

**New England Federal Partners
Interagency Meeting on Climate Change in the Northeast
FULL MEETING NOTES**

Date: June 2-4, 2009

Location: NOAA Fisheries, Northeast Regional Office, Gloucester, MA

Invitees: Federal agency national and regional representatives

TUESDAY, June 2, 2009

Welcome and Logistics:

Chris Mantzaris, NOAA/NMFS).

- Welcome, description of the building, use of building for workshops etc.,
- The goal of this new facility is to bring the community closer.
- Logistics, exits etc. Mike and Sara Johnson introductions, they can handle any questions for building logistics

Highlight of NMFS work at the Gloucester, MA office-

- Sector fishing- is a “catch share” program where the fishing industry group themselves into sectors and regulate themselves. This includes when/where/what they fish, as long as they don’t exceed total allowable catch as a group. The “sector groups” have ranged from 80-5 boats in a sector,. So far there are 19 applications for sectors. This program is voluntary and the sectors are required to monitor themselves. The start-up of this industry paradigm must be done by 2010.
- The new NOAA administrator is focused on fishing, but climate is right alongside as a priority. This meeting is very important; this is the first meeting for New England federal partners only on climate change in the Northeast.

Peyton Robertson (NOAA/NART)

- Director of NOAA Chesapeake bay office, and is now the new NART director.
- Explanations of NART and a comparison between the mid-Atlantic and New England.
 - NOAA- combination of the weather service, coastal survey and fisheries.
 - There are five major line services (offices) in NOAA and the ocean service has not been organized regionally in the past. These are a few of the reasons why NAR was formed. Now the ocean service is co-located around the country like EPA. The initiative under the previous administrator was to gain regional collaboration. NOAA established 8 regions, including the North Atlantic. This region extends from Virginia to Maine, although they admit there is a big difference between VA and MA or ME. Therefore, since there is such variation in the region, there are two sub-regions for the North Atlantic- the Mid-Atlantic and the Northeast

(Betsy Nicolson , is the lead). Ellen Mecray is the lead for climate for the north east.

- Peyton asked everyone to say “Climate”. Everyone did. “ OK so we are all speaking the same language”. Climate is the issue of the decade, even the century.
- The federal political leaders are interested in climate change making this meeting extremely timely and exciting. It is great that all of the Federal Partners who are all working on similar issues have come together to figure each other out, and to figure out who is the right point of contact for each of the various climate change issues.
- President Obama announced the new Executive Order plan for Chesapeake Bay which includes a variety of reports that are required in the next 120 days. For climate, DOI and department of commerce are the leads. NOAA and USGS will likely be the leads, within the departments, for climate change.. Everyone is trying to figure out who is the appropriate lead and why and then assign some responsibility. They are just getting started and figuring out how to organize and respond to the issues. Peyton brought along a fact sheet for the Chesapeake Bay to the meeting for distribution.
- Examples of climate impacts to the Chesapeake Bay
 - The Chesapeake Bay has seen a 1 foot sea level rise in the last century; this is twice the global average. Sea level rise in combination with land subsiding are the reason behind the large amount of total sea level rise.
 - The Naval Base Hampton Rose, is the 2nd most vulnerable to SLR, only 2nd to new Orleans
 - Eelgrass- Chesapeake bay is the southernmost point for eelgrass distribution. 15,000 acres of eelgrass after recent warm summers. Now imagine combining already warm summers to impacts projects from climate change (i.e. warming temperatures, habitat loss etc.). Another major associated impact is the threatened Blue Crabs. The Blue crabs are threatened because eelgrass is their habitat, as this habitat is loss, the Blue Crabs will be affected. The Blue Crabs are a commercially significant species the Chesapeake Bay, therefore the impacts of their loss will be seen across many different areas, including finical.
- The states are demanding that we be responsive to them in climate change. We really need help at the regional level, provide the regional prospective to the states, and how they each individually the fit into the region.

“Seek to understand and then be understood”

Plenary Speaker: The National View: Climate Policy and the Importance of Federal Agency Coordination (Robert Corell, Vice President for Programs, H. John Heinz III Center for Science, Economics and the Environment)

Introduction from Normand Willard (EPA)-

- Thank you to NOAA for the facility and the staff that made it happen.
- One of the important purposes of this meeting is to learn from each other. To know what each agency brings to the table, what are each of our capabilities are (knowledge, data, support tools etc) and to know who are our sometimes overlapping cliental.
- We need to prepare for the climate impacts that are already under way. How are we vulnerable and how will we adapt? What do we have? What do we need? How can we protect the built and the natural environment?
- Our purpose is to serve our cliental, states, NGOs, locals, public at large. We all have responsibilities and what will we do after this meeting?
- Encourage everyone, for the next few days to share what you think are the gaps, the needs etc. and how do we apply our capabilities in the most efficient and effective way.

Robert Corell background:

Dr. Robert W. Corell is on leave as Vice President of Programs at The Heinz Center to lead the Global Climate Action Initiative. Dr. Corell won the Nobel Peace Prize in 2007 for his extensive work with the International Panel on Climate Change (IPCC) assessments. He joined the Center as Global Change Director in December 2006. Before coming to The Heinz Center, Dr. Corell served as a Senior Policy Fellow at the Policy Program of the American Meteorological Society and an Affiliate of the Washington Advisory Group. He recently completed an appointment that began in January 2000 as a Senior Research Fellow in the Belfer Center for Science and International Affairs at Harvard University's Kennedy School of Government. Dr. Corell is actively engaged in research concerned with the sciences of global change and the interface between science and public policy, particularly research activities that are focused on global and regional climate change, related environmental issues, and science to facilitate understanding of vulnerability and sustainable development. He co-chairs an international strategic planning group that is developing a strategy designed to harness science, technology, and innovation for sustainable development; serves as the Chair of the Arctic Climate Impact Assessment; counsels as Senior Science Advisor to ManyOne.Net; and is Chair of the Board of the Digital Universe Foundation. Dr. Corell was Assistant Director for Geosciences at the National Science Foundation where he had oversight for the Atmospheric, Earth, and Ocean Sciences and the global change programs of the National Science Foundation (NSF). He was also a professor and academic administrator at the University of New Hampshire. Dr. Corell is an oceanographer and engineer by background and training, having received Ph.D., M.S., and B.S. degrees at Case Western Reserve University and MIT.

SPEAKER- Robert Corell

- Why are we all here? Because this is where the problems and opportunities are!
- The NSTC (National Science and Technology Council) is comprised of 4 committees and climate change affects them all. They are chaired by the President. President's science advisor sends is best wishes.

- Global change act of 1990- is where we began to work together and start to understand this issue. This act is still in place, but has morphed into “what are we going to do, how are we going to respond” to “this stuff”. The Act started with a focus on research, but is now more of “what are we going to do about climate change” policy act. How can the agencies support everything? Ex. Fisheries, forest etc.
- Over the years two federal agencies, EPA and NOAA primarily, took the lead to figure out what are the strategies and methods that we can use to better support issues like green house gasses and the changes that occur as a result.
- To place this group into the global perspective- the post Kyoto protocol that is being drafted in the near future. Prospective for the Global Deal is being discussed in Copenhagen in December. The stakes are high. There is trade finance, technology, implications, along with the Environment, which was always the issue.
- *While looking at a PowerPoint slide showing a graph:*
Coming out of the last ice age- you will see a little “Glitch”, a unique time during which the climate varied very little and thereby enabling human-kind to flourish. Since then the climate has varied. One degree matters! Variation at this scale can cause substantial changes.
- *While looking at a graph of climate change predictions:*
In 2001-2002 the IPCC raised a whole series of scenarios of what could happen. The red one is the worst cast scenario for emissions- as of 2007, we are above the red line, above the worst case scenario predicted.
- Since 2000 the CO²emissions derived from human sources have been growing 4x’s faster than in the 1900s and are now above the predicted levels.
- In 2008, the atmospheric CO²concentration was 387 ppm, over 40% higher than pre-industrial levels. This is well above anything that the planet has seen in recent years.
 - The CO² concentrations are accelerating
 - 1970-79 --1.3 ppm/year
 - 2008- ---2.3 ppm/year
- Of the CO² concentrations, 80% come from fossil fuels and 20% from deforestation. Of the CO² released , 45% is absorbed in the air, 29% on land, and 26% in ocean,---problem is the land and ocean are filling up, their capacities to accept CO²is limiting.
- Summary of the impacts and consequences of the projected range of temperatures towards the end of the 21st century:
 - Warming of the climate system is unequivocal

- There is now higher confidence in projected patterns of warming
 - Anthropogenic warming and sea level rise will continue for centuries.
- Looking at satellite images of the Arctic for September 15 2008. The major ice sheet is half of what it was in the 1960's. Less and less from 2005-2007 show in a picture and there is no evidence that this will slow down. To put it in perspective the amount that is gone is about equal to the entire eastern side of the United States. Also, remember, all of this ice that is melting is freshwater that is being dumped into the Ocean.
 - Projected scenarios for the future picture of the arctic include ship routes and petroleum potential. ---talk of president bush encouraging the development of these new areas in the arctic for petroleum to get the US out of the Middle East. Although, a quarter of the potential is in Russia.
 - Moving to Greenland, showing a picture of icebergs. 70-90% of the iceberg is below the surface. The glaciers coming off the mass of ice is happening 4xs quicker and when they melt they contribute to Sea Level Rise (SLR).
 - We (scientific community) project that there will be an excess of 1meter of SLR in this century. Showed a picture of New Orleans and the effect of a 1m SLR.
 - The question is : at what temperature will we stabilize? There is potential that the climate is likely, as projected by the IPCC, to take humankind where it has never been before.
 - What are some of the drivers?
 - Growth of emissions in the G8-developed nations, the emerging countries (i.e. China), and the developing countries.
 - Land use (i.e. cutting down trees), Global Deforestation- break point was 1950.
 - The world emissions= 27 billion tons CO²
 - Per-capita average, CO²/yr: The United States is at 20, the global average is 4, all of Europe is 8. Germany 10.4---stabilization is 1.
 - The climate action initiative.
 - The challenge- heads of the state are the most likely individual who can affect the necessary agreements
 - **C-roads Model** (Climate rapid overview and decision support). *Showed c-roads model structure*
 - C- Roads model outputs are consistent with the models from the 2007 IPCC models scenarios.

