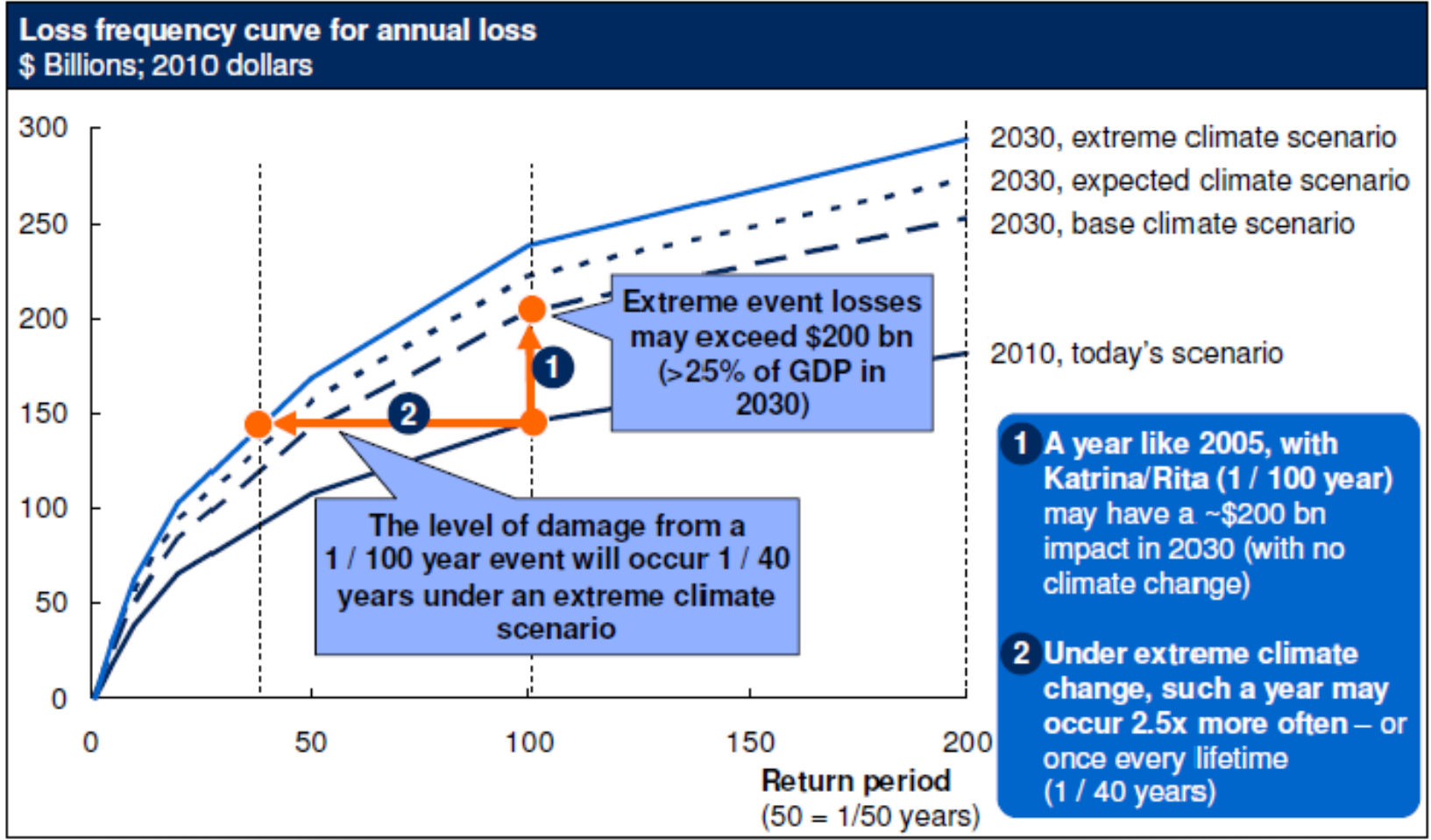
- **Storms can increase the impact of even modest levels of sea level rise**
- **Could lead to more frequent/severe flooding of coastal zones**



