



NExUS Needs Assessments Sun Jul 22 04:59:06 EDT 2018

Printing 387 of total 387 records.

Data: All

Products: All

Services: All

Scientific Discipline: All

Sector: All

Area of Applicability: All

Need	
Description	1. Develop a sustainable, state-of-the-art observational network. 2. Develop tool kits for data collection and submission by interest groups. 3. Develop a data inventory for all the potential sources. 4. Evaluate the feasibility of data sharing with the significant data collection organizations (e.g., DFO, Environment Canada, provincial government). 5. Develop a data management and transmission portal concept and pilot project. 6. Improve flood warning dissemination through the use of technology. 7. Increase public awareness, support, and use of flood forecasting products. 8. Enhance overall governance and funding for flood forecasting, management, and damage recovery.
Lead Agencies	ACASA

Need	A multi-agency effort to integrate health and climate concerns into decision making
Description	A multi-agency effort to integrate health and climate concerns into decision making must address several key questions: (A) What are the threats to health and what groups are vulnerable? (B) What is it that climate change will fundamentally change about health that will require new programs or actions? (C) What existing programs, protocols, and training need to change or receive increased investment to augment their capacity? (D) What areas that cannot be adequately protected should receive stricter development regulations or higher investments in remediating existing stressors?
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions

Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	Boicourt K. and Z.P. Johnson (eds.). 2011. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience. Report for Maryland Commission on Climate Change.

<b>Need</b>	A clearinghouse for transportation-relevant climate change information so they officials can plan and adapt
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	A comprehensive catalog of climate data for the northeast region that includes historical data sets and current observations
Description	A comprehensive catalog of climate data/metadata, including historical and current observations in formats designed to serve an array of stakeholders including modelers, resource managers, coastal managers, and the public at large.
Type	- PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England

Source	Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOOS)
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<b>Need</b>	A consortium to promote collaborative research, monitoring and data sharing on changing forests
Description	A consortium to promote collaborative research, monitoring and data sharing on changing forests
Type	- PRODUCTS: Engagement
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota - Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations. 2010.

<b>Need</b>	A federal program focused on the reevaluation of existing design standards for transportation infrastructure and the continual development of new standards as climate change predictions are updated
Type	- PRODUCTS: Engagement - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	A forum for gathering information on potential impacts of climate change on disease, morbidity, and mortality
Description	A forum for gathering information on potential impacts of climate change on disease, morbidity, and mortality to assist public health programs and inform the public.

Type	- PRODUCTS: Engagement - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	A framework for making protection, abandonment, and retreat/relocation decisions about coastal infrastructure
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

<b>Need</b>	A GIS compatible climate tool for ecological managers and researchers
Description	A tool that puts spatially referenced point data into climate grid data, downscales current climate data, and is GIS compatible; might incorporate climate model data with empirical data from monitoring stations.
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic

Source	Multiple
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<b>Need</b>	A mechanism for transportation professionals and researchers to encourage sharing of best practices to address the potential impacts of climate change
Type	- PRODUCTS: Engagement
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	A tool to archive and disseminate data about agriculture hazards
Description	Increased monitoring of hazards and events, i.e. crop loss, reduction in dairy production, cost of property damaged should be disseminated and archived.
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Managed Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Acquisition of spatial and socioeconomic data regarding human uses of marine resources
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems

Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems - Social and Cultural Resources - Economic Resources
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Aid development of public alert systems for catastrophic events
Description	Aid development of public alert systems for catastrophic events to improve emergency response outcomes
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	People & Nature Adapting to Climate Change: Charting Maine's Course, Pennsylvania Climate Adaptation Planning Report, Preliminary Assessment of Rhode Island's Vulnerability to Climate Change and its Options for Adaptation Action

<b>Need</b>	An efficient monitoring program that informs an adaptive management decision framework
Type	- DATA: In situ Observations - DATA: Observing Systems - DATA: Data Stewardship and Provisions
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England

Source	Massachusetts Climate Change Adaptation Report. September 2011.
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<b>Need</b>	Analysis of potential insurance industry policy changes in high risk areas in NJ's coastal zone
Description	As New Jersey attempts to understand the economic risks and benefits of coastal development and redevelopment, it will be important to understand the impacts of changes to economic drivers such as the insurance industry.
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Social and Cultural Resources - Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Analysis on synergistic effects of climate change and natural thermal variation within the Gulf of Maine
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Nye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Analysis on the cost of changes from climate change impacts on the Gulf of Maine ecosystem
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Climate Society Interactions

Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- New England
Source	Nye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Assess projected impacts of increased flood frequency and volume on municipal water and wastewater utilities
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> </ul>
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Assessment of climate impacts on transportation infrastructure, and the rail system in particular
Description	Assessment of potential risks to, and opportunities for, the state's rail system
Type	<ul style="list-style-type: none"> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Priority	- High
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Assessment of coastal risk management at several scales (state, regional, local) and within different socioeconomic contexts
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)



Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Assessments to identify and prioritize undeveloped, ecologically, and economically important lands for conservation that consider sea-level rise and its associated effects
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

<b>Need</b>	Associated research on climate change impacts on hydrology, and aslo hydropower infrastructure
Type	- DATA: In situ Observations - DATA: Observing Systems - DATA: Surveys and Preliminary Assessments
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.; NOAA, EPA Survey to Determine Cross-sector Needs for Climate Information.

<b>Need</b>	Associated research on the effects of ocean acidification on marine species
Description	Associated research on the effects of ocean acidification on marine species (e.g., shellfish, plankton, corals, protected species, including candidate species and species of concern) and ecosystems.

Type	- DATA: In situ Observations - DATA: Observing Systems
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science - Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	At least two permanent tide gauges should be established in the upper Bay of Fundy (Cumberland Basin and Minas Basin to begin to establish long-term records of storm surge events)
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Source	An Evaluation of Flood Risk to Infrastructure Across the Chignecto Isthmus A Report produced for the Atlantic Climate Adaptation Solutions Association December 2012

<b>Need</b>	Baseline inventory of location/type of man-made or armored shoreline
Type	- DATA: Surveys and Preliminary Assessments
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Connecticut Department of Environmental Protection. Office of Long Island Sound Programs. 2010. Updated Assessment and Strategy of the Connecticut Coastal Management Program.

<b>Need</b>	Best available scientific information on past, current and future changes in climate and factors related to riverine habitat
Description	Best available scientific information on past, current and future changes in climate and related factors for habitat conservation managers to design and implement conservation efforts for riverine habitats

Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- International</li> <li>- National</li> <li>- Regional Or State</li> </ul>
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Best management practices that support use of more adaptable crops and effective growing practice to build resilience in food production systems
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Climate Society Interactions</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	<ul style="list-style-type: none"> <li>- Regional Or State -- New England</li> </ul>
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

Need	Best practices for approval processes and building codes to incorporate climate change impacts and life-cycle costs in development and construction activities
Type	- PRODUCTS: Training and Capacity Building
Focus Area	- Changes in Extremes of Weather and Climate
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Better decision support tools are needed to assist transportation decision makers
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Economic Resources</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- Central -</li> <li>- Great Lakes -- South East</li> </ul>

Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.
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<b>Need</b>	Better definition of high resolution (10 km, one km, 10 degree, or 1 degree variance), so that modelers can make models compatible with fisheries (and other managers') needs.
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Engagement
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

<b>Need</b>	Better identification of thresholds for increased wildlife mortality
Description	Research determining key temperature ranges of threshold mortality for species of interest
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments
Focus Area	- Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

<b>Need</b>	Climate based decision tools for strategic water management
Description	Warmer summers will create challenges for water management, requiring strategic water management in the agriculture sector

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Climate Society Interactions</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	<ul style="list-style-type: none"> <li>- Regional Or State -- New England -- Mid-Atlantic -- Central -</li> <li>- Great Lakes -- South East</li> </ul>
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

Need	Climate tools that allow temperature and precipitation data to be queried by specific thresholds as opposed to current data deliverables, which often have fixed formats
Type	<ul style="list-style-type: none"> <li>- DATA: Data Stewardship and Provisions</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- Regional Or State -- South East</li> </ul>
Source	Dow, K. 2012. Climate Information Needs in the Southeast: Analysis of Requests. CISA Research Report 2012-02. Columbia, SC: Carolinas Integrated Sciences & Assessments (CISA).

Need	Coastal and Marine Spatial Plan that incorporates stakeholder engagement and recognizes relationship with fishery activities
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Plans, Assessments, Studies</li> <li>- PRODUCTS: Engagement</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> </ul>

Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

Need	Coastal and marine vulnerability assessments scaled so that they are useful for habitat management: river basins, estuaries, and coastal ecosystems
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- South East</li> </ul>
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

Need	Collaboration between Northeast Regional Ocean Council (NROC) and other federal programs to create mapping products; training for state staff to create mapping products
Description	Share results of Northeast Regional Ocean Council (NROC) mapping priorities effort with NOAA and other federal programs to identify funding or in-kind staff time to create mapping products; Train state staff to create mapping products
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Sector	- Infrastructure
Region	- Regional Or State -- New England

Source	Personal Communication
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<b>Need</b>	Collaboration to develop contingency plans to respond to climate change impacts on water supplies
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Combined water quality and quantity models to address spill mitigation, turbidity, water demand changes, and drought issues
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Communicate projections for heat waves, temperature extremes and air quality action days, to inform and prepare local emergency services
Type	- PRODUCTS: Training and Capacity Building
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety
Region	- Regional Or State -- New England



Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.
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<b>Need</b>	Community partnerships to increase public health capacity
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Summary: Preliminary Assessment of Rhode Island's Vulnerability to Climate Change and its Options for Adaptation Action. February 2010.

<b>Need</b>	Comprehensive monitoring effort that supports an accessible database to track species range shifts
Description	Comprehensive monitoring effort that supports an accessible database to track species range shifts and other indicators of habitat and ecosystem response to climate change
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Continued federal programs to prevent and control adverse health effects caused by flooding and drought
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions

Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations. 2010.

<b>Need</b>	Continuous climatologies for marine estuaries and freshwater, as well as migratory habitats
Type	- PRODUCTS: Hindcasts (climatologies, models) - PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

<b>Need</b>	Coordinated effort for consistent ocean habitat classification for the Northeast
Description	Both federal and regional classification systems are used in the Northeast; for ease of understanding and coordination, there should be a consistent method. Perhaps a group can be formed to address this issue.
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Climate Society Interactions
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Rhode Island Coastal Resources Management Council. 2010. Program Assessment and Strategy for Enhancement Performed Pursuant to Section 309 of the Coastal Zone Management Act of 1972 as Amended.

Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Federal Highway Administration Climate Change Adaptation Peer Exchanges: Comprehensive Report
Lead Agencies	U.S. DOT, state departments of transportation, metropolitan planning organizations

<b>Need</b>	Coordinated monitoring and data collection between local, state, and national organizations surveying the Gulf of Maine
Description	Gulf of Maine monitoring and research needs to be coordinated between local, state, and national organizations to detect changes in spatial distribution of marine species and to predict the rate of species invasions
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Engagement
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Nye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Coordinated risk assessment for high hazard potential dams
Description	Coordinated risk assessment for high hazard potential dams using the worst-case assumptions of climate change impacts
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science

Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Coordinated, statewide tidal and non-tidal wetlands extent data management
Type	- DATA: Data Stewardship and Provisions
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	Virginia Coastal Management Office. 2011. Section 309 Needs Assessment & Strategy.

<b>Need</b>	Coordination of state and regional wetland restoration partners
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Rhode Island Coastal Resources Management Council. 2010. Program Assessment and Strategy for Enhancement Performed Pursuant to Section 309 of the Coastal Zone Management Act of 1972 as Amended.

<b>Need</b>	Cost benefit analysis of infrastructure related impacts 50-100 years out, so that infrastructure is neither under nor over built
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure

Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	2012 DOT Climate Adaptation Plan

<b>Need</b>	Couple climate change data with environmental data to develop status indicators for key health threats: ozone, pollen, particulates
Description	Couple climate change data with environmental data to develop status indicators for key health threats: ozone, pollen, particulates
Type	- DATA: Indicator Based Research
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Public Health and Safety
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	U.S. Global Change Research Program. National Climate Assessment Health Sector Workshop. Charleston, S.C. February 2012. Meeting notes.

<b>Need</b>	Couple climate data with thresholds for disease vectors, and develop relevant indicators
Description	Couple climate data with thresholds for disease vectors, and develop relevant indicators
Type	- DATA: Indicator Based Research
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	U.S. Global Change Research Program. National Climate Assessment Health Sector Workshop. Charleston, S.C. February 2012. Meeting notes.

<b>Need</b>	Critical climate threshold monitoring to inform infrastructure planning
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Description	From Vermont Agency of Transportation 8/13/2012: Research should be undertaken to identify climate related thresholds that may lead to a significant increase in infrastructure deterioration. The creation of thresholds allows for efficient allocation of resources given the wide range of possible climate scenarios. The use of thresholds is particularly valuable in the case of flooding because of the large uncertainties inherent in future forecasts of precipitation data. Thresholds allow policy makers to avoid costly over-adaptation while maintaining contingency plans for possible climate scenarios.
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Regulatory/ Policy Guidance
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Vermont Agency of Transportation Climate Change Adaptation White Paper: "Adapting Vermont's Transportation Infrastructure to the Future Impacts of Climate Change"

<b>Need</b>	Cross-sector efforts that integrate public health concerns into planning and decision-making process related to growth, development, transportation infrastructure, and water resource management
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Cross Disciplinary
Region	- Regional Or State -- Mid-Atlantic
Source	Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience. Report for Maryland Commission on Climate Change.

<b>Need</b>	Current rates of shoreline change and the maximum vertical extent of wave run-up
Description	Current rates of shoreline change and the maximum vertical extent of wave run-up to strengthen delineation of erosion and flood hazard areas
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate

Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Daily measurement of atmospheric variables to support a high resolution atmospheric forcing reanalysis product from 1975-present
Description	Daily measurement of atmospheric variables (wind speed/direction, air temp, humidity, heat flux) are required to support a high resolution atmospheric forcing reanalysis product from 1975- present (analogous to NCEP/NCAR Reanalysis Project and WRF model).
Type	- DATA: Satellite Remote Observations - DATA: Observing Systems
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOS)

Need	Daily, watershed-level estimates of freshwater input into coastal oceans
Description	Daily, watershed-level estimates of freshwater input (with USGS streamflow measurements?) into coastal ocean to quantify estimates of salt-wedge location in major rivers and estuaries.
Type	- DATA: In situ Observations - DATA: Observing Systems
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOS)

Need	Data describing the location, classification, and extent of current and historic shorelines
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Type	- DATA: Observing Systems - DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Connecticut Department of Environmental Protection. Office of Long Island Sound Programs. 2010. Updated Assessment and Strategy of the Connecticut Coastal Management Program.

<b>Need</b>	Data on length of extreme heat waves
Description	Data on length of extreme heat waves to assess changing air conditioning demands
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Changes in Extremes of Weather and Climate
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Data on migration patterns of both 'good' and 'bad' invasive species (i.e. kudzu or maple trees)
Description	Habitat ranges shift predictions are important for determining expansion of "good" species (for opportunity) and "bad" (pests/highly invasive species)
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological



Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> <li>- Economic Resources</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- Central -</li> <li>- Great Lakes -- South East</li> </ul>
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

Need	Data on seasonal and diurnal load patterns to determine energy demands
Description	Changes in seasonal and diurnal load patters (winter peaking=reduced demand due to warming; summer peaking = length of extreme heat waves + changing air conditioning saturation rates)
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

Need	Data on warmer winters and shorter freezing periods to assist farmers in adapting crops and variety choices to changing climate conditions
Description	Assist farmers in planting crops and varieties appropriate suited to changing climate conditions. Planting dates, crops and varieties on the farm should be suited to warmer winters and shorter freezing period. Appropriate perennial fruit crop varieties need to be selected.

Type	<ul style="list-style-type: none"> <li>- DATA: Data Stewardship and Provisions</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Engagement</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

Need	Data to create a uniform and comprehensive data set of geological information for hazards identification and regulatory use
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Surveys and Preliminary Assessments</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

Need	Data, communication and outreach surrounding the effects of sea level rise on estuaries and coastal marshes
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> <li>- PRODUCTS: Engagement</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>

Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

<b>Need</b>	Database of abundance and population density of marine species (whales, sea birds, invasive coastal species)
Description	Database of abundance and population density of marine species (whales, sea birds, invasive coastal species) perhaps maintained as an online resource
Type	- DATA: In situ Observations - DATA: Data Stewardship and Provisions - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Decision tools to explore costs, risks, benefits, and strategic timing of adaptive upgrades to agricultural infrastructure
Description	Decision tools to explore costs, risks, benefits, and strategic timing of agricultural adaption, i.e., investing in a new drainage system, irrigation system, both, and when
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Managed Ecosystems
Region	- Regional Or State -- Mid-Atlantic

Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.
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Need	Detailed economic model that incorporates societal costs of delayed or inappropriate response to winter storm impacts on transportation infrastructure
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Economic Resources
Region	- National
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

Need	Determine better means of deciding dike height that balance value of land and infrastructure with degree of risk communities are willing to assume
Description	The report cites the following needs: - Conduct a cost benefit analysis for marshbodies identified by Browning, 2011 as containing significant infrastructure using the methodology of van Alphen (2012) to balance the value of the land protected and cost of required infrastructure as well as degree of risk that the communities are willing to assume - Develop a differential determination of critical elevation incorporating sea level rise and storm surge for dykes protecting valuable infrastructure similar to Pilarczyk, 1998.
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Source	Best Management Practices for Climate Change Adaptation in Dykelands: Recommendations for Fundy ACAS sites September 2012

Need	Determine economic risks of hazards and events to agriculture, e.g. crop loss, reduction in dairy production, cost of property damaged
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate

Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Determine effects of change in temperature and pH for all life stages of all diadromous species and with this information, model impacts of climate change on species.
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic -- South East
Source	Greene, K. E., J. L. Zimmerman, R. W. Laney, and J. C. Thomas-Blate. 2009. Atlantic coast diadromous fish habitat: A review of utilization, threats, recommendations for conservation, and research needs.

<b>Need</b>	Determine the minimum area needed to maintain boreal or other threatened ecosystems
Type	- DATA: Surveys and Preliminary Assessments
Focus Area	- Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Develop a sustainable, state-of-the-art observational network for flood monitoring; tool kits for data collection and submission by interest groups; a data inventory.
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Description	Additional needs cited in this report: <ul style="list-style-type: none"> <li>- Evaluate feasibility of data sharing among data collection organizations</li> <li>- Develop a data management and transmission portal concept and pilot project.</li> <li>- Improve flood warning dissemination through the use of technology.</li> <li>- Increase public awareness, support, and use of flood forecasting products.</li> <li>- Enhance overall governance and funding for flood forecasting, management, and damage recovery.</li> </ul>
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> <li>- Climate Society Interactions</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> </ul>
Source	Real-Time Assessment and Monitoring of Inland and Coastal Flooding Events for Atlantic Canada (March 2012)
Lead Agencies	Atlantic Climate Adaptation Solutions Association New Brunswick Department of the Environment, Climate Change Secretariat
Contacts	env-info@gnb.ca

Need	Develop more precise sea-level rise and storm-surge projections for the entire Canadian coast, particularly densely populated areas, and develop a system to regularly update the data and monitor for coastal erosion
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Description	<p>This report offers several policy recommendations regarding improved accuracy of future sea-level rise studies, and the implementation of adaptation measures similar to those quantified in this report.</p> <ul style="list-style-type: none"> <li>•Develop “model” policies that incorporate these strategies, and adopt them at the province and territory level, with protected zones defined by law (e.g. all beaches, dunes, and coastal wetlands, plus a restricted-development area within 30 meters of those zones, as is New Brunswick’s policy), and the ability for local authorities to impose further, but not fewer, restrictions. To prevent a maladaptive rush to develop coastal land prior to implementation, consider a development moratorium in the affected areas while policies are being drafted, and do not allow the adoption process to stretch out for more than one year—even if a choice is made to phase in the strictest measures.</li> <li>• Develop more precise sea-level rise and storm-surge projections for the entire Canadian coast, with a special focus on densely populated areas, and develop a system to regularly update the data and monitor the coastal landscape for erosion and other issues. Greater precision in these estimates will require better elevation data, and a large, well-funded national study to enable far greater local detail in the physical model. Areas at or below sea level should be analyzed more closely, to gauge their exposure to sea-level rise and storm surges and the effectiveness of dikes and other existing barriers.</li> <li>• Strengthen province/territory and local capacity to develop and implement adaptation plans by continuing to fund projects such as the Regional Adaptation Collaboratives; bringing together land-use and environmental experts and enforcers within government (as New Brunswick has done in its Department of Environment); making it easy for local authorities to obtain crucial information and call in experts to assist them; and funding training opportunities.</li> <li>•Educate and engage the public, directly (through the media, websites, etc.) and especially through businesses and professionals likely to interact with homeowners and developers and with a possible stake in mitigating losses—property insurers, banks, real-estate agents, construction companies, architects, landscapers.</li> <li>•Seriously consider the implications of economic and environmental choices beyond coastal zones management: A local-stewardship economy would sharply reduce climate-related losses in the future, but it would require a major shift in priorities. Rapid stabilization of greenhouse gas emissions cannot be achieved by Canada alone, but Canada can choose its role in reducing emissions, and either be a leader, or a straggler. We recommend fostering nationwide debate of these issues.</li> </ul>
Priority	- Unknown
Discipline	- Climate Society Interactions
Sector	- Economic Resources
Source	Costing Climate Impacts and Adaptation: A Canadian Study on Coastal Zones (2010)
Lead Agencies	National Round Table on the Environment and Economy Stockholm Environment Institute

<b>Need</b>	Development of a Coastal Adaptation Plan, as well as a marine/coastal spatial plan
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.