- The model reproduces the global reports, but nothing for local because of the sensitivity tool.
 - Using the C-roads models, policy exercises are being carried out in 3 country groupings (developed nations, emerging, developing countries) to develop emission and land use
- For all 1092 nations you can put them in each of the various scenarios- i.e. “Do something” (ex. US stop deforestation by 2050) or “do nothing” (ex. China, Middle East, Latin America). The models give everyone a sense of reality when the policy makers are doing negotiations. They will know what the model says for 1%, 3% etc. The business opportunities arise with alternative energy options. To fill the gap between BAU and other scenarios. There is a reason the start now- you will need the technology in 10-50 years.
 - Linking global warming impacts with climate action- 3 ranges (lower warming range 3-5.5 degrees, medium, high) and the impacts associated with the 3 ranges. 47 out of 49 models, say that the US southwest will be in a drought through at least mid-century.
 - Sea Level Rise- there are many east coast regions vulnerable to sea level rise of 1 meter. (*showing a map*) i.e. New York City, Chesapeake Bay, Outer Islands Georgia Coast. There are significant areas of concern that have a lot of investment of federal dollars (i.e. Federal facilities) that will be underwater if not adapted.
 - Encouragement of planning of the future for worst case put it into plans now.
 - USGS has created the vulnerability index (CVI) to assess the potential vulnerabilities of many of the nation’s national seashores. The CVI goes from very high to very low. *Showed a map*. Encourage USGS to do more, publish this, have others follow your lead!
 - Netherlands is an example of a country that has been charged by their leader to develop a plan for 3 meters of SLR.
 - Vulnerability= Impacts – Adaptive Capacity
 - An Adaptation Assessment Cascade. – (*showing a diagram*) a methodology to craft long-term continuously updatable adaptation assessment plans focused on climate change.
 - Talk of down scaling the global models, to more local regional projects. Example the Northeast Climate Change study.

- Most important – MAKE A PLAN for adaptation
- Conclusion 1- “climate stationary”- get out of the idea that climate is stationary, must build variability into the structure
 1. Being with users needs
 2. Give priority to process over products
 3. Link information procedures and users
 4. Build connections across disciplines and organizations
 5. Seek institutional suitability
 6. Design for learning.
- Climate change and global warming are no longer simply an environmental issue, it is an issue of economic security and human well-being!

Plenary Short Sessions

Session 1: Engagement with Regional Organizations on Climate Change LEADS: Susan Russell-Robinson (USGS) and Mel Cote (EPA)

Mel Cote-Intro/Background

- Nice to know there is a lot of other agencies working on this very important issue.
- We are getting together to ID gaps and to find out what is being done by the other various agencies. To figure out what areas have existing efforts with leads, but would benefit the collaboration with others as well.
- NROC- many organizers of the workshop are involved with this regional ocean council. NROC has been meeting since 2006.
 - 3 major priority areas- ecosystem health, ocean energy, ocean resiliencies
 - NROC Climate Change Statement- Dave Russ has drafted this statement. 6 months ago.
 - NROC decided to get the Federal Partners together to focus on Adaptation, because in New England the states have taken the lead on mitigation and have plans already in place. However, adaptation is an area we are lagging behind.

For this session agencies will be divided into groups to identify and discuss:

- What agencies/regional groups you are currently working with on Climate Change issues, monitoring etc?
- Who is the stakeholder?
- How are you interacting with them?

NY to Maine is the target territory

USDA:

National Association of Conservation District, resources conservation, development, NROC, New England Governors Council, State Foresters, State fish and game, atg CZM etc., Association of Farm land W Agencies, Nature Conservancy, source water protection, new England organic farmers association, local state watershed group, wood education resource center, age and land preservation groups, coop. extension, restore America estuaries.

DOD:

State DEPS, National resources,, National resources conservation service (NRCS), Nature Conservancy, RI CRMC, Various Academics, local planning orgs, state and local emergency planning, water shed and airshed groups, national council of state legislators. NROC, Coastal America

NOAA:

NROC, CZM, GoMC, Emergency Managers, Office of emergency mgmt in cites, academic RARGOM, cooperative institutes: CCICEET, North Atlantic CI, WHOI CI, sea grant, state climatologists, regional climate center-Cornell-NEDIS/NWS, Media, UCS, Fishery Management Councils, ASFMC, ROSC, Coastal America, Stellwagan bank NMS, NERRS, St. John River Basin , NEWIPCC, TNC, NERACOSS, NWF, GOMOOS, TPL/MCPI, Stranding Network, CLF, CA DFO, POA, NESCAUM, National Fish habitat action plan partnership, Penobscot partnership, CT River Watershed fish passage, GOMODP, GLOBEBC, Take Reduction Teams, APA/Planners, National Dredging team, Environment Candia

DOI:

Watershed Associations, Native Tribes, Localities, Corporations , NERACOOS, NESCAUM, NE Association Fish and Wild Agencies, Canadian Wildlife Service, Environment Canadian, Parks Canada,, National Wind Corp. Group,, Nature Conservancy, Audubon, Trout Unlimited, NWF, Manomet, Gulf of Maine Council, Wildlife Management Inst., Ducks Unlimited, State Agencies-Environmental protection, DOT, Fish and Wildlife, Emergency Services, Homeland Security, CZM, NROC, Friends of the Application Trail

DOT & FHWA:

NEG ECP, ME DOT, Uni Trans Centers, NEARC, MPO's-PL funds, State DOTs-NASTO-funds, FTA-APTA joint planning regs.

DHS/FEMA/USCG:

FEMA- regional Interagency Steering Committee (RISC), ACE, USGS riverine analysis, NRCS, CZM programs, MA-RI-VT, State environ. Agencies, Nature Conservancy, other NGOs in river/coastal, NWS, National Hurricane Center
USCG- Ice Breaking in Rivers i.e. Kennebec, Penobscot, Hudson, Maritime Commerce, FERC, National Shipping w/EPA,

EPA:

NEIPCC, NESCAUM, NEP, National Air Quality Committee, ICLIEI, NEG/ECP, IOOS, New England Tribes, UNH Stormwater, New England Finance Center, National Dredging Team, Gulf of Maine Council, New England Public Utilities, New England Waterworks Association, COMPASS, NEWMOA, NERC, Ocean Literacy of New England, ISO New England, Planners Association, CLF, The Nature Conservancy, The National Estuarine Research Reserve, Watershed Associations, Cape Cod Commission, New England Environment, Bureau of Indian Affairs, New England Business Association, RARGM, I-95 group, Lincoln Land Institute, Homeland Security, Clean Air-Cool Planet, Net work of State DEP climate Educators, Association of Science Centers, NE Campus sustainability council, FS and Canadian counterparts

Session 2: Federal Climate Resources and Activities Inventory

LEADS: Adrienne Harrison (NOAA) and Ron Beck (USCG)

- Climate Inventory was developed in response to requests from state partners and the need from federal partners to reference on other agency activity
- The information in Inventory is from the 9 Federal Agencies who have contributed information (EPA, NOAA, USGS, USFWS, FEMA, DOT, USACE, DOI)

Task for Today

1. ID efforts to collect this information
 - are other agencies gathering this information?
 - Best practices for collecting similar information?
2. Confirm types of information to include
3. Agree on process for updating and tracking information
 - Should there be a data call for this information?
Frequency, recipients
 - Continue collecting information real time

- The requirements for the inventory are: it has to be in this region, need contact name, web link if available, description, program/project title, agency.

Ideas generated through discussion:

- RSS Feed
- Host on inventory on: Coastal Climate Network Site, NROC site, or NEGC site
- debate: Continuously feeded/updated or once a year?
- Partnership opportunities
- Use the information shared today in the Plenary Short Session 1 to fill in the inventory about the partnerships ID'd and the level of involvement
- FEMA.gov national response example
- Consistent taxonomy/categorization scheme (look to TNC for example from their eco-regional assessment)
- Chesapeake Action Plan- another example
- Add link to contact information (ie. Email)
- More categories to sort by (EPA example)
- Clearinghouse of meetings nationally (Calendar?)
- PDF function

Wrap-Up, Plenary Review of the Day, Thoughts

Notes:

- The sum of the parts is the greater of the whole. By looking at the various stakeholders, you may want to engage with additional stakeholders
- The list will be available to add to what additional engagement you want
- The inventory- perhaps expand it beyond the Coastal zone

Discussion of Take-aways from Day 1:

- alternative energy is a big opportunity to fill in the gap
- the opportunity to tap into financial community
- that Blackwater NWR is going to be gone in 2030
- realize how pressing it is to speak to each other
- to avoid duplication of efforts
- the technology being developed- ie. Hydrotechnology, Fed Agencies need to be involved with those developing the technology
- Would like to see more collaboration, this is great to see everyone together; we could be national leaders if the group stays together.
- broad spectrum of involvement, how do we work together effectively, there's so many people to work with.
- Use common stakeholders to get information out
- Arrive at a broader vision for all Fed Agencies, coordinated, not ad hoc
- Need for a coordinated unified message from the federal agencies to stakeholders

- What are the Feds going to use as their go-to information, IPCC? May 2009 report?
- Consistency of communication of scientific information, site sources and state uncertainty
 - how will we adapt, must base it on science, but need to agree on the science
 - climate change brochure on NOAA/USGS on how to communicate uncertainty to public
- How can the feds encourage change of behavior to aid the CC issue
- The need for adaptation planning, what we can provide to our stakeholders to help their efforts (example CRE)

DAY 2, WEDNESDAY, June 3

Plenary, Thoughts from Day 1, Revisit Goals and Objectives, Outline the Day

Notes:

- This morning each Agency will speak about what the agencies are doing in climate change and what the agency's needs may be-what they are looking for help from other agencies.
- Look for gaps and linkages between the agencies briefings. How will we work together and have a single voice, about our data and the uncertainty we are using when we interact with our stakeholders to have a cohesive message.

