Academia Session

Commenter's Affiliation	Comment
Academic-presentation	Overview of issues for Louisiana (LA). Queen of all issues-land loss, with complications of sea level rise. CO2 issue is critical and humans play a part. Protection and restoration of fishery resources "fertile crescent". Coastal hypoxia. Coastal community and cultural areas. The role of science in formulating policy-disconnect between policy, decision-making, and science. Poor integration of science into emergency management.
Academic-presentation	Overview of SLR-big variability, but significant in LA. Need to understand long-term drivers of trend, but also variability. What does this mean for salt marsh accretion-need to get sediment onto the marshes. Managing marshes will depend on where they are-protected marshes will be more impacted by steady SLR, exposed marshes will be more influenced by dynamic processes (storms, etc). Need to move away from simple averages, since many factors influence SLR. Variability in water levels-not a simple process-long-term trend with short-term variability. Diversions will create different kinds of land from what we've lost. highly variable subsidence rates-greatest at the mouth, slower as you move onshore. Coastal zones are dynamic on both spatial and temporal scales. ADCP Backscatter by Mead Allison-shows river varies and there are some parts of the river that carry more sediment than others. Restoration must take advantage of this variability-Restoration should target areas where subsidence rates are low, river sediments are abundant and sediment trapping efficiencies are high.
Question	Any projections of impact of sedimentation from flooding?
Answer	Research is ongoing-no projections to date
Question	Any synoptic studies on-going?
Answer	USGS has on-going efforts
Question	Can marsh rise keep pace with SLR?
Answer	Short answer is yes-long answer is more complicated. Answer rests in the abundance of sediment-lack of sediment will inhibit marshes from keeping pace with SLR. 200M metric tons of sediment coming down the Miss River-need to take advantage of it. Need to get things into the right locations.

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Question	Have the locations been identified that meet the criteria for low subsidence, high sediment, and sed trapping efficiencies are high?
Answer	Modeling efforts are on-going to identify those locations.
Answer	Mississippi hydro study-5 year effort that will create a hydro/sediment management model for the entire Mississippi River. Need to also examine bay-side modeling to examine subsidence rates. Anticipate launching the effort within the next few months/year.
Answer	Likely have high subsidence associated with oil/gas fields
Question	What aobut the impact of high nutrient levels for marshes to keep up with accretion?
Answer	Some work has demonstrated that fresh marshes have been less resistant to storms than existing. Increased nutrients will alter the marshes-less stable than existing marshes. If you're going to divert the river-recommend having a few big diversions rather than lots of small diversions. Smaller diversions have limited sediment input, but have high nutrients and freshwater. With higher sediment loads-also get storm buffering capacity with pro-delta settings and fluid muds.
Academic-presentation	Design principles for restoring marshes-working coast environments. We have a working coast, have citizens and towns that will be affected by restoration, flood protection, water supply, commerce, navigation, industry and fishing industry. Sustainable coastal marshes-maintaining elevation. Erosion, soil compaction, and tectonic shifts prevent marsh building. Diversity of plant communties – highly variable depending on salinity, interior, etc. Changes in the Mississippi River-sediment load reduced, nutrient input increased. Four restoration principles- 1. maximize sediment capture from the river-marsh creation with dredged sediment, need to nourish created marshes with river reintroduction, optimize sediment capture. 2. distribute river flow over multiple channgels and diversion structure-spread the water where is used to be. 3. mimic overbank flooding with small reintroductions at many places along these channels, restrict to highwater years. 4. use all the tools in the restoration tool box. Need more tools. Floating marsh-can be wave reducers.
Question	During the flood event-we need to open Davis Pond and Canaervon. But they've been shut
Answer	Last year (DWH)-had massive impact on oyster industry
Answer	Seafood industry has taken a major hit-trying to do no more harm to the industry.

