Academia Session

Commenter's Affiliation	Comment
Academia	Gulf Coast Research Lab Introduction: Oil Spill "corrosive event" and other problems for the Gulf. Gulf Coast Research Lab in the red on funding (spent more on oil spill than coming in). Inadequate assessment of Deep Water Horizon (DWH) damage. Restoration and response is important. DWH and BP money has been on impact, not long-term restoration. Natural Resource Damage Assessment (NRDA) process is not on restoration, but on litigation and penalties on responsible parties. So, what is restoration and what needs to be done? Sent out article on Gulf needed-restoration. What do we know about Gulf issues and need for restoration? What do we have that we can build a restoration plan around? There's a lot we don't know but it is located in research institutions along the Gulf. However, un-published data is not very valuable. But if you look at these datasets, you will find interesting data that could help. For example, blue-crab populations-Harriet has data on this-it is crashing and we don't know why. Juveniles not surviving. But being published in June. Climate driven? Drought? Keystone species. When it goes there can be cascading effects?
Academia	Long-term fisheries datasets-Department of Marine Resources -30 year database on juvenile and adult fishes on trolling studies Coast-wide, adult fin-fish studies. Historical trends on fish base on the long-term datasets.
Academia	Blue-fin tuna cruise, recreational and commercial fisheries, data compilation and collection before and during oil spill (larvae, etc…)
Academia	Drivers of disease and conditions-stresses expressed as disease.
Academia	Viral disease in shrimp. Have data, not published, but there is host switching of the virus. This virus kills larvae so it is important.

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Academia	Baseline data: Mississippi, Alabama, and Louisiana use same process for quality assurance/quality control data (started in 1968) so it covers 40 years and thousands of samples. Long-term data could be useful. Two animals show significant declines, hard-head catfish and blue-crab. What happened? Disease. Department of Marine Resources has that data, need to get it from them.
Academic presentation part 1	97% of harvested oysters in Mississippi from reefs off coast. Oil impacts: Mississippi right in middle of "blob" and a lot of impact. What happened offshore? Restoration Strategy goes beyond oil-comprehensive restoration strategy. How do restore and maintain to address other stressors aside from oil: coastal erosion, sea level rise, water quality, hurricanes, habitat degradation, population growth and coastal development, overfishing, hypoxia-Hypoxic Event in July 2008-dead zone off of Mississippi (Brunner, Dillon, Gundersen, Howden, and Martin).
Academic presentation part 2	Restoration Goals and Priorities (quotes out of Executive Order): Science-based efforts, existing research and monitoring, identify gaps and build on existing programs. We need to clearly DEFINE goals-as a group, what are the key goals of restoration? Need for Science and monitoring. Need for modeling and predictive capabilities.

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Academic presentation part 3	Ongoing programs and resources-National Oceanic and Atmospheric Administration (NOAA) SEAMAP, hypoxia task force, Gulf of Mexico Alliance (GOMA), Grand Bay National Estuarine Research Reserve (NERR), Northern Gulf Institute (NGI), Gulf of Mexico Coastal Ocean Observing System (GCOOS), and Central Gulf of Mexico Ocean Observing System (Cen GOOS), Southeastern Universities Research Association (SURA) modeling testbed, Mississippi-Alabama Sea Grant, National Science Foundation (NSF) cyber infrastructure-enabled Coastal Hazards Collaboratory (Greg Easen, AL-Huntsville, MSU, Jackson State, etc…)-storm surge inundation models and what cyber infrastructure needed to enhance that across a broad region, Department of Environmental Quality, Department of Marine Resources, NOAA, NR, Environmental Protection Agency (EPA), U.S. Geological Survey (USGS), National Aeronautics and Space Administration (NASA), non-governmental organizations (NGOs).
Academic presentation part 4	Challenges: lack of support for sustained, long-term environmental monitoring. Activities now largely supported through competitive research; coordination among different jurisdictions, agencies, and programs; Strategies must engage federal, state, Academia, and private sector science and expertise; management approaches must be adaptive and responsive to unintended consequences. Conclusions: MS GC encompasses diversity of estuarine systems, management of these systems is critical to the economy and societal well-being, comprehensive strategy for science-based approaches to restoration informed by systematic monitoring and ecosystem modeling is critical for this region
Academia	Comprehensive data management and organized to provide (like what Russ Beard from NOAA does-digital atlas).
Academia	Offshore load monitor relay (LMR) monitoring.

