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

For the 9th 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.
WORLD DELTA HOT SPOTS

IPCC Fourth Assessment: Megadeltas and Risk of Displacement
Mark Wimer, USGS Patuxent Wildlife Research Center, Laurel MD
Mississippi Delta Vulnerable

Loss of America’s Wetland
Tied to Health & Sustainability of Mississippi River System
MISSISSIPPI DELTA VULNERABLE

Blum, M.D. And H.H. Roberts (2009), Drowning of the Mississippi Delta due to insufficient sediment supply and global sea-level rise, Nature Geoscience, 2, 488-491.

Loss of America’s WETLAND
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.
• **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.
• **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.
BLUE RIBBON RESILIENCY
Leadership Forums of America's 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
DELTA'S2010: 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
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:

- 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.

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.)
<table>
<thead>
<tr>
<th>Hazards</th>
<th>Brief overview</th>
<th>Effect of climate change</th>
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<tbody>
<tr>
<td>Wind related damage</td>
<td>• Damage can occur across the Gulf Coast region and in areas further inland</td>
<td>• Potential increase in wind speed of 1.4-2.9% in 2030 (2.1 - 10.2% in 2100) due to warmer sea surface temperatures</td>
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<td>Sea level rise (gradual)</td>
<td>• Key risk is along the coastline</td>
<td>• Relative sea level may rise by 5-6 inches in 2030 (2.5 - 5 feet by 2100)²</td>
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<td>• The Louisiana gulf coast already experiences significant deltaic land loss/subsidence¹</td>
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<tr>
<td>Storm surge</td>
<td>• Risk is along the coastline, linked to hurricane events</td>
<td>• Storms can increase the impact of even modest levels of sea level rise</td>
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<td>• Could lead to more frequent/severe flooding of coastal zones</td>
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Furthermore, even in the near term, loss from extreme event “tail risks” may increase and occur more often.

**Loss frequency curve for annual loss**

- $Billions; 2010 dollars

- **2030, extreme climate scenario**
- **2030, expected climate scenario**
- **2030, base climate scenario**

**Extreme event losses may exceed $200 bn (~25% of GDP in 2030)**

**The level of damage from a 1/100 year event will occur 1/40 years under an extreme climate scenario**

1. A year like 2005, with Katrina/Rita (1/100 year) may have a ~$200 bn impact in 2030 (with no climate change)

2. Under extreme climate change, such a year may occur 2.5x more often – or once every lifetime (1/40 years)
RESILENCY INDEXES
COMBINED RESILIENCY LINE GRAPH

- LAKE CHARLES, LA
- PLAQUEMINES PARISH, LA
- HOUSTON, TX
- TERREBONNE & LAFOURCHE PARISHES, LA
- MISSISSIPPI GULF COAST
- GALVESTON, TX
- MOBILE, AL
- SOUTH PADRE ISLAND, TX
- GULF BAYS & BEACHES, AL
- ST. MARY & IBERIA PARISHES, LA
- JEFFERSON & ORLEANS PARISHES, LA

Graph categories:
- Governance
- Society & Economy
- Coastal Restoration & Protection
- Land Use & Structural Design
- Risk Knowledge
- Warning & Evacuation
- Disaster Recovery & Emergency Response
- Transparency, Public Education & Awareness
Discussion Questions

- What does the community value?

- Aligning with what we value, how do we prioritize solutions?

- Where do we start?
• **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
• **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
• **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
• **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