<b>Need</b>	Development of a coastal adaptation plan/toolbox
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Training and Capacity Building
Focus Area	- Sustainability of Marine Ecosystems
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.

<b>Need</b>	Development of wetlands database and tracking procedures
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.



<b>Need</b>	Disease surveillance and training to address new vector-borne infectious diseases
Type	- PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes
Source	U.S. Global Change Research Program. National Climate Assessment Health Sector Workshop. Charleston, S.C. February 2012. Meeting notes.

<b>Need</b>	Dissemination of results from DOT/FHWA pilot studies as well as other efforts to the state and local entities charged with making transportation decisions
Type	- PRODUCTS: Engagement
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Georgetown Climate Center. Public Comments: 2012 U.S. DOT Climate Adaptation Plan.

<b>Need</b>	Diverse (fine-scale and long-term) precipitation predictions to meet needs of different users
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science

Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- South East</li> </ul>
Source	Dow, K. 2012. Climate Information Needs in the Southeast: Analysis of Requests. CISA Research Report 2012-02. Columbia, SC: Carolinas Integrated Sciences & Assessments (CISA).

Need	Downscaled models of sea level rise, severe weather events and other climate predictions
Description	Downscaled models of sea level rise, severe weather events and other climate predictions are necessary to identify pier, harbor, and waterway infrastructure likely to need improvement
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> </ul>
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.; Others

Need	downscaling of climate change modeling
Description	<p>Additional needs identified in this Vulnerability Assessment:</p> <ul style="list-style-type: none"> <li>- measuring the overall multiplier effects of climate change on provincial economies;</li> <li>- targeted baseline monitoring and reliable inventories for lake, river and groundwater resources, and the condition and capacity of water distribution and treatment systems;</li> <li>- improved understanding and modelling of hydrologic systems and processes (current and historic);</li> <li>- assess extreme weather impacts on transportation and infrastructure systems;</li> <li>- improved understanding of shoreline response to changing water levels;</li> <li>- increased focus on impacts of change of forestry and agriculture; and</li> <li>- studies that derive realistic cost estimates for different adaptation options.</li> </ul>

Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Social and Cultural Resources - Economic Resources - Cross Disciplinary
Source	Adapting to a Changing Climate Change in Nova Scotia: Vulnerability Assessment and Adaptation Options September 2005
Lead Agencies	Nova Scotia Environment Environment Canada

<b>Need</b>	Drought information to determine thresholds for comprehensive drought management
Description	Comprehensive drought management programs that improve monitoring of water supply storage levels and institute specific conservation measures when supplies decline below set thresholds
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Dynamic coastal inundation analyses and maps using sea level projections from downscaled climate models
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)

Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

<b>Need</b>	Economic analyses of sea level rise impacts, coastal hazards, and adaptation responses
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

<b>Need</b>	Economic analysis
Description	<p>Economic analysis: In order to estimate the value of local agricultural production, property values for each parcel of land currently pursuing agricultural businesses would be useful to determine the losses in the region if the current agricultural fields were flooded.</p> <p>Farmer surveys: In order to gain a better understanding of what local farmers are experiencing in relation to climate change and what, if any new practises they are incorporating, a surveys should be sent out.</p>
Discipline	- Climate Society Interactions
Source	<a href="http://atlanticadaptation.ca/sites/discoveryspace.upei.ca.acasa/files/Tantramar%20Dykelands-Agricultural-Adaptation-MtA-2011_1.pdf">http://atlanticadaptation.ca/sites/discoveryspace.upei.ca.acasa/files/Tantramar%20Dykelands-Agricultural-Adaptation-MtA-2011_1.pdf</a>
Lead Agencies	Atlantic Canada Adaptation Solutions Association
Contacts	Climate Change Secretariat, New Brunswick Department of the Environment env-info@gnb.ca

Description	Economic cost-benefit analysis of present and future development in coastal hazard areas under various climate change/sea level rise scenarios is necessary. An analysis of the short and long-term economic gains and costs of existing and future development in high hazard coastal areas is needed to inform future decision-making and identify appropriate actions.
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Economic impact/Risk Analysis for ocean and near shore uses
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Natural Ecosystems - Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Economic value analysis of coastal resources, including commercial and recreational fisheries, land leased area of aquaculture operations, and total production capacity of offshore renewable energy
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions

Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Economic value of existing uses of coastal resources
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Eddy-resolving models and better understanding of source water dynamics; these things are not captured in global models
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Satellite Remote Observations</li> <li>- DATA: Observing Systems</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East

Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.
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<b>Need</b>	Educate water resource utility owners and operators on the vulnerabilities of their assets to climate change impacts
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Education and outreach for owners of property on existing and future floodplains about risk
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Economic Resources
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Education on the costs, risks and hazards associated with living in coastal New Jersey
Description	A critical part of coastal zone management, especially in high risk areas, is education of residents and visitors so that they may make informed choices
Type	- PRODUCTS: Engagement - PRODUCTS: Education

Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Social and Cultural Resources
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Encourage contractor response plans for work zone impacted by high intensity storms
Description	Stronger specifications that require contractor response plans for work zone impacted by high intensity storms
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Encourage small-scale projects such as increasing the area of pervious surfaces in residential areas to improve storm water management
Type	- PRODUCTS: Engagement - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England



Source	Massachusetts Climate Change Adaptation Report. September 2011. New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.
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Need	Encourage stream flow management that mimics natural patterns and protects aquatic systems during low flow conditions
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

Need	Epidemiology studies with climate focus to collect data to identify vulnerable populations and specific risks
Type	- PRODUCTS: Plans, Assessments, Studies
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- National - Regional Or State -- New England
Source	U.S. Global Change Research Program. National Climate Assessment Health Sector Workshop. Charleston, S.C. February 2012. Meeting notes.

Need	Evaluate climate effects on ocean resources and develop management options
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science

Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

<b>Need</b>	Evaluate institutional capacity to meet the needs associated with increases in vector-borne diseases
Description	Evaluate and support service providers in expanding institutional capacity to meet the needs associated with climate change induced increases in vector-borne diseases.
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Evaluate potential climate change impacts on emergency response
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Evaluate resilience of protected species, candidate species, and species of concern to climate change impacts
Description	Evaluate adaptation strategies and resilience of species (including protected species, candidate species, and species of concern) for handling the effects of climate change
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Biota

Region	- National - Regional Or State
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Evaluate the use of Transfer of Development Rights, a smart growth technique used to direct coastal redevelopment inland
Description	Seek to reduce the number of vulnerable coastal properties through land acquisition or by conservation restrictions. Evaluate the use of Transfer of Development Rights, a smart growth technique used to direct coastal redevelopment inland
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Expand cooperative research efforts with sensors on fishing boats (lobster gear, trawl nets) to increase data; more data is needed to support models
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Engagement
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

<b>Need</b>	Expand educational efforts for pesticide risk management, crop adaptation and management, and conservation practices.
Description	Expand educational efforts for pesticide risk management, crop adaptation and management, and conservation practices.

Type	- PRODUCTS: Education
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Expand technical advice on processing and using LiDAR data, mapping, and the vulnerability assessment
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Sector	- Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	Using NOAA Climate Data in Virginia. Sea Level Rise Planning in Northern Virginia. March 2011.

<b>Need</b>	Expanded river stream gauging network to monitor long and short term trends in flow and temperature
Type	- DATA: In situ Observations - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Explore public attitudes and preferences for adaptation and minimization of flood risk and vulnerability
Description	Additional needs cited in the report: - Future research should also explore "multi-attribute evaluations of flood management" - "gain an understanding of the human health and well-being benefits of flood alleviation"
Focus Area	- Coasts and Climate Resilience (including sea-level rise)

Discipline	- Climate Society Interactions
Source	Forecasting Economic Damages from Storm Surge Flooding A Case Study in the Tantramar Region of New Brunswick Prepared by Green Analytics October 2012

Need	Facilitate coordination between engineers and climate science data providers to maximize applicability of data for engineering applications
Description	Increase coordination between engineers and climate science data providers to maximize applicability of data for engineering applications (for example, peak flow in cubic feet/second is more useful than total precipitation in a 25 hour period; a related need is for quantitative predictions about extremes to inform infrastructure design.
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

Need	Facilitate fisheries community of practice that includes fisheries management councils and commissions for the consideration of protected species, candidate species, and species of concern
Description	Increase coordination with fishery management councils and commissions for the consideration of protected species, candidate species, and species of concern in ecosystem-based fisheries management as it relates to climate change issues.
Type	- PRODUCTS: Engagement
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems

Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Facilitate monitoring of current non-endemic diseases for trends, particularly for vulnerable populations
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Fill in habitat data gaps such as size, distribution and connectivity of habitats
Description	Sensitive ecological areas (such as migratory paths) need to be identified so that state agencies, regional planners, and NGOs can lead effective preservation efforts.
Type	- DATA: Observing Systems - DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State
Source	Facing Our Future: Adapting to Connecticut's Changing Climate. March, 2009.

<b>Need</b>	Flood hazard analyses and flood insurance rate map updates with current precipitation and other data
Type	- PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)

Discipline	- Physical Science - Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

Need	Flood maps to determine which transportation project sites are most vulnerable
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

Need	For shellfish: identify pH thresholds for local species, determine adaptive strategies to mitigate the effects of increased disease prevalence and ocean acidification
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Plans, Assessments, Studies
Discipline	- Chemical
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- International - Regional Or State
Source	Adaptation Sub-Committee to CT Governor's Steering Committee on Climate Change. 2010. The Impacts of Climate Change on Connecticut Agriculture, Infrastructure, Natural Resources and Public Health.