What we accomplished yesterday:

- Stirring presentation from Dr. Corell.
- An opportunity to talk with each other about agency coordination.
- Framework of how we can best communicate together.
- Wrap-up of great ideas from the participants.
- Goals of the event- to ID federal responsibilities to address climate change and gain consensus on priorities. We began yesterday to discuss what our responsibilities are, start to brainstorm of a best way to move forward

Highlight main points-

- 1) In response to dr. Corell, there is a sense of urgency for federal action, we need to work together to make sure the federal action is unified.
- 2) The benefits and importance to remain in communication with each other, for ourselves and for our non-federal stakeholders
- 3) Consistencies of data and communication of data to most effectively work, also recognizing the uncertainty of the data that we are using
- 4) The importance of adaptation, that it historically is not talked about as much as mitigation ,but it is a large part

Agency briefings: Panel 1 (Climate observations and modeling):

See PowerPoint's to supplement notes

NOAA/OAR (Eileen Shea)

- Ha- the Hawaiian word for life, it is important for us to share our “ha” during the meeting, it is rude to not respond to a Hawaiian “ALOHA”
- National Climate Service- “secret service” group of individuals in NOAA focused on how we bring NOAA’s strengths on climate together and collaborate. See that there will be more progress at the local and regional level before we get to the national level. Start with an imagine from a NOAA executive session.- the impacts of climate change, why it matters! It affects air quality, ocean life and ecosystem, sustainable food, coastal inundation, water, weather, security, and many others. Climate information will need to be considered in a myriad of environmental, economic, and social decision.
- Suggestions that there is a bigger climate influence other than El Nino, one that we are affecting. NOAA committee on earth sciences is now a council in the executive office
- US global change program, funder of climate change science. Responding to Climate change will take a unprecedented collaboration among everyone, feds, states, NGOs etc. The goal is to provide high quality climate information and services that are user-friendly, responsive and relevant.
- Graphic that explains what the administrator is talking about; most of the current investment is in the science of climate change- research, monitoring observation, modeling assessment etc. Agencies also are fulfilling their missions, sometimes talking with the science, sometimes not.
- Adapt- is admitting defeat that we did not win against the fight against cutting emissions and mitigation. We now accept that even if we went to 0 emissions tomorrow, that there still will be a lot happening in the next 50-100 years no matter what because of what is already in the atmosphere.
- What about a climate service that helps all of the agencies to guide the science program to provide something that means something on the ground to people outside of the agencies? NOAA has a long history of working on these kinds of problems, our mission makes it imperative for us to work on things like this.

- We think that regional matters, it is how you get to communities, managers etc. It is easier to work when you define an area, a place; it makes it more manageable than looking nationally.
- If I had to bet on the on what would be the biggest money investment in the future it will be vulnerability assessment and adaptation planning, likely with a high focus on regions that will help people plan for climate change.

The guiding principles or rules of the road on how will NOAA behave:

- Start from credible sound science information, make sure our messages are credible and consistent.
- Dialog with our stakeholders, listen to them as often as we speak on what we know, we need to listen to what they do to make the information the most useful for them.
- Driver right now to create a climate service in NOAA, is human caused/ human influenced climate change, but it is recognized that we need to acknowledge the current natural variations in weather patterns
- Providing advanced information, models and scales, and useful levels ie. Regions
- Monitor impacts
- Look at problem focused or solution focused projects (ie. Coastal inundation)
- Living marine resources, case study focus the resources there
- NOAA believes that there is a communication, and education, climate literacy component to what we do. Not everyone can be expected to navigate our website. NOAA has invested the time to create a NOAA climate service portal, to house all of the pertinent information in one place
- The 4 P'S- real people that live in real places that are defined by that place, understand the possibilities that we are facing and to understand the partnerships we are creating.

Dan Walker (Climate Program Office)

- He came to NOAA to work on Adaption specifically
- You either mitigate, adapt, or suffer-----we will be doing a little of all 3.
- NOAA climate program office, one of the big jobs is to form partnerships
- NOAA has a broad reach, and access to climate information. He wants to facilitate interaction between the climate information and the needs of others (i.e. other fed agencies)
- Climate Assessment and Services Division (CASD)/Climate Program Office (CPO) program activities---PROGRAMS- Sector Application Research Program (SARP), Regional Integrated Sciences and Assessments (RISA)(new England does not have a RISA...yet), Transition of Research Applications to Climate Services (TRACS). National Integrated Drought Information System (NIDIS), Applied Research Center (ARCs)

NOAA/NOS (Beth Turner)

- Detailed information of what's happening regionally at NOS.
- The different offices of NOS, their activities, what they are doing (SEE POWERPOINT SLIDE)

Living Marine Resources Activities:

- NCCOS
- OCRM
- NMS
- OR&R

Coastal Vulnerability and Built Environment

- OCS
- NGS
- CO-OPS
- CSC

NOAA/NWS (Laurie Hogan)

- Eastern Region – SC to ME
- 4 weather forecast offices in New England
- In 2003 NWS recognized the need for climate services in an organized fashion. There is now climate service staff through out. There is a national portal for Climate Products.
- You can link to NOWdata for data.
- Local offices to local studies that add climate context to the everyday data gathering. How does the information fit to the climate at this station? ID anomalies etc.
- River Forecast Centers- nationwide all of their perception, radar data, perception observation, all of the information is put into useable files. (ie. Shape files).
- The Hydrometeorological Design Studies Center- has precipitation frequency data that can be downloaded. New England information has begun to be updated 2 years ago.
- Climate Prediction Center, Seasonal Forecast/Outlooks
- Climate Change Literacy NWS and Public
 - since 2003, all the climate vocal personnel have been trained.
 - Public doesn't always know where "Weather ends and climate beings" --- NOAA is embracing their role as educators
- NWS ER thoughts- we need to build the technology to provide the services. Need to think about how people are going to use this information. (Ex. Integration of information into GIS, Google maps etc.) "if you build it, they will come" users examples- insurance, engineer design, fire and drought people of concern.
- Welcomes collaboration and partnerships with other agencies!

USGS (Dave Russ)

see PowerPoint

- Over 30 years of climate change science research
 - Bird Surveys- how cc is affecting them
 - Stream gauging networks, characterizing stream flow

Management Issues and Challenges

- Trying to develop a probabilistic framework for their models (ie. CVI index)
- Doing a Sea Ice in the arctic study, how it will effect the wildlife (iei polar bears)
- 4 ways to organize science and monitoring (see slide)

3 major products

- Climate Effects Network (CEN)- national climate early warning system, large Core efforts on areas of large concern. Significantly partnered with many groups (i.e. NOAA, agriculture etc.). 1st pilot effort is in the Yukon in Alaska. An Appalachian Gradient Study is being pushed, and area that could potentially be a pilot site.
- Carbon Sequestration (already assessing geologic sequestration of carbon) – energy and security act- charged USGS to develop a model for biological sequestration
- National Climate Change and Wildlife Science Center (community wide- inside and outside government- to understand the effect of CC to wildlife), 5-7 hubs around the country to look at specifics. Meeting to discuss how to focus the Hub (i.e. Watershed based, geo-political, etc.) Underneath the hubs would be a series of smaller groups, working collaboratively with communities to understand the greater issue.

USGS wants to integrate services and enhance existing programs with the other agencies.

QUESTIONS:

Is there a source for all of the down-scaled models available?

- Norm EPA- EPA has an intern that is attempting to do this, recognizing there is a lot of information from many agencies that is needed.

Is there comprehensive data on energy transfer from ocean to land interface?

- No- maybe for some areas but not all areas

Landscape Conservation Cooperatives

- USGS and FWS are working together, more to come in FWS presentation.

Is there a mechanism to avoid redundancy between NOAA and USGS?

- Some, but Eileen thinks in the next few months that there will be an overarching organization for climate. Conversations are happening at various scales, trying to find the niches and build off of each other.

Agency Briefings: Panel 2 (built environment):

FEMA (Mike Goetz)

see powerpoint

- Study in progress on the impacts of climate change on the National Flood Insurance Program.
- FEMA is 18 billion dollars in the hole, Katrina was a huge hit, more than anything seen before
- Not as much confidence about the numbers of hurricanes per year as other climate change impact predictions.
- 1988-2000 previous climate change and long term erosion studies have occurred -ex. 1991 “Projected Impact of Relative Sea Level Rise on the NFIP”
- Sea Level Rise is not directly considered in the NFIP

FEMA study

- The objectives of the study- determine likely changes in US Flooding
- Not doing climate assessment on their own, using other’s data (ex. IPCC, CCSP)
- Doing a lot of approximating for flooding, not able to do a whole lot of new modeling because the vastness of the program.
- Going to ID Characteristic Regions- (ie. Hydrologic Factors)
- 3 types of analyses- Riverine Flooding, Coastal Flooding, Catastrophic (event-based) modeling
- Expect results from coastal section- end of this year
- Climate change piece-March next year
- FEMA.gov for progress check

Risk Maps

- 60-80% of land area with new Risk Maps.
- 250-300 million dollars a year for the mapping to continue
- RiskMAP- doing quality assessments, what happens from a flood. Assessing the Risks, outreach with the public and all our partners- many lessons learned

Hazard plans at state and local levels.