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Answer	Big risk in the long run-what about economic impacts in long run-we have a too short-term a view of our actions
Question	What is the impact of nutria?
Answer	Very negative effect in freshwater areas. Nutria control program-have seen recovery of some existing eat-out sites, seen some land gain.
Question	Any plans to investigate overbank flooding?
Answer	No current plans-but could implement for swamp forests, close to the edge of collapse
Question	Proposal for earthen berms to protect the marsh, allow for rebuilding-Dutch proposal
Answer	Is being investigated, but the Dutch technique is not directly applicable.
Comment	We had something similar in the past and they didn't work. Marsh building in 10 years turned into open water ponds. No marshes resulted.
Academic-presentation	Coastal wetland forests-not nearly as widely understood as wetland loss. The true effects are not known. Represent an ecosystem that has been severely curtailed by agriculture. Mostly cypress and tupelo. Represent an important remnant of the delta. Topography and hydrology control ecology. Trees ecologically adaptive to deal with stresses, but are not sustaining themselves due to increased flooding and saltwater intrusion. Issues also with impoundment-levees, railroads, etc-impounding water, but subsidence is the dominant problem. Currently have poor regeneration and reduced productivity. Saltwater intrusion-subsience/SLR, navigation canals. Coastal forest-valuable for storm surge protection. Where are the problems? Near and north of Morgan City, most of the area is in a transitional state (100000 acreas, largest area of cypress and tupelo in LA.) Forests have a history of management for timber production-largely regenerated, but conditions have changed since that time. Logging has resumed, but is not the most significant threat to coastal forests. Risk from levee building-coastal forests require mineral soils and some level of drying out, cannot accrete with only organic soil. Coastal forests will get pinched out. Means of restoration-hydrology-FW diversions, additions of sediment and nutrients to building land, reduce saltwater pathways. Levees doom forests to hydrological dysfunction.
Comment	Forests around Lake Pontchartrain would be really impacted this year in the absence of the flooding-due to saltwater intrusion.

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Comment	Big diversions are attested to as being more effective, but not sure if you can get huge managed diversions? Why not just sill the levee? Why do we need to manage? Over-engineering. Need to examine the cost-benefit of small diversions. Current proposals for FW input to forests are minimalists. Can't we stimulate some alternative thinking on reducing the mega-engineering?
Answer	Place of land-building-Atachafalya basin. When it fills with sediment, could build forests
Comment	How about unmanaged sills and breaks in the levee as a solution? Allow the ebb and flow of river flooding be more natural.
Question	Any other areas for restoration that could be recommended?
Question	Lower river diversions might work
Comment	Could develop a quick and dirty plan for unmanaged levee sills that would deal with geography.
Academic-presentation	Need more environmental social scientists. Very difficult to repair the environment-requires significant commitment. Need to have balance between physical/biological and human. Does restoration of ecosystem come through communities restoration or does community restoration come through direct ecosystem restoration? Weak bureaucracy in response to disasters. Example-regional citizen's advisory council in PWS-makes as significant impact as scientists-watchdog effort and knowledge base. RCAC contracts research to understand the issue. Vested interest of citizens keeps focus on target, helps incur shared knowledge with the community-exchange of knowledge. Personal participation in government and active engagement can increase resiliency of the coasts and ecosystem. Fewer lawsuits with citizens at the table. Engagement of citizens in ecosystem restoration and functioning, also provides additional science. Characteristics of resilient communities-self-sufficiency, abiltiy to assess surroundings (ecosystem), strong family /friends, strong engagement. New manners of employment impacted resiliency-how? Current emphasis on research topics on how do cultures respond with disasters; how can large bureaucracies change to be supportive of local communities. Larger bureaucracies more often harm than help. Community resiliency is not a panacea for ecosystem restoration-cannot be embraced naively. Communities with vested interest have generated significant risk reduction. Communities need to take responsbility for their own safety. Agenices must honor local ecological knowledge. Quantify TEK with scientific knowledge. Scientists harvested partnering with communities. Quantify traditional ecological knowledge and combine with science knowledge on a map for restoration. TF engagement-large bureaucracies don't yet know how. Need to take advantage of EJ efforts.