Need	Forecasts of low precipitation events for industrial and municipal water supplies
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Description	Saltwater intrusion becomes a big issue during low flows, for both industrial and municipal water supplies; drought cant create a salt wedge, which can be then be pushed even further inland by wind and upwelling.
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Forest monitoring to rack introduction and spread of pathogens, changes in forest condition, physical climate trends, and evidence of species shift
Type	- DATA: In situ Observations - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota - Economic Resources
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Geo-spatial data to integrate with existing and new habitat and human use data and information
Type	- DATA: Satellite Remote Observations - DATA: Observing Systems - DATA: Depth and Elevation Data
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota



Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

Need	Geospatial tools and approaches are needed to help habitat managers to assess habitat resiliency and adaptation under different climate change and management scenarios
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Biota</li> <li>- Social and Cultural Resources</li> </ul>
Region	<ul style="list-style-type: none"> <li>- International</li> <li>- National</li> <li>- Regional Or State</li> <li>- Local/City</li> </ul>
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

Need	Guidance on incorporating coastal climate adaptation into the Coastal and Estuarine Land Conservation plan
Type	- PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England

Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.
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<b>Need</b>	Guidance with incorporating sea level rise into state/local planning and long-term management efforts
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic -- South East
Source	NOAA Eastern Region Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated in May 2010.

<b>Need</b>	Habitat assessments to prioritize beach restoration
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Habitat continuity information to effectively update bridges and culverts for wildlife passage
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological
Sector	- Infrastructure - Natural Ecosystems - Biota

Region	- Regional Or State
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Habitat parcelization and fragmentation need to be incorporated into management strategies
Type	- PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Health impact assessments at the state and local levels to identify risk associated with climate change, air quality, and health
Description	Enhance scientific understanding of the relationship between climate change, air quality, and health outcomes by conducting health impact assessments at the state and local levels
Type	- DATA: Observing Systems
Priority	- High
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	High resolution coean temperature data, surface to bottom, particularly mixed layer depth and seasonal data
Type	- DATA: In situ Observations - DATA: Observing Systems - DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions

Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

<b>Need</b>	High resolution ocean acidification coastal-scale models
Type	- PRODUCTS: Hindcasts (climatologies, models) - PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.

<b>Need</b>	High resolution sea level, storm frequency, salinity, pH, temperature, nutrient levels, biological structure and size, currents, and chlorophyll at key locations
Type	- DATA: In situ Observations - DATA: Satellite Remote Observations - DATA: Observing Systems
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats

Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Massachusetts Climate Change Adaptation Report. September 2011. (And other state plans)

<b>Need</b>	High resolution topographical data for coastal zone management
Description	Acquire detailed topographical data of the coastal zone
Type	- DATA: In situ Observations - DATA: Depth and Elevation Data - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Higher model resolution in the nearshore to aid in managing highly productive coastal and estuarine shellfish growing areas
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East

Source	Massachusetts Climate Change Adaptation Report. September 2011; Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.
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<b>Need</b>	Hourly and daily temperature data for energy facilities that need to plan for immediate energy demands
Description	Hourly and daily temperature data for energy facilities that need to plan for immediate energy demands
Type	- DATA: In situ Observations - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure - Economic Resources
Region	- International - Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Identification of ecologically significant habitat (hubs and corridors)
Description	Identify ecologically significant habitat to facilitate conservation of critical habitat impacted by current and future climate change
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report, New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future

Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Region	- National - Regional Or State -- New England
Source	The Nature Conservancy. Public Comments: 2012 U.S. DOT Climate Adaptation Plan.

<b>Need</b>	Identify and distribute data about thresholds for crop freezes, pest survival, and precipitation
Description	Data about thresholds for crop freezes, pest survival, and precipitation is necessary to identify opportunities for new crops and to phase out less suitable crops, and to identify changes in pest dynamics. This may involve existing data being provisioned in a way so that necessary information is retrievable; for instance, allowing user access to determine parameters (such as number of days without precipitation) so that they can tailor it to crops of interest.
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes. Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Identify and prioritize what ecosystem and habitat features to monitor, and develop new indicators if necessary
Type	- DATA: Surveys and Preliminary Assessments - DATA: Indicator Based Research
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological

Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Identify human populations most at risk with respect to coastal change impacts
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Identify migration corridors that include wetland areas, linkages between wetlands and upland, and large parcels of connected habitat, both terrestrial and aquatic
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Identify remaining critical coldwater fish habitat areas in order to reconnect high quality habitats by removing in-stream barriers and re-establishing in-stream flows
Type	- PRODUCTS: Plans, Assessments, Studies



Focus Area	- Climate Impacts on Water Resources
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Identify resilient forest ecosystems, including forest reserves and actively managed forests
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Identify the cumulative impacts of human uses and climate change on oceans
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Identify vulnerable fish species likely to be affected by climate change and practices that may mitigate these effects
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Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Identify water and sewer facilities susceptible to saltwater intrusion and coastal inundation
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Improve capacities to conduct vector and human surveillance in order to identify at risk groups and target outreach
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Improve public awareness of changing risks of drought and fires
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions

Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.

<b>Need</b>	Improved baseline information about river herring are necessary to predict climate impacts; baseline information includes questions about life history and habitat use
Description	Topics include: Historical level of the population, life history (ocean, habitat, etc.) for all stages and habitat areas (e.g., lake, river, estuary and ocean) using consistent coastwide protocols; Habitat needs include: Downstream studies to see how salt marshes are utilized, assessments just above the tide zone and below a structure, quantitative larval assessment for habitats and 1) Ocean distribution 2) Fishing impact in the ocean environment 3) Migratory patterns coast wide for all stocks 4) Coordination across states to fill-in data gaps 5) Increased river monitoring, not just at the first dam 6) Linking river runs to water temperatures and flow 7) Environmental tolerances and thresholds (e.g., temperature) for all life stages and 8) Laboratory studies that document biological responses to water chemistry and habitat thresholds
Type	- DATA: Surveys and Preliminary Assessments - DATA: Indicator Based Research - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

<b>Need</b>	Improved coastal inundation models
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science

Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Improved collection of/access to data and metrics for local communities to assess vulnerabilities and prevent public health impacts
Type	- DATA: Data Stewardship and Provisions
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience. Report for Maryland Commission on Climate Change.

<b>Need</b>	Improved data and monitoring program to determine agriculture vulnerabilities
Description	Better data and monitoring programs to help determine risk of crop damage, as well as the risk of emerging insect pest, plant disease pathogens, and increased viability of weeds.
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes. Facing Our Future: Adapting to Connecticut's Changing Climate. March, 2009.

<b>Need</b>	Improved delivery of real-time local weather data from government agencies
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Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Engagement
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

<b>Need</b>	Improved elevation assessment tools such as LiDAR to help inform decisions about project siting
Type	- DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure - Economic Resources
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Improved federal, state, local, and regional integration and coordination of observation systems that detect trends in coastal water levels, elevation and/or subsidence, shoreline change, wetland loss, and tidal influence on estuaries and water supplies
Type	- DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions - PRODUCTS: Engagement
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Ecological and Biological
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic

Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.
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<b>Need</b>	Improved mapping to identify potential sites for renewable energy systems
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.

<b>Need</b>	Improved prediction for how hydrography (mapping of water's topographic features) will change in the Gulf of Maine
Description	Considerable uncertainty surrounds how broadscale hydrography will change in the next 50-100 years
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	SourceNye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Improved predictions for lake level change in response to climate change
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Climate Impacts on Water Resources

Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Improved predictions for spatial extent of coastal wetlands
Description	Examine Wetlands Protection Act rules will have to be revised to address predicted changes in spatial extent of coastal wetlands
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Improved regional approaches to water planning through regulations, training, capacity, communication and outreach
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

<b>Need</b>	Improved seasonal weather forecasts and day-to-day weather forecasts for agricultural sector
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Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	- Climate Impacts on Water Resources
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> <li>- Ecological and Biological</li> </ul>
Sector	- Managed Ecosystems
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	<b>Improved short-term and seasonal forecasts at local levels</b>
Description	Improved short-term and seasonal forecasts at local levels, including downscaled impact models
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- Central -</li> <li>- Great Lakes -- South East</li> </ul>

<b>Need</b>	<b>Improved understanding of climate impacts on water table levels and implications for septic systems</b>
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England



Source	Massachusetts Climate Change Adaptation Report. September 2011.
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<b>Need</b>	Improved understanding of impacts of reduced summer flows on large rivers and ground water tables to address water demands
Description	Improved understanding of impacts of reduced summer flows on large rivers and ground water tables to address water demands; reduced water tables could lead to conflicts among users.
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Improved understanding of regional and local climate impacts on coastal habitats and species including coral, marine fisheries, endangered species and marine mammal protection act (MMPA) species, candidate species, and species of concern
Type	<ul style="list-style-type: none"> <li>- DATA: Indicator Based Research</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State
Source	Eastern Region Gaps, Needs and Assets Document. Updated in May 2010.

Description	Improved understanding of regional and local climate impacts on coastal habitats, including improved data on phenology and impacts of drought
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Improved understanding of the sources and effects of cumulative impacts and stress on the marine environment
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

<b>Need</b>	Improved understanding of water budgets and water resource demands in a changing climate, including updated precipitation data
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East

Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.
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<b>Need</b>	In-depth geomorphic assessment to identify vulnerable river reaches and monitor rivers for disconnection from floodplains
Type	- DATA: In situ Observations - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Inclusion of ice sheet dynamics and ocean-ice shelf interactions in global climate models for more accurate projections of global sea level rise
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Increase the capacity of essential partners in NOAA's habitat conservation efforts at regional, state and local levels to use and respond to impacts of climate change on riverine, coastal and marine habitats
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Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Natural Ecosystems</li> <li>- Biota</li> <li>- Social and Cultural Resources</li> <li>- Cross Disciplinary</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State</li> <li>- Local/City</li> </ul>
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Increased coordination between state and local, state and federal governments – interstate collaboration
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> <li>- PRODUCTS: Other</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>

Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Great Lakes -- South East
Source	NOAA Eastern Region Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated in May 2010.