-ex. plan to raise the height of properties

FHWA (Rebecca Lupes)

- Becky’s office- Sustainable Transport Climate Change Team
- FHWA organization- HQ and then an office in every state, then resource centers
- Three Climate change angles within FHWA- transportation GHG Emissions, Infrastructure Risk, Collaboration
- FHWA is a user of other agencies data

- New Transportation Reauthorization Bill coming soon- hoping it will guide us on GHG emissions
- Currently developing a strategy for Adaptation
 - Trying figuring out how to approach this
- Small study to develop a guide on how to conduct a risk assessment for transportation infrastructure within a state.
- Planning to update flood plain regulations
- Informal study- to find out what actions state DOTs are doing on adaptation throughout the country. Only 13 states are currently doing adaptation work- Maine was one of them
- Collaboration- integrating environmental information into long term FHWA planning and now climate change specific information. Now encouraging collaboration with other agencies. Looking at mitigation (ie. Wetland restoration) collaboration efforts.
 - DOT planning is including adaptation and mitigation.
- GHG collaboration- executive level interagency meetings occurring, most of present agencies are in attendance
- Gulf Coast Study- 2400 miles would be inundated with 4ft Sea level rise in the Gulf Coast
- Atlantic Coast Study- FL to NY- GIS analysis on SLR impacts to infrastructure
- NCHP 20-83(05)- just getting underway, but is a multimillion dollar study

www.fhwa.dot.gov/hep/climate

www.climate.dot.gov

USACE (Kate White)

- We are a science agency although, most people don't think of us as that
 - Early ice core work in the 1930's in Greenland and Antarctica
- USACE is the largest water resource operating agency in the US
 - Don't own the water, but we manage it
 - 50% of projects are past their operating age
 - 2nd largest recreational agency in the US
- Everything in our portfolio is at risk from climate change - not much we can do for mitigation, but we can do a lot for adaptation!
- We produce 25% of hydropower in US.
- May 2007- meeting on Climate change operating agencies – USACE and bureau of reclamation, Science agencies- USGS, NOAA
 - Put the 2 major operating and the 2 major science agencies together, and move together under one report
- CEQ- 19 agency meeting, including the Corp. , asked each agency what they are doing

- Key Point- the need for alternatives that perform well over a wide range of future scenarios
- Adaptive management is the way we are going to do it, building on others science to create adaptive management plans
- Sea level Rise planning guidance is coming out
 - how to calculate SLR
 - Sea Level Change Scenarios- the key is to ask *when* this is likely to occur
- USACE has stimulus funds to work on some Downscaling of climate models
 - Hoping to have some of the models out by the end of this year
 - Also working on geo-special tools to get the data out.
- FY10-\$14.5 million a year for Adaptation-to look at resilience and to reduce vulnerability for Corp infrastructure
- Ongoing activities- collaboration collaboration collaboration!
- Want to move forward on the most creditable science available
- Planned a carbon cycle study workshop on non-stationary Fall 2009
 - evaluation of coastal vulnerabilities
 - anyone interested, contact Kate
 - want to talk to other agencies about coastal vulnerability assessments
- Stationarity- everything built on the assumption that things are staying the same (past looks like the future), but the equilibrium paradigm is an old idea, we need know what new assumptions do we make when we design projects, we need to be planning out at least 100 years.

Coast Guard (Ron Beck)

see PowerPoint

- Chief of energy and facilities branch- LNG, windfarm, tidal projects etc,
- Territory- Maine- to NY Harbor and VT
- Lighthouses- relocation because of erosion etc.
- Maritime domain- national security, enforcement, search and rescues, help NOAA (i.e. right whales in Stellwagen bank).
- Continuous daily presence in the environment.
- Having to relocate and modify various Coast Guard stations because of damage. (i.e. Storms)
- Loss of water at facilities (i.e. ground water)
- Trying to reduce GHG within their own facilities, not as aggrieved as it will be in the future
- Northwest Passage- Ice breaking aspects for US is under CG jurisdictions

- out of 3 vessels, 2 are broken, only problem is Russia and China are competition
 - foresee regular navigation in the next few years, treaties, pollution control etc. will be emerging issues for the area
 - it takes 8-10 years, for structure to be up and running
 - if we have no presence, it is discomfoting, because Russia is there and has a presence.
- Emission Control Areas- regulation on behavior and restrictions of burning only certain fuels, if don't comply there are consequences.
 - Marine pollution control act- this is the regulatory act for control, working with EPA
 - Talk of international emissions trading scheme for vessels.
 - CG will not let you in if you don't comply wit the Marine Pollution Control Act requirements
 - 3 new positions for Marine Transportation System recovery, what happens after a major storm event, these planned actions could also work if it was a man-made event. (i.e. bridge comes down, have to deal with how to get the bridge debris out of there)

1-95 corridor

- very vulnerable
- solve the problem of transportation with large container shipping instead
 - reduce GHG as well and get the trucks off the road
- Offshore renewable energy initiatives
 - ex. cape wind
 - NIMBY
 - Banna- don't build anything any where
 - Idiot- id do it over there

USFS (Steve Davis)

- 1/7 of the US is National Forest and Grasslands
- Work with state and locals to sustain forest and grasslands
- Forest are important for the country, and a resource for our water supply
- If we don't give direction to landowners, they will convert the forest to something else
- FS has developed a vision for the entire agency for climate change (see powerpoint)
- FS has developed a strategic framework (will send for meeting materials)
 - to achieve goals, need to work with other Feds, states and locals

Actions

- woody biomass utilization- how to best use the existing wood, in private lands specifically (conversion in schools from oil burning to wood burning)
- carbon sequestration program- working with land owners, studies of carbon, how to develop a market for land owners for carbon credits, to get a return for their lands and how they manage it
- Forest Health and Forest Pest Management- species are moving and effecting new areas because of Climate change
- Fire Management – frequency and severity of fires are increasing , trying to figure out ways to mitigate these, and to have plans in place for wildfires
- Forest stewardship- keeping forest forests, ecosystems services, market this
- watershed management- working with communities on green infrastructure, riparian buffers for source waters

Summary- what is our niche, where do we engage? Looking to partner with other agencies.

2nd Power Point

- FS Mission
- When you look at trees, you can tell that some tree species are becoming obsolete in their former territories, this effects the ecosystems that rely on these species
- we have to make recommendation to the public and for our forests on what to do for the next 120 years, what is resilient
- Katarina and Hugo- desolated trees, need to find more resilient trees for hurricane regions because increasing hurricane intensity
- Stand replacing wildfires are increasing tremendously, trying to make the forest stands more resilient.
- Reforestation needs to follow disturbance, but what do we plant?? It needs to be resilient so that it will last.
- We are getting species to Canada because of the warming climate and species from the South are moving in
- Publications on harvesting carbon, and how much carbon can come off ecosystems
 - then trying to take the research and translate to landowners

Speaker. State of the Science: A New England Regional Context (Cameron Wake, PhD. Climate Change Research Center at UNH)

- Biggest Fear- we all stay in our solos, and solve individual problems, but not the problem at large. No single sector can address climate change on its own. There needs to be collaboration between everyone feds, universities, state, ngo's etc.

- Believes that the regional scale is the appropriate scale to solve this problem. Local to regional levels are where adaptation will be huge.
- We really do need to work towards sustainability
 - Encourage to read- New England futures. Org
New England: Six Teams – or One?
 - Sustainability is not about being “green”, it is not just about operations
It integrates into 4 systems- climate and energy, biodiversity and ecosystems, food system, and culture system
- Book Recommendation- The Sustainable Learning Community
- UNH- longest endowed sustainability program

Climate Change Science

- Vostok ice core graph, with business as usual (BAU), CO2 could reach 1000ppm---where it has never been above 300 ppm
- Systems are changing far more rapidly than we originally thought
- Greatest warming in winter in the NE has happened in the past 30 years
- Change in days of snow cover—across region, a decrease in the snow cover
 - Durham ex. 30 few days of snow cover currently
- There has been three 100 year flood in the past four years----we are already seeing a lot more events of precipitation.
- Sea Level Rise- it is happening
- The Northeast Climate Impacts Assessment was written to fill a void because the federal government had not done a regional assessment.
 - Out of 50 contributing authors, only 6 were from federal agencies (some of which took a risk, because it started in 2005-6, and it was Climate Changed focused)
 - Data is available at Northeast Climate Data website
- NARCCAP- assessment downscaling of models
- The Northeast Climate Impacts Report focused on 2 emission scenarios (1 high, and 1 low) from the IPCC report
 - The models to a reasonable job capturing the annual trend in temperatures
 - 2050-2100 is where you see the major differences between the 2 scenarios--- because the impacts from past behavior will be seen up to 2050
 - Under high scenario 65 days in Boston will feel greater than 90degrees (now there is 1), that could translate into 20-40 bad air quality days
 - Increase in precipitation- most will occur in winter, mostly as rain not snow

- More extreme precipitation events will call for the need of adaptation for our infrastructure (i.e. wastewater treatment plants, roads etc.)
- Drought- currently 2-3 every 5 years in short term, high emission- 1 drought every year, 30 in 30 years

Impacts to sectors

- Forests- different Forest types, \$19billion economic a year, expect that entire lost spruce, lost of foliage trees
 - hemlock woolly adelgid - increase parasite, decrease in the forests
- Traditional fruit crops may suffer- i.e. Cranberry- need 1800hrs chilling, under high emissions, will never reach this many hours
 - apples could survive, could switch to this industry
- Potential loss of commercial cod fisher- under high emission scenario- there will not be any habitat that can sustain juvenile cod which could cause complete collapse of cod fisheries

Coastal Inundation

- 100 year flood, based on tidal gage flood. High-emissions scenario, 16 SLR--- graphic of Boston SLR
 - 70-90billion to save Boston

Kinematic Constraints on Glacier Contributions to 21st Century Sea-level rise

- SLR might go up by 7feet.
- His range- 3ft to 7ft
- Sept. 5, 2008 VOL 321 SCIENCE

How can federal agencies help cities, regions, and states improve adaptive capacity and reduce vulnerability?

- Provide decision relevant information (talk to stakeholders before the study to make it useful!, need to ask the stakeholder what they need to know about Climate change- engage the stakeholder, then collaborate)
- regional collaboration and engagement across all sectors (continue, more meetings like this, invite others-Uni, NGO, Business)
- Focus on sustainability and problem focused

Call for regional assessment

- Work with NROC and all feds on a future project for a regional assessment
- 2nd - need governors and legislators interested
 - summit on climate and energy, fall 2010 want to work with us for a 2-3 event focused on climate and energy, for all sectors

New England products= students and ideas

NH Climate Action Plan

- Non-profit, states, uni (but no feds)
- perhaps integrate with Federal Regional Activities
- focus on reducing GHG emission that also promotes the growth of new jobs
- for every action, calculated how much GHG emission would be reduced

Economic Benefits vs. Avoided CO2 emissions by 2025

-there is a huge net positive for net economic impact

We are at that fork---the future is ours, we need to get off the BAU pathway, I would argue sustainability

Questions:

Has engagement of the fishing industry occurred?