# AWF/ENERGY GULF COAST Adaptation Study

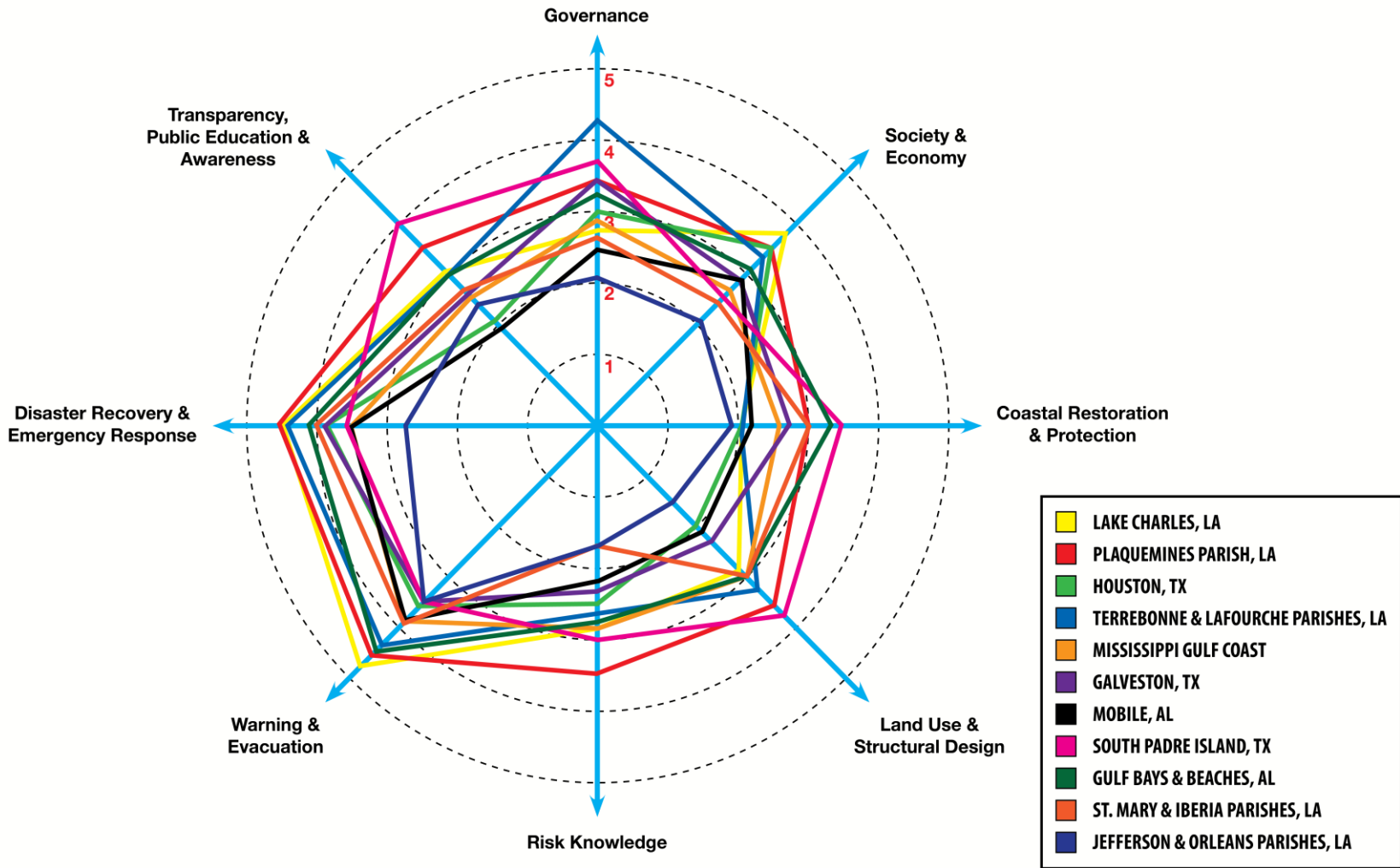


Furthermore, even in the near term, loss from extreme event “tail risks” may increase and occur more often