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Academic-presentation	The major coast killers are large linear levee systems and oil and gas industry. Need to have circular levees, need to have oil/gas sites that don't require continual dredging. Morganza levee alone will cut off 130K acres of marsh. If you add up the acreage from permitted oil and gas , you get more acres taken by direct dredging of canals than all the restored acres to date by restoration effort. Need significantly different approach. Need to re-examine engineering; bought development easements. Coast is a floodway likely occupied by humans. People need to step back a little bit. Can't afford to cut off the whole landscape, can ring communities. Current mentality in LA-a religion of levees. No alternative coming out of the national environmental groups, either. Multiple lines of defense idea has not been fully examined, cost-benefit, etc. Oil industry responsible for approximately 90% of the losses on the coast and haven't paid a penny. Oil/gas industry are still in denial about causation. A report on restoration can be credible unless it talks about funding. It is not credible to expect tax payers to foot the entire bill, someone has to have the nerve to ask the petroleum industry to kick in. Put it on the table-a report on restoration cannot be credible if it doesn't discuss how it will be funded-need to include contribution from oil/gas industry. Someone needs to have the nerve to make the ask. how do we address future harm? Oil/gas permitting. no permit was ever denied, only 212 required any mitigation out of >5000. Effect of the canals is said to be drag lines when it is really the hydrological effects and its spoil banks that is damaged. Lateral effect of canals is massive-much larger than the initial damage. we underplay what we need to mitigate by about 1:10. There have been overmarsh vehicles that can handle oil/gas activities without damaging the marsh. Walt Secoura-report. No net loss doesn't work.
Question	What's the impact of backfilling existing canals?
Answer	Backfilling would have significant impact-is very underutilized. Coastal use guidelines require it but has never been included in a permit. Oil/gas companies resist.
Comment	Gene Turner has some good numbers on cost-benefit for backfilling.
GCERT	Heard that large companies have sold more shallow wells/lines to smaller companies.
Answer	Need to find a geographic block. Need to look at coastal use guidelines.
Question	Are companies required to haul off their old equipment from marsh?
Answer	Not known if in the regulations, but parts of leases.

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Academic-presentation	Hypoxia-influence by river flow, weather events and patterns. Average size of dead zone has doubled. SPARROW model has influenced policy decisions. Gulf Hypoxia Action Plan-main policy document. Underlying goal-protect the resource of the Gulf Fishery before negative impacst can be seen on an ecosystem level. Limited funding to date-no direct Action Plan implementation. Indirect funding through the Farm Bill (not directly focused on hypoxia), some point source reductions through Clean Water Act. Huge expansion of bio-fuels not captured in Action Plan. USDA Mississippi River Basin Clean Water Initiative(MRBI)-first direct implementation funding since Action Plan was developed-through NRCS-$80M/year for 4 fiscal years Current status-MRBI, state nutrient strategies, but have no $$, no large appropriations anticipated. Some portion of the BP monies could be directed upstream. Massive nutrients loading anticipated with flood.
Question	Landscape initiative in Iowa-retiling some of the areas. Any word on that?
Answer	Iowa's nutrient reduction strategy-large-scale effort. One alternative being put on the table. All natural wetlands in Iowa have been eliminated (>80%), opportunities for watershed mitigation better. Need to examine how feasible it is and where the funding will come from.
Comment	There are some private options that might exist
Comment	The only way this issue will every be dealt with is by lawsuits. It seems also that to be successful, need to show what the damages are. What are the impacts from hypoxia?
Answer	Hard to tease out from dock-side numbers. Can't evaluate from dock-side numbers. Problem not being recognized economically.
Question	Are there plans to do any type of ecosystem service valuation for the hypoxia issue?
Answer	Some efforts are on-going, but hard to focus around it, given more immediate challenges for industries. Even if we do see a big signal of impact, given the funding situation, what will be our response? Opportunity for BP funds to be directed up-river.
Comment	Need to have a more robust means of determining success for the NRCS efforts. Performance measures, monitoring, etc.