- Not in our assessment other than the collapse of the Cod industry, I would look to NOAA as the point of contact to engagement, move towards sustainability

It takes a lot of work to collaborate! Make it central, engagement with outside

What is an example of a decision relevant data?

- tell the future for flood, tell them that the amount you have to adapt depends on what humans do
- data in degree Fahrenheit ----make data simple and useful to the common man
- always ask your stakeholders

Agency Briefings, Panel 3 (management):

EPA (Ken Moraff)

- Mitigation- a surprising area to make a significant impact
 - Example: EPA is responsible for WWTP and Drinking water plants—we are working with them since we regulate them to bring down their emissions, since they are huge energy hogs—we have ID projects to reduce emissions by 1/3. If we can replicate across to New England we could save and reduce GHG as much as cape wind. We have leverage in areas we may not realize.
- Many similarities and over lap among agencies. Everyone is trying to find out niches. What are our unique areas? Where does it make sense for us to work?
- EPA- we have the authority to implement the clean water act---everything is going to be effected by climate change
 - Ex.- pollution load regulations: need not stationary as well! We use past precipitation trends for regulation of pollution loads.

- Design of storm water systems, and regulation of these system needs to change
- the way we manage our drinking water systems
- Bottom line is there are lots of things to figure out

EPA has developed a national broad strategy for its water programs.

- There is a lot of systems and procedures in the way we do our work, it is hard to integrate climate change into our procedures and guidelines, when where and how do we do this?? Especially when there is economic consequences, one that is defendable
- Lots of challenges for us to think through
 - program by program? Adjust this process for CC
 - overall philosophy change? Look globally?
- Lisa Jackson- “we need to stop fighting the rain”—we need to figure out a way to deal with it, not fight it, maybe not catch and pipe the rain but rather look at ways for it to be absorbed into the ground.
 - Same things we need to do for CC, we need to do for our core programs anyway.

Climate Ready Estuaries

- A way EPA is thinking through climate change adaptation
- in order to make sense of it, need to focus on a place
- Piscataqua Region Estuaries Partnership help communities figure out culverts
- Mass Bays- Salt Marshes- what’s most vulnerable, what are the management practices we need to provide
- Casco Bay- trying to map and ID important wetland areas, also trying to develop communication tools to constituents
- Long Island Sound Study- Sentinel monitoring to effectively detect climate change, also developing a coastal climate adaptation plan

New England Environmental Finance Center

- decision making tool and a communication tool, gives the economic picture as well

Water resilience conference

Existing partnerships

NPS (Dave Reynolds)

- Region- Maine to VA out to WV/PA
- Going to focus on the NPS niche and what the NPS needs
- Going from the evidence we have been seeing, what we can do about it
- In the past year- hired a Fulltime climate change coordinator
- formed 6 ad hoc committees (legal and policy, planning, science, resource stewardship, ghg emission and sustainable operations, and communication)
- The Joshua trees are walking off the reservation—getting too dry and too hot

- Death Valley—getting wetter----might sustain Joshua trees in the future
- Mitigation- leadership by example- working with EPA to developed climate friendly parks , an emission inventory
- NPS- Bottom up organization---as a whole a work off ideas from all the different parks
 - some leading groups are in the pacific west region- set 2016 goal for carbon neutral parks
- Adaptation- how much do we spend when we know what is coming? Goal is resiliency, protect endangered species.
- Monitor vital signs over time- have meta data that is stored forever
 - Other agencies are welcome to use the data that is available
- Engineering personnel are looking at adaptation from NPS structures (visitor centers- mobilized)
- Focusing on the planning aspect
 - NPS can offer experience, general management plans are 15-20 year plans for what is going to happen in the park, set goals and move toward it, if need to adjust goals, you adapt the plan
- Communication- inspiring resource stewardship
 - NPS is ideally positioned to raise awareness on climate change and communicate solutions being implemented across the service and department
 - NPS offer their assistance to get the word out to the “people”
 - There is a northeast climate change committee established
- Need help building resiliency
- Plug- mid-Atlantic land use manager climate change adaptation meeting, March 9-11, 2010

NRCS (Andrew Lipsky)

- NRCS- we don't have our act together on climate change, we are just starting, but CC is effecting us
- NRCS born from the Soil Conservation Act
- Carbon sequestration in the soils.
- Conservation happens through HQ and each state office- has national goals
 - big broad goals, states figures out conservation practices and BMPs, there are representatives in every county in the US. Can help landowners develop a conservation plans- ex. 45000 cost-share incentive easement agreements with private land owners
- USDA- draft climate change goals

- NRCS niche
 - farm bill funding- conservation incentive programs, direct or indirect effect of reducing carbon
 - have some resource monitoring, forecasting, and assessment
 - NRCS biggest effect is getting the conservation on the ground, dealing with the stressors that lead to ghg
 - Opportunities for managing ghg and carbon sequestration targeted incentives
 - Programs to bring conservation on the land
 - Farm Bill \$54 billion opportunity, 90million a year for the next 5 years for the northeast
 - financial incentives to move from high input corn silage to grass based
 - restore oysters, also build resiliency to the habitat, paying farmers to grow restoration oysters along with their market oysters

- Take away
 - High farm bill funding levels
 - Low conservation field staff levels
 - Complex multi-resource/multi scale conservation needs which will now include climate change activities
 - --encourage involvement from other agencies!

NOAA/NMFS (Mike Johnson in for Tom Noji)

see PowerPoint

- NOAA fisheries report- stewardship responsibilities for living marine resources and coastal ecosystems.
- Climate change issues for NMFS' resource management
 - there is legislation mandates to protect resources – NOAA fisheries has had conditioned discussions on climate change on how to manage the resources they are responsible for.
 - ocean acidification, loss of sea ice, ocean warming, sea level rise

- Regional Observation based on recent research- Fogarty et. al report on Cod fisheries---may be gone by end of century
 - Atlantic croaker will spread northward in to southern new England
 - winter flounder nurseries will become synchronized, with a boom or bust scenario for the species

- Management Needs- cause of concern for species from the management side
 - study on the needs for the region, -clear that this region needs information tools and services for climate change and spatial tools monitoring, models scaled to a watershed level and guidance

- Examples of CC initiatives in the region
 - look at long term plans for biological productivity and sustainable fisheries
- Some key research Questions:
 - Will MSY increase or decrease w/CC?
 - Do we have the infrastructure to respond to changes?
- For the modeler, the degree of down scaling is not available for species specific
- 3 primary research topics for science center
 - primary production and mechanisms in relation to species productivity and distribution
 - habitat sustainability, services and connectivity
 - Integrated climate- ocean ecosystem models
- Program organization is around 6 working groups; the workgroup is responsible for the science to meet specific workgroup goals. Then the program is governed by the program management working group and by program leaders, then the program steering committee
- The key to success is not just the funding but the collaboration among NOAA and outside the agency with other federal partners and other parties.

FWS (Sherry Morgan)

- Region- VA and WV to ME
- FWS has a climate change strategic plan and a 5 year action plan
 - Organized similar to others- mitigation, adaptation, education
 - landscape level approach to conservation
- On-going regional activities- (look at handout, follows along with presentation)
 - where do we have coastal wetlands that will be able to migrate?
 - documenting long term change in soil and vegetation in response to SL
 - developing an ecological integrity assessment in refuges
 - national wetland inventory program- model for remote sensing monitoring of watersheds and habitat.
- SLAMM- Sea Level Affecting Marshes Model - model for wetland conservation and shore line conversion for long term SLR.
- ACJV -sustainable landscape project for migratory birds, to plan for bird conservation, the migratory bird program is out ahead of other programs when talking about landscape scale conservation. Looking at future capacity of lands to support migratory birds.

- Every state agency completed a state action plan specific to fish and wildlife in 2005;
- There is a group prepping guidance for states for what they should consider when they adopt their climate change plan
 - VA MA VT NY moving forward with climate change planning
 - MA-Mahomet center, working together
 - VT – workshop in July
- Working together- NE states been thinking about working together for a while, They pool their money when they work on regional conservation needs

www.rcngrants.org what the states are doing

- Key points
 - a lot to be done
 - money being given in 2010 budget
 - Avoid duplication

Breakout Group Topics include:

- (i) **Adapting to Climate Impacts on the Built Environment (LEADS: *Rebecca Lupes (FHWA) and Ron Beck (USCG)*; Facilitator: Joseph Siegel; Note-taker: Regina Lyons)**
- (ii) **Adapting to Climate Impacts on Marine Ecosystems and Living Marine Resources (LEADS: *Tom Noji (NOAA/NMFS)*; Facilitator: Hugh Martinez; Note-taker: Mike Johnson)**
- (iii) **Adapting to Climate Impacts on Vulnerable Coasts (LEADS: *Diane Gould (EPA) and Dave Reynolds (NPS)*; Facilitator: Elissa Tonkin; Note-taker: Sheila Colwell)**

Notes for Adapting to Climate Impacts on the Built Environment ONLY

Breakout Session Round 1- Built Environment

Notes:

Introductions, Becky and Ron will explain the scope of the built environment, then we will be covering the 4 questions, finally we will make recommendations for the next group for what they should do.

First- formal introductions, say name, agency, and 1 sentence on what you do on climate change.

1. Becky Lupes- mitigation and adaptation issues
2. Ron Beck- Coast Guard, chief of energy and facility branch – traditional and renewable
3. Kate White- ACE institute for water resources, policy, technology climate program guide

4. Tim Gleason- EPA ORD in Narragansett RI- habitat effects, currently no climate change
5. Steve Garebedian.- Fish research, climate related research
6. David Vallee – NOAA NWS
7. Norm Willard- EPA climate and energy
8. Laurie Hogan- NOAA/NWS- team leader for climate services for the eastern region- train staff of climate variability and climate literacy
9. Eileen Shea- NOAA National Climatic Data center, climate service, one of the organizers of the pacific equivalent to this workshop
10. Sherry Morgan- FWS in Hadley, 2 programs, migratory birds- how do we incorporate cc into planning for migratory bird conservation?, other group is how to share cc information w/states as they update their action plans
11. Susan Russell-Robinson- USGS- coastal geology – funding for new project on SLR impacts, DOI – chair for communication for cross cutting topics, FWS lead for the CT River /long Island
12. Beth Turner- NOS- manage research programs
13. Ellen Mecray- work at headquarters for climate research- strategic planner for NOAA, other hat is sitting in Wood Hole for New England fisheries science plan, climate lead for Northeast regional team.
14. Tom Huntington- USGS hydrologic responses to climate change
15. Autumn Birt- NRCS Maine- carbon sequestration
16. Nadine Dodge- EPA intern, climate change impacts on water systems
17. Paula Kullberg- ACE
18. Regina Lyons- EPA Ocean and coastal unit

The built environment for this breakout session is defined as all man made structures- (ex. offshore, roads bridge, pip lines, dams, jetties, water treatment, telecommunication, private property structures on the coast, transportation, ports)

There are 2 other sessions, for what we don't cover in this session.