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Academia	Part of restoration is public health, epidemiological effort-all kinds of ailments related to BP oil spill
Academia	Shrimp virus discussed earlier- can it be transferred to people? No
Academia	Sea floor ocean observing system-what is the impact of oil on the ocean floor? Causing problems-hypoxia/anoxia. There is a long-term monitoring site on seafloor, 950meters deep, 9 miles away-that needs to be looked at. Also, observe impact of oil on shallow waters and on floor? Oil still coming up on beaches. Submerged oil-because we know so little about it, it needs to be stressed in this plan, but this down deep in the water and on ocean floor, we need to look at, see what the long-term impact is and this is important. Because of the environment, it might not be weathered the way oil near the surface was.
Academia	Need ability to repeat survey [which survey?]. Rapid funding from NSF to work samples.
Academia	Dispersant data is not part of NRDA data, but crabs had dispersant in them in tissue, many of them dead, we know there is impact to resources. Station north of oil head had repeated problems.
Academia	NRDA misunderstanding. Point not to look at background and older data and trend/abundance. NRDA is a legal process not a scientific process. But initial funding was investigative, not for monitoring or long-term impacts. NRDA is not an ecology-based process, but a legal process. Not looking at long-term trends in background data

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Academia	Research plan a year before BP spill. Four Sea Grants invest 10 million in research/year. We are challenged with the BP money that dwarfs everything else. They've invested 50 million to date, and then another 50 million/year for future (in request for proposals - RFP - coming out). Sea Grant-proposals for that money. Ecosystem Services. Looking at investing Sea Grant money into social science. Not at exclusion of natural sciences. Where Sea Grant goes in the future based on NOAA's funding-university based program with NOAA funding. 800pound Gorilla is BP money-what is that going to addressed? So Sea Grant can address what is not being addressed by BP money.
Academia	BP money ($500 million) won't solve everything. Will only solve a small number of problems, not a large number of problems
Academia	We don't currently do long-term monitoring. Who will do it and who will fund it? That has very much fallen through the cracks and no one is doing it.
Academia	With regards to support for monitoring, there hasn't been a mechanism for funding. No one supports long-term monitoring! We need to be strategic in how we invest our resources in long-term monitoring. We need to plan to make most efficient use of monitoring for modeling, assessment, etc. Funding-many existing assets and capabilities for monitoring are supported through competitive funds and earmarks. These are both going away and retraction. In these capabilities, so that is a paramount concern in the restoration strategy.
Academia	Land trust-use BP funds for endowment for long-term monitoring. A large lump sum for an endowment to support long-term monitoring. Trustees would need to work out and the Task Force would need to communicate with them.

Academia Session

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Academia	We have to go beyond monitoring. The science has to drive the monitoring. DWH was a large-scale toxicological event with physical/chemical parameters that are affecting the organisms involved. There are so few people involved, we are overlooking things that could provide information, for example: some organisms can process petroleum because they've been exposed over time, but what molecular indicators can tell us more about the oil spill and the dispersants? What else are we missing? We don't know near enough about the dispersants. We don't know enough about the oil spill.
Academia	Not as much research on estuarine organisms as fresh water. Some molecular research can be done. Another fish pathway, biotransforming: fish respond with different pathways based, low dissolved oxygen is one pathway. Different environmental exposure can affect fish, reproduction, etc. Dispersant-we have basic toxicity data, but effectively not research on chronic exposure, juvenile or larvae exposure, but dispersant also increases organism uptake because it has been dispersed. Organisms that would avoid oil then take it up because of exposure.
Academia	Acute toxicity work and chronic studies going on in 7 species and hope to do long-term and generational tests. Molecular aspect: potential for photochemical exposure on surface.
Academia	Gulf of Mexico Research Plan (GMRP)-1200 responses, 260 organizations. Pre-oil spill-few year process and all raw data we can provide. After oil spill, there were additional surveys done with additional survey needs. And then a larger scale survey was sent out. Foundation of plan not changed, but an addendum to the plan created. Does Sea Grant need to do some more on research priorities since oil spill?