<b>Need</b>	increased geologic mapping and groundwater resource assessments to provide an inventory of the resource available and the consequences of developing it.
Description	Most areas of Nova Scotia currently do not have comprehensive groundwater management plans and would benefit from increased mapping and inventories.
Discipline	- Physical Science - Climate Society Interactions
Sector	- Public Health and Safety
Source	Vulnerability of Nova Scotia's Coastal Groundwater Supplies to Climate Change May 2012

<b>Need</b>	Increased knowledge sharing to facilitate information development and dissemination
Type	- PRODUCTS: Engagement
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Increased marine habitat assessment is necessary in order to accurately forecast biological response to climate change
Type	- DATA: Surveys and Preliminary Assessments - DATA: Indicator Based Research - PRODUCTS: Plans, Assessments, Studies
Priority	- High

Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England
Source	Massachusetts Ocean Management Plan. Volume 1., 2009.; Report of the National Marine Fisheries service Habitat Assessment Improvement Plan Team, 2010.
Lead Agencies	NOAA NMFS

<b>Need</b>	Increased saltwater intrusion monitoring
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Data Stewardship and Provisions</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Increased tide gauge network to monitor tidal resources and local sea level rise
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Observing Systems</li> </ul>
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience. Report for Maryland Commission on Climate Change.

<b>Need</b>	Indicators and indices to gauge the severity of impacts drought induced saltwater intrusion has on coastal systems
Type	- DATA: In situ Observations - DATA: Indicator Based Research
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drough Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

<b>Need</b>	Indicators that are representative of specific geographic ranges, behaviors, or population characteristics of certain species, including plants, birds, mammals, and insects, that are known to be sensitive to sea-level rise and other climatic changes
Type	- DATA: Indicator Based Research
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Observing Systems</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Ecological and Biological</li> <li>- Chemical</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

Need	Information about river herring sensitivity to climate change variables and projecting these into the future
Description	Variables include water chemistry and habitat criteria for river herring, water quality (including temperature, pH, salinity, contaminants, etc.) and match it up to spawning habitat and early life stage development; well-coordinated fishery independent survey network in juvenile habitats
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

Need	Information on potential impacts of climate change on river herring by region including information of species, life stage, indicators, potential impacts, and available data/relevant references
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Type	- DATA: In situ Observations - DATA: Data Stewardship and Provisions - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

<b>Need</b>	Initiatives to educate public about limiting the spread of vector-born disease
Description	Initiatives to educate public about reducing vector born diseases, for instance preventing standing water to reduce mosquito breeding habitats
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Initiatives to remove invasive species from large unfragmented forest blocks on state land
Description	Collaborate with community non-profits on conservation efforts, including removal of invasive species
Type	- PRODUCTS: Engagement - PRODUCTS: Education
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions

Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Integrate environmental and health initiatives so that they address both human and ecosystem health
Description	Integrate environmental and health initiatives so that they address both human and ecosystem health
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Sector	- Public Health and Safety - Natural Ecosystems - Social and Cultural Resources - Cross Disciplinary
Region	- Regional Or State -- Mid-Atlantic
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Integration of sea-level rise projections and scenarios into digital/spatial database
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- Central -</li> <li>- Great Lakes -- South East</li> </ul>
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	Inventory of infrastructure potentially impacted by sea level rise, including the identification of public and private systems and facilities and threatened historical structures
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

<b>Need</b>	Investigate benefits to broader use of integrated pest management
Description	Conduct research and investigate use of pest controls for changing conditions. Integrated pest management, and the use of herbicides, fungicides, and insecticides will likely be needed to address pests not presently common in Massachusetts. Research by educational institutions and trade groups on organic strategies, as well as training in new pest controls may be needed to improve familiarity of best practices and alternative solutions to emerging pests.
Type	<ul style="list-style-type: none"> <li>- DATA: Other</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>

Focus Area	- Climate Impacts on Water Resources
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Landslides maps to predict mudslides in the case of severe storms
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	LiDAR data for revision of FEMA maps and in-depth modeling of geomorphic/vegetation changes due to sea level rise
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	Governor's Commission on Climate Change (Virginia). Final Report: A Climate Change Action Plan. December 2008.

<b>Need</b>	LiDAR data to conduct vulnerability assessment in these areas: sea level rise and coastal flooding, habitat types, socio-economic vulnerability to sea level rise, existing infrastructure
Description	LiDAR data to conduct vulnerability assessment in these areas: sea level rise and coastal flooding, habitat types, socio-economic vulnerability to sea level rise, existing infrastructure.

Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	Governor's Commission on Climate Change (Virginia). Final Report: A Climate Change Action Plan. December, 2008.

<b>Need</b>	LiDAR to identify important wetlands and ensure that a variety of wetland types are represented in land protection planning
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Local climate-change predictions
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Description	From page 22 of the report: We need local climate-change predictions. As well, we need better measurements of past and present-day conditions. Better information on waves and water levels is important. Currently, only a handful of permanent water-level gauging stations are operating in Atlantic Canada. For example, there is just one permanent gauge in Prince Edward Island (at Charlottetown). Measuring storm surge and extreme water levels along the north, east, and west shores of the island must rely on gauges located hundreds of kilometres away. Data on offshore wave conditions is even sparser. Computer models and remote sensing data are making great strides in improving our predicting water levels and understanding our nearshore waters. But there is still a need for reliable, long-term measurements.
Sector	- Infrastructure - Natural Ecosystems
Source	see report information above
Lead Agencies	Atlantic Canada Adaptation Solutions Association
Contacts	Mike Davies, Ph.D. (report author), <a href="http://www.coldwater-consulting.com">www.coldwater-consulting.com</a>

Need	Localized flooding and sea level rise information to build up coastal roads in preparation for storms, and prepare community for road closures
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

Need	Management for private forests to address increase pest pressure, fragmentation as well as stressors associated with climate change
Description	Management for private forests to address increase pest pressure, fragmentation as well as stressors associated with climate change

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Education</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> </ul>
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	<ul style="list-style-type: none"> <li>- Ecological and Biological</li> <li>- Climate Society Interactions</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Biota</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Map of new infrastructure and development outside of future floodplans considering sea level rise, erosion of barrier islands and coast lines, and wetland inundation
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Mapping benthic habitats
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Biota
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Mapping of coastal areas to determine areas well suited for coastal protection
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Mapping of location and elevation of public and private infrastructure, including value and condition
Type	- DATA: Depth and Elevation Data - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Social and Cultural Resources - Economic Resources
Region	- Regional Or State -- New England
Source	Facing Our Future: Adapting to Connecticut's Changing Climate. March, 2009.

<b>Need</b>	Mapping of shifts in habitat uses and species distributions (including prey species) to document climate impacts
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)



Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Mapping sea level rise inundation zones
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Rhode Island Coastal Resources Management Council. 2010. Program Assessment and Strategy for Enhancement Performed Pursuant to Section 309 of the Coastal Zone Management Act of 1972 as Amended.

<b>Need</b>	Mapping that combines NOAA weather predictions and agricultural knowledge to assist with crop relocation
Description	Support and plans for crop relocation projects, using mapping that combines NOAA weather predictions and agricultural knowledge
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Maps of barrier island land area change
Description	Increased understanding of storm impact on barrier islands, including maps of land area change
Type	- PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Maps of flood and storm surge heights, with extent of areas inundated compounded by impervious surface run off
Description	Maps of flood and storm surge heights, with extent of areas inundated compounded by impervious surface run off (similar to existing FEMA maps)
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	State of New Jersey. 2008. Draft: Global Warming Response Act Recommendation Report.

<b>Need</b>	Maps of the effects of changes in oceanographic conditions on protected marine species, including candidate species and species of concern, and their prey
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats

Discipline	- Physical Science - Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Maps of where public drinking water supply systems, waste water treatment facilities, and locations where public linear infrastructure such as roads or sewer systems intersect surface waters; include vulnerability to flooding
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Marine ocean acidification threshold information
Type	- DATA: Observing Systems - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East

Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.
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<b>Need</b>	Modeling and inundation analyses for storm surge from extra-tropical storms
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

<b>Need</b>	Modeling support for sea level rise and products to make the data and model results available to all stakeholders and users
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- South East
Source	Mitchum, G. 2011. Sea Level Changes in the Southeastern United States: Past, Present, and Future. Florida Climate Institute. Southeast Climate Consortium.

<b>Need</b>	Models of aquifers and groundwater flows in the coastal zone to inventory the vulnerability of water systems
Description	Models of aquifers and groundwater flows in the coastal zone to inventory the vulnerability of public/private water systems to saltwater due to progressive sea level rise
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)

Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Monitor health hazards and events (i.e. air quality monitoring, number of heat related illnesses and deaths)
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Engagement - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Monitor the impacts of storms and hurricanes on water-borne diseases
Type	- DATA: Surveys and Preliminary Assessments - DATA: Data Stewardship and Provisions - PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Monitoring and evaluation are needed to identify climate-driven changes
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Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Monitoring and farmer education programs to encourage identification and reporting of agricultural pests
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Monitoring and identification of pollution-induced eutrophication that facilitates algal blooms
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Natural Ecosystems - Biota - Social and Cultural Resources - Recreation and Tourism

Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.

<b>Need</b>	Monitoring of coastal and marine habitat ecosystem response to climate change
Type	- DATA: In situ Observations - DATA: Observing Systems
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Monitoring of coastal and marine habitat ecosystem response to climate change
Type	- DATA: In situ Observations - DATA: Observing Systems
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East

Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.
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<b>Need</b>	Monitoring strategy for key marine indicators, including invasive species
Type	- DATA: Indicator Based Research - PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Monitoring to detect environmental responses to climate change and prioritize inland habitat or watersheds to protect or restore
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Engagement
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.

<b>Need</b>	Monitoring transportation infrastructure conditions, particularly the impacts of weather and climate extremes
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Type	- DATA: Observing Systems - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	More information on river herring at the extremes of the range to see the most acute climate change effect (e.g., on blueback herring in the St. Johns River, alewife in North Carolina)
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NMFS. 2012. River Herring Climate Change Workshop Report. Report to the National Marine Fisheries Service, Northeast Regional Office. December 27, 2012, 60pp.