Think broadly don't limit yourselves at this point

4 Questions:

What are the major issues?

What are the federal roles and responsibilities?

How to manage pace and volume of communications with each other's and stakeholders

What are some specific projects for multi-agency collaboration?

Question 1- Major issues

1. Culvert size
2. Private land ownership vs. eminent domain

- a. current landmark where a private landowner property was seized by the government for condo's because it brought in more taxes
 - b. If a park was losing wetland could you seize private property for migration?
 - c. Need to learn more about ecosystem services, to make that argument.
3. Value of built environment vs. the value of the environment
 - a. Need to learn more about ecosystem valuation
 - b. Meeting on June 12 about ecosystems services on private land, moving the concept of valuation forward, by bringing all the stakeholders together. The meeting was put on by the wildlife habitat council.
4. Permitting building in areas that use to not be considered high risk, but CC models show they will be high risk in the future
 - -the permitting authority will have to deal this issue,
 - -zoning regulations
 - establish a new flood plain
 - -Suggestion of a paper to read: Death of stacionarity and the birth of neohydrology
5. The need to ID what the key vulnerabilities are in the built environment
 - a. Then there needs to be communication of vulnerabilities to the entities that have jurisdiction over these structures/areas etc.
6. Avoid duplication
 - Need to compile a list of what is being done for the built environment
7. Data sets and ways to map where the infrastructure is, need to compile existing current information (ex. Elevation data)
 - NROC marine cadastre is a clearing house however there are security issues and sensitivity of that data.
 - inland infrastructure and where its vulnerability
 - elevation of the roadways- need for FHWA
8. Large investment needed for rebuilding or fixing aging infrastructure
 - put the issue into a bigger context for water waste water, telecommunication, dams, bridge, tunnels, hurricane barriers etc. that are in need
9. Will decision makers let the land go or built hard structures protect and retreat
10. Estuarine environment and its effects on communities

- ex. rural communities get that water from Hudson River, saturation areas are right on the water
11. Dam decommissioning or re-licensing, catastrophic dam failure
 - FERC re-licenses are not taking not account flooding.
 - As the precipitation analysis is done, the requirements for these types of structures are out of data
 12. Sanitation/ Outflows on rivers (i.e. CSO, SSO)
 13. Agreement on the range of climate change effects
 - we need to agree on the ranges of change so then we can work with these assumptions, this effects finances, and many other industries
 14. Deign specs will need to shift/change
 - a. Will effect insurance and property
 15. Bulletin 17-B the hydrologic frequencies needs updating
 - the bulletin determines how to calculate flows, its from the 80's , there is nothing to replace it although there has been a effort for 15years to update, but so far nothing therefore Feds have to abide by it until it is changed.
 - Federally we are still bond by the non stationary part of it; ---states could come out ahead of us and say that this won't do.
 16. Categorization of streams and rivers on USGS maps
 - Systems flow will change as a result of climate change but regulations are made base on USGS maps, therefore even if the classification of what is "*ephemeral*" or "perennial" is an old classification and not what actually exists, we still have to rely on the maps.
 17. Modeling
 - There are different modeling groups that say different things, so how to Feds change their regulations, what model do we follow?
 - What downscaling method do we go with?
 - The Feds need to evaluate the models and agree that these are the numbers we are going to go with.
 - IRIS - Integrated water resources- has not evolved beyond operation
 18. Telecommunications infrastructure
 - Key facilities that may go completely out, they can be in coastal regions, i.e. Black outs
 - this industry needs to be engaged, decentralized, need to build resiliencies into their design

19. Energy- tidal, wind, LNG, electrical transfer stations
20. Transportation corridors
21. Recreation/tourist industry- coastal, water supply,
 - When do you abandon the system? When do you embrace the system (i.e. ports)
22. When do you put your money into mitigation and put the money into adaption?
23. The levees aren't built high enough, who owns the land?
24. Dredging-
 - time of year restrictions
 - opening of new ports for larger ships

Question 2- What are the federal roles and responsibilities?

1. Land ownership/eminant domain----not a federal role, local and state
 - What about parklands? We stay away from eminent domain right now, what about the future, what if private landowners are losing their houses, they want harden shorelines, but its not in the federal interest
 - Look to the providence of new Brunswick, the way ice destroys business, giving opportunities for trading away from the coast, small structures on the coast, larger structures further away and use transportation (i.e. trains) to get to the coast
 - TX state law that prevents rebuilding
 - HUD/FEMA and others, buyouts for land, relocation
 - Federal disaster assistant
2. Ecosystem valuation-
 - Feds need to communicate these to the public
 - what about social scientists in the federal agencies
 - Forest service would be involved
 - NOAA ex. the value of a right whale, Value of a seal/ Valdez case
 - we need a consistent federal message of what we value, there is an interagency workgroup for this (only 4 agencies currently, should expand) USGS NOAA, reclamation, and the ACE)
 - NASA is leading a interagency workgroup on climate change, we should tap this work group for working on ecosystem valuation
3. Permitting high risk areas- water discharges, drinking water regulation,
 - EPA does permitting for drinking water and water discharges

- need to provide a better understanding to what is changing and how its going to change
- assign responsibilities
- improve high resolution data mapping (i.e. LIDAR)
- plan decommissioning (ex. energy sites), valuation schemes will change depending on how long the permit is valued for
- Permitting alternative energy (federal engagement) NEPA process. Example of effects -Heat intensity, new transmission corridors
- a role to inform state and locals
- timescales
- In general there will be a greater demand on those involved in the NEPA process

4. Modeling Coordination

- Agencies need to come together to be efficient with resources
- Agencies need to communicate a whole, better to stakeholders

5. Science- we need to work together, who is going to do it, which one

- its our role to communicate and coordinate among ourselves, avoid duplication
- make sure you clarify roles and responsibilities
- doesn't the federal agencies have particular roles in science that only the feds do, because of the huge investment, across borders
- Feds fund the major investments
- Regional group, develop regional priorities, tap into the national science foundation

6. 17-B Bulletin --need federal agencies to come together

- need to improve modeling, and an agreement on one model to use

Instruct the next group to look at regional scope

7. Flood risk- that's a federal role, across many agencies
8. Overall, Broaden coordination
9. ID priority list, federal adaptation priority list

Question 3: How can we manage the pace and volume of communications with each stakeholder?

1. Get IBM or something like that for someone to donate space (portal/WIKI) to share information

- use existing networks and tools (ex, ProjectWorks to register LIDAR data)
- recognize that investment if needed
- recognize that others may be out there that are already doing this, and may be doing it better

- NASA may be an example for WebPages etc.
- SharePoint – (something that some agencies are currently using to share information)
- security of information is going to be of concern (some things may be in development, or need protection legal implications)- esp. for things housed off government sites
- Possibilities to have a contractor- cheaper quicker better? If they are then maybe they should be doing it
 - i. example – CFI did surveys of stakeholders for NWS
- engage sector associations (professional associations) that are already using and communicating with the stakeholders
- Good Meta data!

Question 4: ID Projects

1. Agreement on interagency Modeling and delivery of the info from modeling to communication about model
 - recognize preexisting MOUs
 - how do we sustain modeling and regional efforts, need a regional climate change assessment in New England
 - Inundation mapping-1st need to get feds to agree on a model/scenarios, time validity, and uncertainty, then put mapping and information on a federal server.
 - Create an agreement to revisit every “?”Years, based on certain climate scenarios.
2. Consistency in valuation- develop a framework
3. Collaboration on our priorities
4. Develop a common taxonomy among federal agencies
 - Then stakeholders can search and get the same results, only problem is others want different language because they don't want to be turned down for funding because the language makes their project appear as the same thing as others.
5. Coordinate on congressional budget requests
 - Regional group go to congress
6. Collection of best practices (BMP) for region
7. Work on the categorization of what river and streams are (i.e. topo maps)
 - USGS, ACE, FWS, FHWA etc.
8. Coordinate agency monitoring networks

- climate effect networks, IWRIS
9. Issue an MOU collectively to further working together

How to direct the next Group:

- more of a regional focus
- address the duplication of efforts
- address competitive issues, not wanting to share data across agencies
- inter-agency competitiveness/conflict and wiliness of agencies
- keep the end in mind
- focus on projects and communication
- common language, a single project
- issue- maintaining attribution
- shared credit-shared responsibilities
- defining niches, but recognizing that there is over lap (map out the constellation of who does what) who is doing specifically (#2-question)
- how do we provide a consistent message, so people don't shop around
- ID the guiding principles, begin with the end in mind, define what the end is
- possibly of a MOU- example of the joint-climate statement provided for the meeting
- Recognize that the Feds aren't the only ones, who else should be here? (for the built environment)
 - what are our respective roles to get them to the table
 - example, pacific has a 26person steering committee including a wide range of stakeholders

Breakout Session Round 2-Built Environment

Notes:

1. Meredith Bartron –DOI/FWS
2. Sandra Knight – NOAA/OAR
3. Michael Goetz- FEMA
4. David Russ- USGS
5. Adiranne Harrison- NOAA
6. Dan Marrone- NOAA/NMFS
7. Glenn Hodgkins- USGS
8. Regina Lyons- EPA (notetaker)
9. Becky Lupes- FEMA (lead)
10. Ron Beck- Coast Guard (lead)

All man-made structures- examples- jetties, bridges, culverts, pipelines, ports etc. and private property