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Academia	GMRP has more "plans" consolidated than anywhere else. A meta-analysis of all those plans needs to be done (158 plans since oil spill). Fear of political pressure. Do we as scientists bow to political pressure? I think dispersants was the right thing to do, however because of political pressure, it may never be used again and is that the right thing scientifically to be done? We need to separate ourselves out of the political pressure.
Academia	We are here to talk about restoration. I am on a group to discuss "sustainable everything in the coastal zone". If we manage one ecological service, we impact another ecological service. I encourage you to look at whether restoration is positive? Neutral? Negative? Nothing long-term beyond 5-6 years. If you build a wetland does it behave like a wetland over the long-term? We are managing for sustainability. Sustainability has to be first, and then restoration. What are we restoring to? It has an impact on other issues and we need to think that way.
Academia	Recent paper on living shoreline models. Sills built. Vegetation looks good, but other (fisheries) not advancing
Academia	Modeling and monitoring in order to asses, predict, and mitigate undesirable consequences
Academia	Effects of climate and sea level rise. We can build marshes all day, but will they be sustainable with sea level rise?
Academia	Managing ecological services and communities with sea level rise.
Academia	Mississippi is sensitive to actions to the west-diversions, freshwaer, and sediment impacts the Sound. Need modeling.

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Academia	Train tracks stopped sheet flow down the marshes in a big way. As marsh grows landward, it will come up against the tracks, presenting a problem for marsh migration
Academia	Marshes-oil came ashore during high tides. Even though there is oil at marsh point, but there will likely not be marsh anymore in the future (because of sea level rise) and the oil will be gone because the marsh will be gone. Restoration needs to look at this in a holistic way and what the future will be like. In other areas where there is little to no tidal flushing, then this is a bigger problem with oil and toxicity.
Academia	Initial work related to restoration and plans for the future. Marshes that have been lost over time. Our abilities and techniques for creating new marshes have been improved over the years. In recent time with sea level rise and climate change, I've adapted my thinking where is the "best place to do restoration in Grand Bay" and the best place to do land acquisition. This is different now than it was 10 years ago because of restoration. This needs to be thought about on a large-scale. How at Grand Bay can we look north of our boundaries? At the refuges and National Park Service (NPS) and how we can look to the future and at future boundaries? We might need to buy land at the northern part of the reserve because of sea level rise. Future changes in vegetation.
Academia	What about National Estuarine Research Reserve (NERR) monitoring program?
Academia	Monitoring program-water quality monitoring and nutrients program. Water quality dataset will give past information-good long-term monitoring. Sea level rise monitoring. System-wide monitoring at the reserve over the long-term.

Academia Session

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Academia	What's the interface with the Hypoxia Task Force? Mississippi Department of Environmental Quality -Hypoxia Task Force, and Gulf of Mexico Alliance (GOMA) and nutrients priority issue team. Hypoxia in the Gulf and upstream into the watershed.
Academia	Richard Ingram involved in both Task Forces and GOMA nutrients priority issue team (PIT) methodological intercomparisons between different sites. Quality Assurance/Quality Control across sites and standardizing methodology. Looking for ways to make sure data is collected according to protocols that are identical or quality is good. Have data available to others so others can access it.
Academia	GOMA has a data advisory group (Melanie Morris and Jim Jaboe) and reps on each PIT are getting involved in the data
Academia	EPA coordinated benthic monitoring program, where federal money is distributed to states, GOMA grant, states use different protocols for benthic sampling. It is difficult because it is not standardized. Tetra-tech trying to pull it together, get it comparable, etc…Continuous program.
Academia	2000-2005 national program or benthic sampling. 2010-Department of Marine Resources and Gulf Coast Research Laboratory is continuing monitoring on years that EPA is not funding the monitoring
Academia	Monitoring needs for restoration: science-based monitoring-ecosystem function
Academia	Metric for ecosystem function: Nutrients and microbial processes; Macro-benthic function-Convey if system is functioning well; Target organisms-ways to measure success of restoration with target engineering organisms