<b>Need</b>	Municipal resources and tools for climate adaptation planning when faced with limited budgets and staffing
Description	Leaders in the region recognize the need to be proactive in adapting... but do not yet have the resources and tools they require to do so successfully...Many said they needed help making adaptation a priority in their communities at a time of constrained human and financial resources.
Type	- PRODUCTS: Engagement
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate

Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Social and Cultural Resources - Economic Resources - Cross Disciplinary
Region	- Regional Or State -- New England
Source	Preparing for the Changing Climate: A Northeast-focused Needs Assessment (Clean Air-Cool Planet, 2011)
Lead Agencies	Clean Air-Cool Planet

Need	Municipalities in New Brunswick need funding, expertise, information and cooperation to increase their capacity for climate change adaptation
Description	From the study: "Many municipalities are small and have limited staff who have no expertise in (or even basic knowledge of) environmental and climate change matters. Municipalities feel that they need information and often do not have the finances, time or human resources to collect it themselves. They also need proof that climate change is actually occurring locally, and information and an increased awareness on how exactly climate change trends will affect ... their communities. Furthermore, this information needs to be consistently available over the long-term... Municipalities would benefit from toolkits and tangible examples of climate change adaptation planning. These could include recommended actions in the forms of specific models of bylaws, legislations, policies, and guidelines for design standards, for example."
Type	- PRODUCTS: Plans, Assessments, Studies
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Social and Cultural Resources - Economic Resources - Cross Disciplinary
Source	Capacity for Climate Change Adaptation in New Brunswick Municipalities (2010)
Lead Agencies	Mount Allison University Rural and Small Town Programme
Contacts	Stephanie Miller and Gwen Zwicker

Need	National system for inventorying natural areas that includes their carbon sink capacity (and calculates the CO2 emissions that would result from their conversion). Uniform national (Canadian) calculator to help assign dollar values to natural features.
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Description	<p>From a conference call with municipalities on the topic of land use/land conversion and its impact on municipal greenhouse gas emissions:</p> <p>Participants voiced the need for a systematic, nationwide approach/system to compile inventories of natural areas that include a GHG count (carbon sink capacity), and provide a uniform means by which to calculate potential CO2 emissions from conversion of these natural areas. Since it may take time to develop these inventories and conversion measures, participants recommended that a uniform nationwide calculator should be developed that could assign a dollar value to natural features. Participants expressed a need for Canada to emphasize land use/conservation as a critical means of emissions reductions/carbon stabilization and provide better means of measuring cost/benefits of preservation vs. infrastructure investment (e.g., is money better spent preserving/reconstructing wetlands or retrofitting a building). They felt that Canada needs broader public recognition of the value natural lands provide both for carbon storage (emissions reductions/mitigation) and for adaptation (flood control; reducing heat island effect; tempering winds and extreme weather; reducing drought, erosion, and desertification).</p>
Discipline	- Ecological and Biological
Sector	<ul style="list-style-type: none"> <li>- Natural Ecosystems</li> <li>- Economic Resources</li> <li>- Cross Disciplinary</li> </ul>
Source	July 2013 Land Use Discussion hosted by FCM's Partners for Climate Protection
Lead Agencies	Federation of Canadian Municipalities/Partners for Climate Protection
Contacts	Devin Causley, pcp@fcm.ca

Need	<p>Need modelling for what level of storm severity will cause overtopping of dykes</p> <p>Assess potential for salt marsh restoration as an adaptive strategy to buffer storm surge</p> <p>Define regionally relevant best practices to reduce flood risk/impact</p>
Description	<p>Additional needs identified in the report:</p> <ul style="list-style-type: none"> <li>- The flat water model used leaves open the question of how long/intense a storm has to be to overtop the dykes</li> <li>- need for strong coordination between RCMP, CN rail, Department of Transportation, and utilities in terms of emergency response if waters do flow over the dykes</li> <li>- need further study of how Hsaline intrusion affect freshwater wetlands and impact biodiversity</li> </ul>
Type	- PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> </ul>

Source	Coastal Dykelands in the Tantramar Area: Impacts of Climate Change on Dyke Erosion and Flood Risk (October 2012)
Lead Agencies	Atlantic Climate Adaptation Solutions Association New Brunswick Department of Environment--Climate Change Secretariat
Contacts	env-info@gnb.ca

<b>Need</b>	Need more information on adaptive actions taken by communities in the Gulf of Maine region; climate impacts specific to the region; and socio-economic data on the costs of ecosystem disruptions and major storm/weather events.
Description	The State of the Gulf of Maine Report's theme papers on climate change (2010) cite gaps in climate-related information on adaptive actions that communities are taking; regional impacts of climate change; and socio-economic data about the costs associated with extreme weather events and potential diminishment of productive ecosystems.
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Education
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems - Biota - Social and Cultural Resources - Economic Resources
Source	State of the Gulf of Maine Report Theme Papers on Climate Change Impacts (2010)
Lead Agencies	Gulf of Maine Council on the Marine Environment
Contacts	Heather Breeze Heather.Breeze@dfo-mpo.gc.ca

<b>Need</b>	New design that lessens stormwater and wastewater nutrient effects on ecosystems
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science - Ecological and Biological
Sector	- Infrastructure
Region	- Regional Or State -- New England

Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.
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<b>Need</b>	Northeast regional and sub-regional Coastal and Marine Spatial Planning
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> </ul>
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Connecticut Department of Environmental Protection. Office of Long Island Sound Programs. 2010. Updated Assessment and Strategy of the Connecticut Coastal Management Program.

<b>Need</b>	Ocean acidification observations and research
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Observing Systems</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Ecological and Biological
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Ocean Tracking Network to monitor ocean acidification and migration patterns
Type	- DATA: Observing Systems

Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Ecological and Biological
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- International</li> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic -- South East</li> </ul>
Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.

Need	On-line Coastal Atlas that facilitates access to best available information on renewable ocean energy- related siting issues
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

Need	Outreach and education about climate related hazards, natural disasters, and emergency response protocol
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Education</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic

Source	New Hampshire Climate Action Plan, People & Nature Adapting to Climate Change: Charting Maine's Course, Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations
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<b>Need</b>	Outreach and education about water conservation practices
Description	Conduct outreach and education about water conservation practices.
Type	- PRODUCTS: Engagement - PRODUCTS: Education
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Outreach and education programs for populations most vulnerable to climate related health hazards
Description	Outreach and education programs for populations most vulnerable to climate related health hazards
Type	- PRODUCTS: Engagement - PRODUCTS: Education
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Rhode Island Climate Commission Progress Report 2012. Adapting to Climate Change in the Ocean State: A Starting Point, Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations. 2010.

<b>Need</b>	outreach material on adaptation and planning for the general public, providing landowners and communities with examples of climate change best practices and with comparative cost-benefit analyses of adaptive changes
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Description	Other needs identified at this meeting include: - create a list of indicator species to monitor how climate change is affecting GOM marine life; - foster the sharing and coordination of data and modelling experiences, and help compile standardized and consistent land-based datasets such as LIDAR; - support development of high-resolution maps (at 5 km) in conjunction with federal, provincial, state, municipal, and private entities;
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Needs identified at a binational meeting in Orono, Maine in September 2013
Lead Agencies	Gulf of Maine Council on the Marine Environment Climate Network

<b>Need</b>	Outreach materials on flood adaptation measures for facilities with hazardous materials
Description	Encourage local government agencies that oversee the operation or building of industrial facilities with hazardous waste and hazardous materials in areas prone to flooding to develop outreach materials on flood adaptation measures
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Outreach on effective coastal hazards planning to make public aware of existing resources and info
Type	- PRODUCTS: Engagement
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate



Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Connecticut Department of Environmental Protection. Office of Long Island Sound Programs. 2010. Updated Assessment and Strategy of the Connecticut Coastal Management Program.

Need	Outreach to coastal managers: inform about StormSmart Coasts web site as a tool to communicate with other CMPs on what they are doing and how they are engaging communities in adaption planning
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	New Hampshire Department of Environmental Services. 2010. Coastal Zone Management Act Section 309 Enhancement Grants Program Assessment and Strategy. R-WD-10-25.

Need	Outreach to facilitate public dialogue about benefits, costs, and risks associated with protecting existing coastal development
Type	- PRODUCTS: Engagement
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Partnership with existing federal agriculture programs to facilitate outreach and technical assistance programs at the state or county level
Description	Provide technical assistance and outreach in partnership with existing federal programs (such as U.S. Department of Agriculture's Natural Resources Conservation Service) that deliver programs at the state or county level.

Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Partnerships between industry and government to facilitate technical assistance to businesses that are adapting to climate change
Type	- PRODUCTS: Engagement - PRODUCTS: Regulatory/ Policy Guidance
Priority	- High
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Pest monitoring education programs for farmers
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Policies that encourage the use of energy efficient cooling methods such as shading buildings and windows, and use of highly reflective roof paints to reduce building temperature and energy usage
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Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

Need	Policy and guidance on the use of living shoreline techniques to address coastal erosion and cumulative effects of shoreline hardening
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Rhode Island Coastal Resources Management Council. 2010. Program Assessment and Strategy for Enhancement Performed Pursuant to Section 309 of the Coastal Zone Management Act of 1972 as Amended.

Need	Policy engagement and communication about trade-offs between transportation infrastructure robustness versus economic costs of failure
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	- Infrastructure

Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

<b>Need</b>	Policy strategies (such as rolling easements) that protect coastal wetlands by prohibiting seawall construction, while still allowing for development
Type	- PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Policy that targets coastal and floodplain properties for residents and structures needing to relocate due to risk of inundation
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Rhode Island Climate Commission Progress Report 2012. Adapting to Climate Change in the Ocean State: A Starting Point.

<b>Need</b>	Policy to reduce agricultural, urban, and stormwater runoff
Description	Seek to implement and enforce legal and design standards to reduce agricultural, urban, and stormwater runoff

Type	- PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Policy toolkits to help build resilient regional water systems
Description	Policy toolkits that help build resilient regional water systems using tools such as treaties, risk sharing mechanisms, and regional planning approaches
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Policy tools that help provide disincentives to building or remaining in high risk areas
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Predictions for changes to freezing periods to inform logging industry
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Description	Information on freezing periods for loggers; soil must be hard for heavy machinery to operate without causing damage
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Predictions of harmful algal blooms and marine pathogens
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Predictions to help identify new agricultural market opportunities and guide new crop development
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

Description	Predictive data on weather extremes to adapt culvert management; adaptations might include changing requirements for culvert size, implementing design for increased scour, and increased inspection of culverts.
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Predictive mapping and modeling to identify location of future habitats
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Multiple

<b>Need</b>	Predictive models for red tide (phytoplankton blooms)
Type	- PRODUCTS: Hindcasts (climatologies, models) - PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science

Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.

Need	Probabilistic investment analyses and design approaches that apply techniques for trading off the costs of making transportation infrastructure more robust against the economic costs of failure
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.

Need	Probability forecasts of moisture, to aid with thresholds of fungus-resistant crop
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.



Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Projections of increased water demand to establish new thresholds and guidelines
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Projects/maps to help identify vulnerable coastal infrastructure and ecosystems: shoreline, coastal wetlands, transportation (streets, bridges and causeways) and energy infrastructure
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	State of New Jersey. 2008. Draft: Global Warming Response Act Recommendation Report.