First focus on the issues from the first group, and then see what additional issues that comes to mind

Last sessions issues- private land ownership (issue of eminent domain, CT may be an example of what we can do, what happens to coastline structures as we lose it), ecosystem valuation (what is a compensation value of the lost of resources), building permitting in high risk areas (moving targets ex. sewage treatment plants), ID key vulnerabilities and the consequences, compile current information on elevation, how to inform investments (aging infrastructure), Will decision makers let land go or protect (private / public) protect/retreat, River systems-estuary changes, Sanitation/outflows on rivers, Dam decommissioning/ catastrophic dam failure, design specs shift/changes in assumptions (effects insurance and property), Need to update Bulletin 7B- hydrologic frequency, categorization of stream and river (perennial vs. ephemeral), Federal agencies have different modeling /downscale methods, engage with telecommunication industry and energy transportation corridor- private sector, if we rely on barges will ports be sand?, Dredging whether/ when as CC impacts

Issues From group 2:

1. planning for habitat as SLR
 - beaches will be lost and shore bird habitat will be lost so now the habitat needs to migrate where structures currently exist, need to plan for habitat impacts when planning for new structures as well keep plans for creating new habitat, planning of hard structures may be for natural habitat
 - ID or assessment of which ecosystems to save and which ecosystems to abandon when planning
 - Coastal Barrier Resource Act- do we need to expand this act? Some areas have protection currently, but might need to expand the program so more places are protected, how is it working? Who should take the lead? Multi agencies lead to make the changes
 - Large economic component to changing this act and involving congress
 - Will need to ID who the decision makers, not just congress, need to provide the correct information

Multi-agency assessment on strategic needs and planning for coastal vulnerability

Ecological impacts when building alternative energy projects

- -ex. Wind Farm- look at birds
- Tides- look at destruction impacts
- -there will be more and more of this in the future, we will need to be prepared
- -the projects may also provide new habitat, so make sure we look at it from both sides, look at current proposals- what is missing from them for the future?

Recovery Act Money- shovel ready projects, look at the climate aspects of all of these projects, they are being authorized in a different Act, so look at the projects from a climate view – see if these projects will mean CC adaptation goals, will these projects last the next 50 years?

- This links to many of the topics, data needs , the need for adopting what designs we agree on will be able to adapt
- Some may not need elaborate models, they just need to be built higher in general
- Climate change should be a priority when reviewing proposals to build

Suggestions from last group-

- more regional focus
- address the duplication of efforts
- explore interagency competitiveness/conflict (make projects realistic)
- Explore common language- OMB
- ID common principals with goals in mind
- Who else would be at the table with the Feds, what is our respective roles to get to them to the table (think of projects beyond the Fed government as well)

Brainstorm now, the prioritize the projects based n this other groups suggestions

Projects from other group- interagency modeling and delivery of information to decision makers (recognize existing MOU, need regional CC assessments in NE, inundation mapping, 1st get fed agreement on scenarios and time validity put on a federal server), consistency of valuation(built and ecosystem), collaboration on our priorities, coordination on congressional budget requests, collection of BMP for region, categorize streams and rivers- USGS, CORP. FWS, FHWA., better coordinate monitoring networks climate effects network IWRIS, Issues an MOU collectively to further working together.

Projects from Group 2:

1. MOU and Strategy for participation
 - What is the step forward? If we are going to do as a coordinated multi agency effort, we need to formalize as a formal group. Carry a pathway along with the MOU. Under the MOU the group can create a strategy for participation
2. Geographic projects: location projects- wind project? A dredging projects?
3. Culverts and Estuaries, Bridges (Place-base project)
 - understand their vulnerability on coasts
 - pick a stream or river to work on
 - work through existing projects (i.e. EPA National Estuary Program, NERRS)
 - Start a project in a national park or wild life refuge
 - This type of project could yield quick results

Culverts

- Many agencies have culvert projects occurring, perhaps bring everyone together to talk about these projects, what's working, how we can influence
- Get Eastern Federal Lands Division–DOT involved on a project, they could provide funding potential (ex. roadway culvert)

4. Sea Level rise Mapping

5. LIDAR

- USGS stimulus package projects
 - Analyzing the data, coordinating the data
 - Coordination to make others aware of the projects and proposals out there and what we are working on
 - Regional vs. single project (i.e. all of New England or a single state)
 - Compile a list of projects and proposals
 - Resolve issues that everyone in the agencies have their own clearing houses, how to coordinate these efforts
 - Existing efforts i.e. ProjectWorks
 - Storage and Availability of data for all agencies to use
 - ID who is funded to do LIDAR
- 6. Bridging communication gaps around issues (i.e. LiDAR), also bringing private sector, bring in those who are actually building structures
 - Team or committee to ID a project that is realistic
 - Bring staff and the responsible partners together
 - build on the collaborations
 - Budgets? Money to put people together, put planning in place to get clearance to get permission to go to these meetings. Plan on 5-10 days a year devoted to these issues.

7. Impact of CC on newly proposals for energy projects

- how much SLR is going to be taken into consideration
- look at the existing projects that are occurring, are they taking into consideration of CC
- encourage new NROC alternative energy group to talk about CC
- look at regulatory schemes
- hypothetical Executive Order in 2009- charging agencies that they must look at climate change impacts for projects when they are reviewing

New alternative energy

- Ensure CC impacts are considered
- NROC can be charged
- Check with MMS- EIS board
- MOA among regional agencies
- Bring MMS and FERC into this group
- consider habitat/ ecological impacts as well

8. EO-11988-pressure value of flood plains
 - FHWA is looking to update their floodplain regulations
 - Useful tool (FWMA, FHWA)

Breakout Session Round 3 -Built Environment

Notes:

Defined what was meant by built environment

Group 1's projects

Group 2's projects

Rather than spending time on issues, this group will look at the existing projects listed, and asking what is really important and is this missing from what is already listed

Projects from Group 3

1. USGS has 2 existing projects on SLR effects on ground water
 - what does increase ground levels have effect on building foundation, and building submerging,
 - What about ground water supply wells?
 - Coastal ground water issues have not been giving much attention.
 - The dewatering costs and efforts that will be needed to keep the cities work (i.e. dewatering the subways).
 - Since USGS already has 2 projects already started, perhaps encourage partnerships on the project, currently Yale University and TNC- their funding ends in 3 months, hoping to bring others in to continue the projects
 - project is focused on CT and Yale because the project was created when they wanted to design their new basements taking climate change into consideration
 - USGS want to make this project for all people along the coast (beyond CT/Yale)
2. need for regional vulnerability assessments and an example of demonstration projects that could eventually be scaled up
-SLR, Culverts, Roads, ground water
3. Food list of built environment vulnerability and risk to inform new projects and to coordinate how we handle these risks.
 - coordinate and communicate jointly to the public and stakeholders
 - people are going to want to know when we are in the their towns, so even if its on a regional level, make the project feel local as well,
 - downscale vulnerability projects from regional to local, give examples to locals so they now what they can do within in their own town

- Ex. the NEP projects
 - List of issue, list of geography, list of demo projects—
 - Planning support toll?
 - Enhanced the spreadsheet from the 1st day, add vulnerability column
4. Coastal inundation visualization projects
- combine modeling, (ex. wave run-up model) to show how communities will flood,
 - keep a library of maps at each level of SLR
 - happening at various areas/agencies, communication of what's going on
 - having to pick projects based on where LiDAR exists, but with new stimulus money and more LiDAR available- lets do it right
 - this is a great communication piece to show risks of climate change
 - ensure consistency in methods and models across the board
 - Visualization projects, capture the issue in a real way for towns
 - need to get the FEDS together because there is a capacity funding issues for large scale projects
 - categorizing individual activities as a whole so everyone what knows what each other is doing or categorize other projects that are ground-up and that involve new collaboration projects
 - the need to work on a regional scale
5. Regulatory and policy hammers
- considers opportunities of what we can influence that force change
 - federal decisions about climate change (ex. habitat), we comment on permits to see if it will effect habitat or how
 - we are not sure how we are going to incorporate climate change comments into the permitting process therefore putting interagency heads together to decide how we will make our recommendations would be worthwhile
 - need for how to incorporate climate predictions into regulatory decision
 - Ex. water temperature change in the near shores, what is the cumulative impact wit that and LNG terminals, how do you do an EIS when the baseline is changing?
 - First there is the need to agree on the climate change projections, then make decisions based on that
 - Better understanding of other federal agency goals when they comment on other agency projects
6. Create an inventory of regulatory decisions (and agencies involved) related to climate change
- ID across the region: what topics are most commented on most often (i.e. SLR on projects), how are decisions sensitive to CC, how do decisions deal with uncertainty of CC predictions. This is the level of refinement that we need. If this is done regionally, perhaps at NROC, this could change National Policy.