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Academia	Microbiota-should we look at upper level organisms? Actually, lower level organisms might tell us more about restoration (micro-flora); functional groups.
Academia	Physical components: circulation, sediment transport, optical conditions
Academia	Identify appropriate restoration efforts/goals: "Ideal restoration effort would be the ecosystem services it provides-does it function well?"
Academia	Engineering standpoint-ecosystem improves but what about the storm buffer? Is it cost effective?
Academia	Ecosystem services.
Academia	Habitat restoration.
Academia	Storm protection.
Academia	Watershed monitoring-fresh water, water quality, water quantity.
Academia	Stressors within the watershed: positive or negative.
Academia	Land use/land change influence storm water and stresses restoration.
Academia	What is the major plus or major minus? for example: corn-based ethanol production? Good for U.S., bad for Gulf?
Academia	What goes on upstream affects downstream.
Academia	Socio-economic: human aspect of ecosystem services. indicators of well-being: ecosystem services and connection with indicators of well-being (wealth, job satisfactions, etc…, and this ties into resilience).
Academia	Scientific literacy in the public- for example "safe seafood". Test after test after test saying the seafood is safe and people don't believe it. Understanding of "risk". We always have risk, but people just wouldn't believe that the seafood was safe regardless of who collected the data or where it came from.

Academia Session

Commenter's Affiliation	Comment
Academia	Restoration of public confidence/trust in govt. and science-long-term funding and management depends on public trust.
Academia	Engage public in monitoring effort.
Academia	Engineering science and models: comparative success of different practices, how does this need to be integrated into the ecosystem models and ecosystem services.
Academia	How do we put monetary value on ecosystem services.
Academia	Modeling needs for restoration-we need to monitor according to what we're modeling and allow that to guide us.
Academia	The adaptive management supported by modeling, the modeling can't be effective if we don't have the right modeling data and parameters.
Academia	When we target the organisms and we model are we looking at the organisms we have? Or the organisms we want?
Academia	A model will need to be multi-faceted to include many things.
Academia	Watershed components, land use, water resources.
Academia	Climate variability on these things (influence of sea level rise to be included in a model).
Academia	Sea level rise impacts.
Academia	Top things to be modeled: value of the long-term data that exists (40 year dataset might need to be continued or built upon)-can't under-estimate the value.
Academia	Figure out who has what (seasonal) before determining what needs to be done.
Academia	Gulf Coast Seafood Laboratory (GCSL) has done a lot with the Department of Marine Resources on not only continuing, but expanding the current monitoring networks-working with others to build a long-term datasets (subsidizing).

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Commenter's Affiliation	Comment
Academia	Sustain and expand long-term records.
Academia	Critical habitat needs to be monitored/modeled, including oyster reefs, submerged aquatic vegetation, (Ship Island), salt marshes, mangroves.
Academia	Have a systematic valuation of habitat, ecosystem service evaluation, and taking economic-SEA GRANT funding with oyster reefs, salt marshes, mangroves, submerged aquatic vegetation.
Academia	Barrier islands need to be monitored/modeled. Do we have extensive knowledge on barrier islands, reefs, and ecological value of those (oyster habitats)-bathymetric surveys-long-term, after a storm needs to be done and feeds into models?
Academia	Someone needs to know what the other agencies are doing-coordination with policy.
Academia	We do a restoration project, and then someone comes and dredges and ruins the project.
Academia	Where on the landscape to we measure things? If you are going to restore it? Do you put monitoring where it is barren and then track movement of restored vegetation? Where does it happen on a spatial context?
Academia	How do things offshore move onshore? Ecological services in a marine spatial planning contexts?
Academia	Need to map habitats and what the extent of they are? How are they moving?
Academia	Hydrological restoration: restoring hydrological flow in a small area can benefit a large area (focus on two acres and affect 200 acres).