Description	Promote 'citizen science', the involvement of citizens to monitor ecological shifts in time and space (i.e. feederwatch: survey to predict bird distributions)
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Observing Systems</li> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Education</li> </ul>
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Sector	<ul style="list-style-type: none"> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Promote fire suppression practices in response to increased fire risk.
Description	Promote fire suppression practices in response to increased fire risk.
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- New England
Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.

<b>Need</b>	Promote sustainable land use planning and development to avoid habitat fragmentation
Description	Promote sustainable land use planning and development to avoid habitat fragmentation.
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Education</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats

Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. March 2009.

<b>Need</b>	Promote workforce development to train public health staff to respond to climate change related health threats
Description	Promote workforce development to train public health staff to respond to climate change related health threats
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Provide foresters with strategies, technical assistance, skills, and support services related to maintaining forest viability in the face of climate change induced disturbance
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Other
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	public awareness of climate change risks/impacts, potential mitigation actions, integration of climate vulnerability information into planning, improved forecasting
Description	The Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) in its 2013 Regional Climate Change Action Plan: Strategic Overview cites the need to <ul style="list-style-type: none"> <li>• enhance understanding of regional climate-related change and its impacts;</li> <li>• share information on effective policies and practices (particularly those that involve multi-jurisdictional collaboration);</li> <li>• work cooperatively with the research community to better understand forecasting and appropriate macro-level adaptation measures;</li> <li>• ensure that climate risk/vulnerability/adaptation information is integrated into planning and sectoral decision-making; and</li> <li>• continue to inform the public about climate risks and impacts, mitigation actions, and preparedness.</li> </ul>
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Social and Cultural Resources - Economic Resources - Cross Disciplinary
Region	- Regional Or State -- New England
Source	The Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) 2013 Regional Climate Change Action Plan: Strategic Overview
Lead Agencies	Conference of New England Governors and Eastern Canadian Premiers

<b>Need</b>	Public outreach to educate about water management importance and strategies
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Type	- PRODUCTS: Engagement - PRODUCTS: Education
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Publicly available monitoring and data about climate and health indicators such as airborne pollen and mold
Type	- DATA: In situ Observations - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	R&D/implementation of sensors and other “smart” technologies to monitor transportation infrastructure
Description	R&D for sensors and other “smart” technologies would enable infrastructure providers to receive advance warning of potential failure due to water levels and currents, wave action, winds, and temperatures exceeding what the infrastructure was designed to withstand
Type	- DATA: Observing Systems
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East

Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation. Washington, DC: The National Academies Press.
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<b>Need</b>	Refined benthic and demersal resource data on species location in reference to coastal armoring
Type	- DATA: In situ Observations - DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Ecological and Biological
Sector	- Infrastructure - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Refined modeling and mapping of the variations of sea level rise impacts (inundation, flooding, storm surge)
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure - Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic
Source	Governor's Commission on Climate Change (Virginia). Final Report: A Climate Change Action Plan. December 2008.

Description	Current conditions need to be put into a historical context and observations need to be incorporated into regional modeling to support hindcasts, nowcasts, and forecasts of climate conditions in the region.
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic</li> </ul>
Source	Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOS)

Need	Regional precipitation data and projections to predict freshwater inputs into bays and estuaries
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> <li>- PRODUCTS: Viewers and Web-based Tools</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State -- New England -- Mid-Atlantic</li> <li>- Local/City</li> </ul>
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Regionalization efforts among local boards of health
Description	Facilitate and enhance regionalization efforts among local boards of health
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Training and Capacity Building</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Relative and absolute humidity data to determine HVAC needs for industrial applications
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Type	- DATA: In situ Observations - DATA: Data Stewardship and Provisions
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- South East
Source	Dow, K. 2012. Climate Information Needs in the Southeast: Analysis of Requests. CISA Research Report 2012-02. Columbia, SC: Carolinas Integrated Sciences & Assessments (CISA).

<b>Need</b>	Research and development of road building materials that can withstand high temperatures without buckling, and mechanisms for sharing new knowledge
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	National Research Council. 2008. Transportation Research Board Special Report 290: Potential Impacts of Climate Change on U.S. Transportation.

<b>Need</b>	Research and improved projections for local scale ocean stratification and its impact on production
Type	- DATA: In situ Observations - DATA: Satellite Remote Observations - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota

Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

Need	Research and observations are needed to anticipate and track how habitats respond to changes in climate
Description	Research and observations are needed to anticipate and track how habitats respond to changes in climate
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	- Ecological and Biological
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

Need	Research and observations to help design and evaluate marine habitat protection and restoration efforts to promote resilience and adaptation to climate change
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Plans, Assessments, Studies</li> <li>- PRODUCTS: Other</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Coasts and Climate Resilience (including sea-level rise)</li> </ul>

Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Research equitable water pricing programs to implement greater water conservation
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Research focused on bridges in the context of possible increased stream instability due to different sediment transport loads, overtopping, and weir flow damage to bridge approach roadways
Description	Research focused on bridges in the context of possible increased stream instability due to different sediment transport loads, overtopping, and weir flow damage to bridge approach roadways
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Research into feasibility of alternative power generation, specifically focused on resilience to climate impacts
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Research into impact of hydrological changes on non-point source pollution and storm water runoff
Description	Research into impact of hydrological changes on non-point source pollution and storm water runoff
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic

Source	Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations. 2010.
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<b>Need</b>	Research into local impacts of climate on health demands and the capacity of providers
Description	Assess the capacity of providers to address anticipated increased patient volumes and changing health demands, including capacity to address heat waves and anomalous winter weather events.
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research into opportunities to coordinate water treatment and energy generation
Description	Explore opportunities to coordinate water treatment and energy generation, for example locating power plants adjacent to wastewater treatment facilities could partially displace freshwater needs for cooling purposes
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research into spatial and temporal distribution and habitat needs of marine animals and plants
Description	Develop a better understanding of the spatial and temporal distribution and habitat needs of marine animals and plants
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological

Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research into specific economic impacts of drought on coastal resources
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure - Managed Ecosystems - Natural Ecosystems - Biota - Economic Resources
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drought Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

<b>Need</b>	Research into specific economic impacts of drought on healthcare costs
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Economic Resources
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drought Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

<b>Need</b>	Research into technology (water re-use systems, desalination, irrigation efficiency) to improve storage and reuse practices of storm water
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Description	Research into technology: water re-use systems, desalination, irrigation efficiency to improve storage and reuse practices of storm water Research and development
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Rhode Island Climate Commission Progress Report 2012. Adapting to Climate Change in the Ocean State: A Starting Point.

<b>Need</b>	Research into the capacity of streams and rivers to assimilate effluent from wastewater treatment plants experiencing increasing water temperatures
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Research into the effects of shifting pH on aquaculture and shellfish fisheries
Description	Research into the effects of shifting pH on aquaculture and shellfish fisheries
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Economic Resources
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research into the impacts of climate change on genetics of fishery stocks and other marine species
Type	- PRODUCTS: Plans, Assessments, Studies

Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Understanding Climate Impacts on Fish Stocks of the Northeast Large Marine Ecosystem: Key Research Needs and Future Directions. Providence, RI; July 23, 2013. Meeting Notes.

<b>Need</b>	Research into the impacts of climate change on the agricultural economy, food prices, and food security
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Economic Resources
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Research into the potential effects of shifting climate patterns on offshore wind structures such as turbines and drilling platforms
Description	Research into the potential effects of shifting climate patterns on offshore wind structures such as turbines and drilling platforms
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Economic Resources



Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Research into the role of groundwater in coastal systems, particularly focused on depth, discharge rates, and combined impacts of nutrients, contaminants, etc
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drough Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

Need	Research into whether or not the life spans of buildings are in line with anticipated climate changes (i.e., a 50-year building will not be located in an area where flooding is projected in 30 years' time)
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Research is needed on Great Lakes biogeochemical cycles and how they will interact with climate change
Description	Geologic conditions surrounding the Great Lakes create different chemistry than oceans or other freshwater environments; as a result, there is a strong need for research about Great Lakes' biogeochemical cycles, and how they will interact with climate change

Type	- DATA: In situ Observations - DATA: Data Stewardship and Provisions
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science - Chemical
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Research is needed on when, where and how habitats and ecosystems may undergo rapid, significant changes or ecological tipping points, and possible management strategies to avoid these outcomes
Description	Special focus is needed on when, where and how habitats and ecosystems may undergo rapid, significant changes or ecological tipping points, and possible management strategies to avoid these outcomes
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	NOAA Office of Habitat Conservation. 2010. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate.

Description	Facilitate research on crop adaptation and diversity with a specific focus on hybrid crops better able to withstand new pests
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological
Sector	- Public Health and Safety - Managed Ecosystems - Economic Resources
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research on disease resistant shellfish strains
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Research on the economic impacts of coastal hazards (including sea level rise) on resource-based trades and industries
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Economic Resources
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Research policy options for nourishment of private beaches
Description	Examine issuing a state policy regarding the mining of sediment from the seafloor to guide the use of sand and gravel resources from Massachusetts' tidelands, especially for nourishment of private beaches
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Research to identify major crops and livestock affected by climate change to develop mitigating practices
Description	Assess vulnerable crops. Identify major crops and livestock likely to be affected by climate change, and practices that may mitigate these effects
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England

Source	Massachusetts Climate Change Adaptation Report. September 2011.
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Need	Research, educate, and develop incentives to encourage forestry practices that foster regeneration of vulnerable species (such as northern hardwoods) to perpetuate their benefits
Description	Research, educate, and develop incentives to encourage forestry practices that foster regeneration of vulnerable species (such as northern hardwoods) to perpetuate their benefits
Type	<ul style="list-style-type: none"> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- PRODUCTS: Engagement</li> <li>- PRODUCTS: Education</li> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

Need	Restoration and wetland adaptation strategies in response to sea level rise
Type	- PRODUCTS: Training and Capacity Building
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> <li>- Climate Society Interactions</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	Source New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

Type	- DATA: In situ Observations
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Osgood, K.E. (Ed). 2008. Climate Impacts on U.S. Living Marine Resources: National Marine Fisheries Service Concerns, Activities and Needs. NOAA Technical Memorandum NMFS-F/SPO-89

<b>Need</b>	Risk alert system for potential homebuyers
Type	- PRODUCTS: Engagement
Priority	- High
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Multiple

<b>Need</b>	Risk and vulnerability assessments that incorporate sea level rise
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010. (Unpublished).