- the process has not been done, have the region come out front
 - perhaps focus on a category of projects (ex. highways, I-95 corridor, railroads)
 - if we did highway, who would be involved?(EPA, FRA, Coast Guard (bridges for RR and highways), EPA, DOT, NMFS, FWS, Army Corp., State technology transfer centers, NOAA at large---- states and local roads will need to be worked on too)
 - Others: FEMA, Homeland Security, Forest Service, DOD, NRCS, FERC, MMS, NPS
 - Ex. FHWA example- EPA comments on their EIS projects, but the general comment is “please take into consideration CC –emissions and adaptation” but the specifics could be worked out regionally to agree on what they will do.
 - Need to keep in mind that we have national policy that we must follow
 - Warning---everyone is spread thin, it is hard to get everyone together, creating a new group may not be realistic, there are already existing groups (NROC, GOM, Sudbury, New “Gloucester group” for energy projects)
7. Need for training programs on climate change for existing staff collectively.
- Share information through webinars and meeting interagency wide to increase education and awareness
 - NOAA climate portal is an example of how to educate/training
 - Train staff on an interagency level (i.e. Those commenting on NEPA, NPDS etc. permits)
 - ex. MMS proceedings with cape wind
 - Its never been a priority to incorporate CC into agency decisions, this needs to be changed
 - Train people in non-stationarity
 - Ex. 100-year flood concept, 17-b was a federally convinced to
 - keep consistent across the nation, agree on models and what will be taught, have it updated yearly or at least more than once
 - This project is critical for our everyday jobs, a framework could be used for our every day jobs (ex. NEPA process)
 - EPA HQ NEPA office, gave money for reviewing offshore energy projects-one idea, there is no guidance for how we review these projects, could use this money for creating guidance

Day 3, THURSDAY, June 4

Breakout Topic Report Outs: *Built Environment*

A few salient projects that kept coming up

- modeling and getting the information to decision makers

Inundation mapping, agreement on scenarios, federal server for the decision makers

- LIDAR- information collection and coordination
 - compile list of projects that are going on
 - storage and data availability, improve the upkeep of data and available to needed users, then communicate the availability to those who need it
- Insure the CC impacts are taken into consideration in new energy development projects (i.e. off shore)
 - focus of impacts of these projects on the environment
- Look at culverts and bridges
 - pilot project in a national park or refuge, or NEP
 - redesign project so it address climate change
- Look at regulatory and policy hammers that currently exist in the government, how can we force the climate change issues,
 - it is core function of our every day job, reviewing projects, however there is a resource limitations to actually come up with this list. The NEPA process hold the hammer, from the permitting agencies- this could be a quick win through the permitting agencies, FERC , MMS, MIRAD
 - Barriers: time and resources, inconsistent data sets or time series that make the over all argument less effective
 - USGS 2 projects hat is occurring in CT that is looking at effects of CC on ground water
- list of agencies involved in different types of projects
 - Consideration of ground-up projects
 - broad scope project, or ID a specific stream or bridge

Vulnerable Coast Group (including watershed)

- Overall theme through the 3 groups is that there is a lot of information out there (i.e. regional monitoring) the US in general needs to collect and organize information on Climate change; it is currently in various forms and formats, including stakeholders.
- instead of figure out what to collect, perhaps focus on the synthesis of the existing data
 - stakeholders are getting fatigued with the same questions
 - monitoring information and surveys that have been done, and existing programs that we need to tie into as well (ex. the US is putting out a national climate change assessment, information pulled out of this report should be tied into what we do)
 - the farm bill is looking at state conservation plans, the states are looking at all of their state conservation needs, we don't need to ask them, read the report.

- Need for a consistent business approach for NROC activities that we will be involved in. It will take money to do some of these collaboration projects, the money put in should show that we save money in the end, take a business approach so that we can continue to grow.
 - Barriers- the need to establish a system for resource and staff to carry this out, great lake collaborative is an example of how people work together and get funding as well

Projects:

- Regional monitoring effort, make sure there isn't stove piping (ex. watershed or water projects/assessments or monitoring stations)
 - there is all kinds of monitoring occurring, but needs to be linked and driven to real needs and where can we be most effectively
- USGS- 2 CT projects in the coast, one dealing with ground water and the second is a watershed project including ground water
 - trying to get more partners involved, everyone is tight with money, but maybe we can come together to complete the project. Encouragement of including other agencies.
-Dave will provide Ellen with a 1-pager for the website
- NROC Fed. Partners group is a mechanism to build collaboration and funding efforts towards monitoring
 - A lot of us are doing monitoring already, but not with a Climate change focus, we should look for a opportunity to incorporate Climate change into our existing monitoring, and then collaborate to create a sentinel monitoring network
 - Stakeholders are sick of the same old questions, listen to what we've already heard, and move forward

Living Resources

Projects and Fed Partners Role

- An idea of assembling a regional team for a regional assessment that might occur down the road. This will encourage future cooperation, then the regional assessment could inform the national assessment.
- Reach out to agencies that are currently not involved HHS, HUD, Dept of Ed, FERC etc.----have someone from Fed Partners go to them rather than scolding them, so that they might be more encouraged to work with us. A more full team can then tackle any project.

- coastal vulnerability project with Kate White (NOS and USGS are currently involved) need NMPS and others
- Stakeholder focused and shared learning
 - evaluate the impacts of climate change
 - we need to know what components and models to use then we can inform and educate others
 - NOAA has already synthesized models within their agencies, EPA has a similar modeling effort
 - Ex. MA SLR effort, -do we have the data for the model that you think is best?
- Specific geographic project- the Penobscot River Projects- do we have the right people involved, names at agencies?

Closing Discussion

- Common themes and common threads that were throughout
 - Terms used 6x more times—inventory, niches, resilience, communication, data and information, monitoring, coordination and collaboration, LIDAR, capacity, vulnerability
- Niches- what are the fed niches? Some are clear some are not
 - What under our existing authorities, what can we do now?
 - for those who get involved in regulatory projects, are we reviewing for the impacts of climate change, (i.e. Highway, airport, infrastructure) are people looking into the future, projecting out
 - The concepts of “we’ll worry about when it happens” is something we need to work on
 - There are things we are doing now, something are unclear and some things are new, how do we move forward to get things done?
 - Develop new groups? Take advantage of existing groups?
- Resilience- everything needs to be resilience, everything needs to be able to adapt, something are adaptable, but something are not
- Communication
 - There are several subsets, current procedures. New forms or avenues of communication
 - Need communication improvement between feds, but then move outside to states locals NGO elected officials then outward to Public
 - We need to be clear and consistent. We need to sell what we are trying to accomplish---what terms or context resonant with the public

- Data information tools and modeling
 - shared learning as a long term need
 - an inventory of what exists now
 - How do we transfer and transmit the information?
 - What are the sources?
 - Is someone well positioned well to be a clearing house, QA and QC of what we are putting out there?

- Priorities and actions
 - they will never end! What we can do now? What do we have the ability to do that get at the issues that we heard here?
 - individual actions
 - collective actions- we are all wrestling with this

- Inventories- getting an idea of what is out there, need to inventory the science, communication (websites, avenues to disseminate information, groups, conferences, meeting); projects (what is everyone doing, feds, states, others, we need to be informed); information and data; resources (who can we devote to this, where is the money, how much can each agency bring?—other agencies dept. of Ed, HHS—know how has the money and who you bring in to tap into the money); timing (long term and short term); business plan (make a solid economic case for what we want to accomplish, show the long term savings of spending money now)

Thoughts on regional priorities and where we go from here (*opening up the floor*)

- Will we get to see the notes?
 - Issue with Regina's staffing
 - commitment from the executive– 6-7 page document, who participated, what were decision made, thoughts/ideas come up

- Request for a list of participants, phone numbers ,emails etc.

- There is a responsibility for everyone here to raise this issue to the higher levels (i.e. regional administrators)

- possibly of 2 documents- one larger document with the raw notes for the participants and the second short version.

- Request to post PowerPoint's especially Robert Corell and Cameron Wake's (possible need for agency clearance for some PowerPoint's)

- Request for project lists and summaries from the notes from the flip charts

- One thing we can do as we plan in FY09 and beyond, we have an idea of contacts, expertise from other agencies---change behavior, look outside our silos
- Regional Science Council at EPA---we can say that we need to focus on collaboration and coordination on a particular area because there is mutual interest, when we do internal solicitation for research that is the focus (interagency work)
 - RFP is coming up soon
- Everyone can feed into existing plans, (i.e. state conservation plans); Dan Walker said that he would provide access to the 2012 assessment. At the climate program office, it is important that we communicate that there is interest for us to be involved in the next regional assessment. Just got Obama work to do an assessment in 2012, so just now defining the process for the assessment, commitment that Dan and Eileen will keep the group informed and the process is formed.
- Contact list- the invitee list is at 120 people, the participant list is 70 ---additional names from agencies of who should be contacted and part of this process
- Who is going to be moving this forward?? NROC kept coming up, but those in NROC are worried because that is a lot of work. Possibly expand NROC participation-new agencies/participants, possibly a climate change group
 - shouldn't just be the executive committee or one group (i.e. NROC), should be all participants
- There were some “projects” that are doable now. Should the dialogue be started now?
- CZ09- next big gathering
- June 23rd in Kittery is the next “Sudbury Group” meeting- emergency response team will be present
- American Fisheries Society meeting in the fall, there will be a CC session
- Project laundry list- work on a more focused criteria of how you would pick a project
 - i.e. multi-agency, funding available, regional focus etc.
 - have the principle roles ID'd then use criteria to pick the projects
 - may not be a large priority, but may be easy to get done
 - some basic fundamental criteria
- The business case should be focused on now—proving that working together/coordinated fashion is beneficially

- think strategically that this will take real resources and that it has to come from somewhere, there is a better utilization of what is existing and has financial benefit
 - someone from each agency, ID language that will resonate within their agency, write up a succinct mission statement of what we are doing and the business case of the benefits of doing this.
 - show how sharing information in the end saves money to do other high priorities
 - possible ad hoc federal partners group to take on this mission
 - might need a few sample projects to show the benefits and then expand from there, these smaller projects can be used as benefit projects
 - concern that the “lets do it” projects can take a year or two
 - instead of new projects, look to other projects that have already been done that used multi-agencies as examples, wetland inventory and coastal vulnerability are examples
- LIAR
 - best decisions and how to pick projects
 - LIDAR workshop that occurred will provide a summary report by the end of the month- Susan RR
 - FEMA is proceeding head with contracts for LIDAR- will provide others the information that it is coming and where it is occurring
 - as you do projects, tell others about it so there is not overlap (especially when talking about LIDAR). If there is time before starting the project ask for collaboration.
 - There was a commitment at the LIDAR workshop for everyone there to enter their past-current- and future LIDAR projects into project works

What didn't work?

- Roving-Breakout sessions- didn't work, just got into a subject and then the session was over, perhaps focus on the one area that you have the most expertise in. and stay in the group.
 - couldn't get closure on certain ideas
 - maybe 4 questions are too many
 - could provide a lot to 1 group, but not much to the others
 - others liked the sessions with multiple perspectives
 - the 2 and 3rd sessions were grappling with what the previous group did, took away from their session
 - depends on the goal of the roving sessions- build on others or use blank sheets and generate all new ideas
 - *Different opinion*- real success! First time everyone participated in an exercise, everyone has something on the carts.
- Have a session that is a technical in-depth session on a project that is currently happening with multi-agency, science