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Academic-presentation	Oyster fishery-Gulf produces 60-65% of oysters nationally. Habitats based on saility gradients. Worked with industry and community to share the information on oyster habitats for mapping. Oysters provide a diversity of goods and services. Ecological goods and services: water filtration (50 gal/day); nutrient cycling; hard shell habitat; provides corridor between shelter and foraging grounds for associated fauna; carbon sequestration; stabilization of adjacent shorelines; habitat for recreation generated monetary services – coastal anglers. DWH impacts-several major diversions opened to try to keep the oil out of the estuaries-ineffective. FW-overwhelming for oysters. Can look at oyster survival at low sailinities with right temperatures (not summer). Challenges with coastal restoration-diversions present and proposed. 1.7M acres of public grounds for oyster harvest, within that 38K of oyster reef. Private oyster leases-392K acres. Significant public-private partnership. Additional ecological service-oyster can serve as a living sentinel for eastuarine salinity health-provides a biological basis for adaptive management strategies and a biological metric for northern estuarine-dependent fisheries. Estuary habitat is critical to recreational and commercial fisheries. How much freshwater/diversions should be opened? Can we pulse river diversions for a short period of time, harvest sediment, turn off and still have oysters. Requires communication and trust. Oyster fits within each of the TF goals-should look at oyster as biological sentinel.
Question	What's the threshold temperature for oysters that you can put freshwater through?
Answer	About 20C
Question	Will we be seeing impacts from Bohemia opening?
Answer	Temperatures are pretty high right now. Last year-had high river as well as open diversions. Uncertain if last year, we crossed the threshold of oyster reproduction and impact.
Question	What about oyster reefs for storm protection?
Answer	Looking at reef formation on man-made structures. Can get a population and community within a years time. But reef building takes time, depends on the structure.
Question	Does it make a lot of sense to build reefs or restore the environment first?
Answer	Reef building takes a decent current (food supply), are we seeing erosion such that we don't have the same current system as in the past? Combination of location and hydrology.

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Question	If there is investment in creating oyster reefs, should they be created on protected areas to minimize impacts from overfishing?
Answer	Current efforts are examining the culch that exists and impacts from fishing. Have action in place to monitor fishing boats for location-examine shell budget and impacts.
Question	If we're going to invest in restoration efforts, should we also invest in protected areas that will help sustain the population?
Answer	Yes-but seeing potential conflicts with where reefs are being planned and potential locations of diversions.
Academic-presentation	Methodology on how to best allocate resources for restoration. Socio-economics-policitcal science, law, anthropology, sociology, economics. Resource/environmental ecosnomics-application of economic principles to natural capital (e.g., energy, soil, water, fisheries, wildlife). CWPPRA-based on cost-effectiveness. Cost effectiveness- total cost/total benefits. Cost effectiveness model, CE ($/unit) = total cost ($cost of a project)/total benefits (unit). What does it cost to get a specific unit of benefit? How do you quantify benefit? Wetland value assessment-Eight community level habitat models and weighted variables of habitat quantity/quality. How to compare between projects? Annual habitat unit-expressed the benefits of the life of the project. Costs vary based on type and location of project. What are the benefits that are included in the analysis? with study group-over time, had increase in costs, but decrease in benefits. need to continue to work to quantify benefits.
Comment	Wetland value assessment-undergone changes overtime.
Answer	Adaptive process. Will see changes with increased knowledge-becoming more realistic with new knowledge.
Comment	Early on-costs were greatly underestimated
Comment	Need to understand trade-offs-restore the barrier islands that are very $$ versus vegetative plantings that aren't.
Answer	Need to make some decision on how to allocate resources. If you don't know the cost of any of them, can't make a decision.
Comment	Need to first look at outcomes that society values to be achieved. For example, USACE doesn't look at what they hope to achieve when planning a levee-social impact assessment. Can't look only at economics, need to assess what is hoped to be achieved. Need to have the community buy-in.

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Question	Any feeling on financial support for ecosystem restoration?
Answer	No good feeling for it. Not much interest in overall increase in spending. Lots of interest in decreasing budgetary exposure. Lots of issues are very important, but we can't look only to DC for funding to address these issues. Even with the impacts of not doing anything, leadership in DC is not hearing that. The cost of inaction. Far better to avoid destroying something than restoring it.
Academic-presentation	Wildlife management is about: managing water levels (flooding stress) and managing salinities (salinilty stress). Disturbances in marsh mostly mean fire, a natural part of the system, can be a tool. Now have bigger tools, Caenarvon, etc. using the river to create wetlands. Terraces to create wetlands and wetland edge- Dig the bottom, create hole and adjacent ridge. Over time build land, really popular in western LA, Rockerfeller refuge. Create edge habitat created, very valuable.
Question	How good are chemical measures of hydrocarbons at predicting toxicity? How clean is clean?
Answer	Not a straight line relationship. More hydrocarbons in soil, not necessarily more damaging. Lot of scatter in the data – best we have but not perfect measures.
Comment	If you are going to restore water qualitly, what are you restoring to? Focus needs to be on determining reasonable ecosystem goals for restoration. Need monitoring and observing to know if we are reaching our goals.