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Commenter's Affiliation	Comment
Academia	What about adaptive management? Does anyone have any experience with adaptive management?
Academia	Hypoxia Task Force-know what needs to be done, but don't know if it is successful.
Academia	Dr. Wai Leiu looking at sea level rise and wetlands upstream-simultaneous Location and Mapping (SLAM) modeling- salt/fresh-movement and affects on wetlands upstream-considered in adaptive management?
Academia	Do we need a framework modeling system to start with?
Academia	What about managed retreat from sea level rise?-temporal, spatial, or both? Will we only manage restoration north because of sea level rise? Are we abandoning some of the immediate coastal restoration?
Academia	We need a systematic analysis on what will happen 10-20 years in the future, storm frequency, etc…and what is the sustainability of restoration in an area and will it be sustainable after 5 years or something longer?
Academia	Some people believe marsh will sustain itself under regular sea level rise over a period of time. Accelerated, it might not keep up. Sediment deposition and marsh rebuilding could also keep up with sea level rise.
Academia	Effectiveness and sustainability of diversions.
Academia	Ensemble approach to modeling. We have to use more than one. Multiple degrees of complexity. They will be developed to answer different questions (probably 100's of models).
Academia	How critical a habitat are submerged aquatic vegetation for fisheries-what bout other habitat? are there existing models and studies to examine that?

Academia Session

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Academia	Oyster reefs, salt marshes, and mangroves-haven't been assessed for criticality-ecosystem service valuation. SeaGrant will likely be supporting additional research on the ecosystem valuation for these environments.
Academia	What are the trade-offs? People and ecosystem? More/Less impact and economic trade-off and cultural trade-off-ecosystem services and estuarine areas.
Academia	Move upstream to different/better areas.
Academia	Artificial reefs as part of a restoration strategy? Societal benefit? Fish aggregating devices (FADS) for inshore and offshore-the public loves these and they don't affect other habitats. put them around jetties and boat ramps and public is supportive.
Academia	Supports different types of communities, including oysters.
Academia	Sanctuaries and reserves: if we start expanding monitoring out in the Gulf, is that going to be a good reaction from the fisheries industries, etc.
Academia	What about barrier islands-birds and wildlife?
Academia	What about hydrological restoration? What about restoring hydrological flow? For example-Grand Bay-$1million projects or less.
Academia	Don't have a good handle on extent of habitats-what about relict reefs? What is the ecological value of those?
Academia	Need up to date bathymetric surveys, after every storm, need to resurvey areas.
Academia	Need to examine the policy element-what are the other agencies doing.
Academia	Ecosystem service valuation-not just economics, also well-being, etc.

Academia Session

Commenter's Affiliation	Comment
Academia	Restoration location-could be assessed via models. Need to consider long-term viability.
Academia	Need to map out habitat extent.
Academia	Adaptive management-monitoring, studying, then changing way moving forward.
Academia	In the past-cheapest solution was to buy property.
Academia	Trying to put out methane monitors and work with oil companies to establish these monitoring stations on platforms.
Academia	Working with Oil industry for monitoring on platforms and should be supporting efforts to sustain restoration strategy.
Academia	We were not able to get Chevron to work with us and work with pilots to tell where whale sharks are/are not. If anything smacks of responsibility, they withdraw. What would like to encourage is that it is a Gulf of Mexico issue and in this restoration it is an opportunity to focus on Gulf and bring ecosystems up to a level of understanding that other national ecosystems are acknowledged.