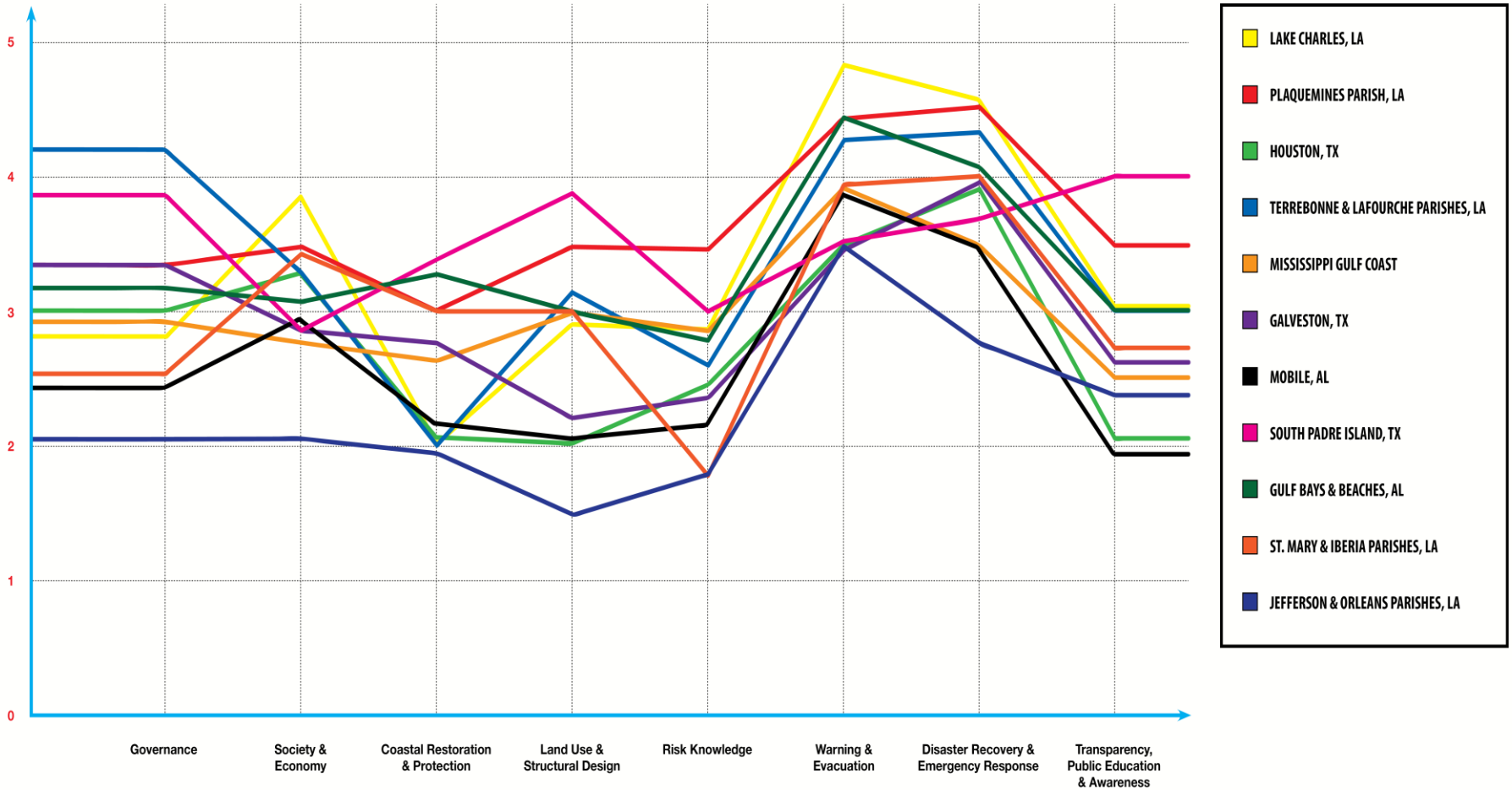
# RESILIENCY INDEXES







# COMBINED RESILIENCY LINE GRAPH



# BLUE RIBBON FORUMS

## Discussion Questions

- What does the community value?
- Aligning with what we value how do we prioritize solutions?
- Where do we start?



# RECOMMENDATIONS

## Process & Performance

- **Create a continuum of action based on recommendations**
  - Release findings from the project and disseminate to policy makers
  - Work with GOMA to have Governors support recommendations
  - Convene DC industry and NGO representation to create common push for policy changes; establish points of relative contact with Administration and Congress.
  - Early meetings with agencies to build them in to project development
  - Advocate for forecasting ahead of consequence
  - Build broader trust





# RECOMMENDATIONS

## Process & Performance



- **Challenge current federal process where conflicting federal policy can lead to time and cost overruns.**
  - Eliminate conflicting federal policy; ensure agency interaction; consider delay mitigation; utilize Task Force as a vehicle for policy correction
  - Assess mitigation process; pool mitigation funds for coastal restoration; adjust mitigation and streamline process to avoid barriers and cost overruns for environmentally beneficial projects; qualify mitigation
  - Unlock Harbor Maintenance Trust Fund for intended purpose
  - Similar to Cost/Benefit analysis, introduce a Consequence cost ratio
  - Enter into discussions with USACE on principles and guidelines to include greater priority for restoration

# RECOMMENDATIONS

## Process & Performance

- **Ensure for Multiple Lines of Offense**
  - Seek system solutions; allow emergency or general rule for coastal restoration
  - Balance natural solutions with hard engineering
  - Reconnect the Delta to the upper river for coordinated awareness and action
  - Act locally, but in keeping with regional and comprehensive plans
  - Deploy best available global dredge technology; utilize current dredge resources continuously



# RECOMMENDATIONS

## Process & Performance



- **Innovation & Enterprise**

- Establish ecosystem valuing systems and add to permitting process
- Support living shorelines development
- Practice no net loss of culture
- Provide incentives for land restoration, including beneficial use of carbon
- Campaign for individual resiliency



# **BLUE RIBBON FORUMS**

## *2011 – 2012 Schedule*

**Lake Charles, LA**  
**March 22 – 23, 2011**

**Plaquemines Parish, LA**  
**May 16 - 17, 2011**

**Houston, TX**  
**June 27 – 28, 2011**

**Terrebonne/Lafourche  
Parishes, LA**  
**September 27 – 29, 2011**

**Mississippi Gulf Coast**  
**October 18 – 20, 2011**

**Galveston, TX**  
**November 16 – 17, 2011**

**Mobile, AL**  
**January 25, 2012**

**Orange Beach, AL**  
**March 8, 2012**

**South Padre Island, TX**  
**March 22, 2012**

**St. Mary/Iberia  
Parishes, LA**  
**April 11, 2012**

**Jefferson/Orleans  
Parishes, LA**  
**May 29-30, 2012**



The logo consists of a white square with a black border. On the left side of the square are two stars: a white star on an orange square background and a light blue star on a dark blue square background. To the right of the stars, the text "America's" is in a large, black, sans-serif font, and "WETLAND" is in a larger, bold, black, sans-serif font. Below the white square is a dark grey rectangular bar with the word "FOUNDATION" in white, bold, sans-serif capital letters.

**America's  
WETLAND  
FOUNDATION**

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