<b>Need</b>	Risk assessment addressing habitat loss and degradation
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Description	Evaluate risks of habitat loss and degradation; implement appropriate solutions to maintain terrestrial and aquatic ecosystem connectivity.
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England
Source	The Impacts of Climate Change on Connecticut Agriculture, Infrastructure, Natural Resources and Public Health, People & Nature Adapting to Climate Change: Charting Maine's Course, The New Hampshire Climate Action Plan:

<b>Need</b>	Risk-based methods to evaluate service life of infrastructure assets against adverse climate change
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Risk/vulnerability assessments of erosion and storm surge with sea level rise scenarios
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Commonwealth of Massachusetts. Executive Office of Energy and Environmental Affairs. Office of Coastal Zone Management. 2010. Section 309 Assessment and Five-Year Strategy for CZM Program Enhancement (FY2011-2015).

<b>Need</b>	Robust, multidisciplinary network to share daptation science, tools, data, and expertise among federal agencies and with state, local and tribal governments.
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Type	- PRODUCTS: Engagement
Focus Area	- Changes in Extremes of Weather and Climate
Sector	- Infrastructure - Natural Ecosystems
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	The Nature Conservancy. Public Comments: 2012 U.S. DOT Climate Adaptation Plan.

<b>Need</b>	Routine mechanisms for coastal and marine sectors to stay current on best available scientific information, i.e. through the NOAA Climate Portal, webinars, training workshops, etc.
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Satellite altimetry to measure sea level rise and ice melts, local tidal gauges to measure relative sea level change at the local scale
Type	- DATA: In situ Observations - DATA: Observing Systems - DATA: Surveys and Preliminary Assessments - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)



Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- South East
Source	Mitchum, G. 2011. Sea Level Changes in the Southeastern United States: Past, Present, and Future. Florida Climate Institute. Southeast Climate Consortium.

<b>Need</b>	Scientific and technological research to identify novel means to reduce air pollution
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Scientific guidance for habitat managers on how best to apply climate projections
Description	Habitat managers need help from NOAA climate scientists on how best to apply climate projections, and under what conditions
Type	- DATA: Data Stewardship and Provisions - PRODUCTS: Other - PRODUCTS: Training and Capacity Building
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Sea level rise maps specific to waste water systems (private septic and public systems)
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Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Sea surface and water column profiles of these parameters are necessary and measurements are needed on spatial and temporal scales that capture the variability experienced by organisms
Type	- DATA: In situ Observations
Focus Area	- Sustainability of Marine Ecosystems
Discipline	- Physical Science
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Osgood, K.E. (Ed). 2008. Climate Impacts on U.S. Living Marine Resources: National Marine Fisheries Service Concerns, Activities and Needs. NOAA Technical Memorandum NMFS-F/SPO-89

<b>Need</b>	Sea surface, water column and bottom temperature data
Type	- DATA: In situ Observations - DATA: Observing Systems
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Sensors for tracking ocean acidification
Description	Sensors for tracking ocean acidification
Type	- DATA: In situ Observations - DATA: Observing Systems
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Partnership for Observation of the Global Oceans. 2010. Speed Installation of System to Monitor Vital Signs of Global Ocean, Scientists Urge.

<b>Need</b>	Shoreline management planning
Description	Will involve "assessing underlying geology and morphology, historic and recent shoreline change, as well as mapping of existing structures and current shore conditions, assessing existing marine resources, analyzing general wave climate, analyzing storm surge and sea level rise, and developing site-specific shore management strategies."
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Geological
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	Virginia Coastal Management Office. 2011. Section 309 Needs Assessment & Strategy.

<b>Need</b>	Short & long term weather forecasts & probabilities, with an emphasis on flash events that consider effects on livestock
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate

Discipline	- Physical Science
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Specific agency-level plans generated by DOT for communication and integration of efforts among the modal administrations and to state and metropolitan partners
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Georgetown Climate Center. Public Comments: 2012 U.S. DOT Climate Adaptation Plan.
Lead Agencies	DOT

<b>Need</b>	State-wide sea-level rise inundation and storm surge modeling at a scale appropriate for both state and local planning
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

<b>Need</b>	Statewide Adaptation Plan addressing coastal hazards under various climate change and sea level rise scenarios
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Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New Jersey Coastal Management Office. 2011. New Jersey Section 309 Coastal Programs Assessment and Strategy for 2011-2015.

<b>Need</b>	Statewide database inventory of natural systems and resources
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future.

<b>Need</b>	Stronger federal, state, local, and regional observation systems to improve the detection of biological, physical, and chemical responses to climate change and sea level rise
Type	- DATA: In situ Observations - DATA: Satellite Remote Observations - DATA: Observing Systems - DATA: Data Stewardship and Provisions
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological - Chemical
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- Mid-Atlantic

Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.
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<b>Need</b>	Studies on specific impacts of climate change on food supplies, food quality, food availability, and disease transmission
Description	Identify and understand specific impacts of climate change on food supplies, food quality, and disease transmission to develop appropriate policies and regulations
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Massachusetts Climate Change Adaptation Report, Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II

<b>Need</b>	Studies that evaluate impacts of weather extreme predictions on transportation infrastructure design and materials
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Studies to identify coastal areas for suitable sand and gravel nourishment
Description	Identify coastal areas for suitable sand and gravel nourishment. Includes investigating appropriate potential borrow areas, identifying sediment quantities and examining sediment characteristics
Type	- DATA: Surveys and Preliminary Assessments - DATA: Depth and Elevation Data - PRODUCTS: Plans, Assessments, Studies

Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> <li>- Geological</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England
Source	The Commonwealth of Massachusetts. 2009. Management and Administration. Massachusetts Ocean Management Plan. Volume 1.

<b>Need</b>	Study on risks to affordability and availability of insurance
Description	Study on climate change risks to availability and affordability of insurance, including identifying data gaps, insurance structures to encourage early adaption, and assessment for managing risks and uncertainty
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> <li>- Economic Resources</li> </ul>
Region	- Regional Or State -- Mid-Atlantic
Source	Maryland Commission on Climate Change. 2008. Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase I: Sea-level Rise and Coastal Storms. Adaptation and Response Working Group.

<b>Need</b>	Support stormwater, land use and flood management to prioritize natural function and minimize hazards to existing structures
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Training and Capacity Building</li> <li>- PRODUCTS: Management Guidance (i.e. structured decision making)</li> <li>- PRODUCTS: Regulatory/ Policy Guidance</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Climate Society Interactions

Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Systems to measure and monitor climate-related health effects and identify those populations which may be most vulnerable
Type	- PRODUCTS: Engagement - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Targeted education efforts for planners, and for specific groups or communities more likely to be vulnerable to public health impacts
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- Mid-Atlantic
Source	Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience. Report for Maryland Commission on Climate Change.

<b>Need</b>	Targeted process studies are required to understand the mechanisms controlling the responses of living marine resources to climate
Type	- DATA: In situ Observations - DATA: Other - PRODUCTS: Plans, Assessments, Studies



Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	Osgood, K.E. (Ed). 2008. Climate Impacts on U.S. Living Marine Resources: National Marine Fisheries Service Concerns, Activities and Needs. NOAA Technical Memorandum NMFS-F/SPO-89

<b>Need</b>	Technical and financial support for farmers transitioning to new crops and infrastructure
Description	Policies that provide technical and financial support to farmers for transitioning to new crops and infrastructure.
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance - PRODUCTS: Other
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Economic Resources
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Technical assistance to aid in the implementation of Low Impact Development (LID) site design and stormwater management regulations
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Temperature and precipitation thresholds for increased wildlife mortality
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Thresholds for building material in areas of material strength, resistance to heat, cold and acidity
Type	- DATA: Surveys and Preliminary Assessments
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Sector	- Infrastructure

<b>Need</b>	Tide-coordinated NOAA LIDAR Coastal Surveys (mid-tide to low-tide)(shoreline; topo)
Type	- DATA: Observing Systems - DATA: Depth and Elevation Data - DATA: Data Stewardship and Provisions
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Rhode Island Coastal Resources Management Council. 2010. Program Assessment and Strategy for Enhancement Performed Pursuant to Section 309 of the Coastal Zone Management Act of 1972 as Amended.

<b>Need</b>	Time series of pH for the Gulf of Maine
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Description	No data exist on acidification in nearshore or ocean ecosystems for the Gulf of Maine
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science - Chemical
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Nye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Time series to detect changes in timing of ecological events occurring in the Gulf of Maine
Type	- DATA: In situ Observations - DATA: Observing Systems - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Nye, J. 2010. Climate Change and its Effects on Ecosystems Habitats and Biota. State of the Gulf of Maine.

<b>Need</b>	Tool for archiving and disseminating data related to forest hazards
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic

Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.
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<b>Need</b>	Tool that archives and makes data about health hazards widely available
Description	Archive and make data about health hazards widely available(i.e. air quality monitoring, number of heat related illnesses and deaths).
Type	- PRODUCTS: Engagement - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State
Source	ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report., Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change Phase II: Building Societal, Economic, and Ecological Resilience

<b>Need</b>	Toolkit or guidance to understand existing policy strengths and limitations for integrating adaptation strategies for sea level rise
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	- Infrastructure - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	Governor's Commission on Climate Change (Virginia). Final Report: A Climate Change Action Plan. December 2008.

<b>Need</b>	Toolkit to implement strategies for siting development outside of vulnerable resource areas
Description	Analyze strategies for siting new development and redevelopment outside of projected vulnerable and future resource areas.
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions

Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report

<b>Need</b>	Tools and models that combine climate (i.e. maps of temp ranges) and biology data to create migrating species maps
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Tools and technical assistance for private owners to prepare infrastructure for impacts
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- National - Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	Multiple

Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Tools that incorporate near-real-time data, including meteorological & snow pack data, water quality data, stream flow data, and reservoir status data
Description	Tools that incorporate near-real-time data, including meteorological & snow pack data, water quality data, stream flow data, and reservoir status data
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.

<b>Need</b>	Tools that track long term temperature shifts geographically to assist agricultural adaptation
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science

Sector	- Managed Ecosystems
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Tools to help develop long-term infrastructure sustainability plans
Description	Use adaptive management techniques to develop long-term infrastructure sustainability plans. Develop long-term solutions that include decentralized resources and regional approaches. Some solutions may involve centralized or decentralized physical assets
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Sector	- Infrastructure
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Tools to incorporate climate data into farm insurance policies
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools - PRODUCTS: Management Guidance (i.e. structured decision making)
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Infrastructure - Managed Ecosystems - Economic Resources
Region	- Regional Or State -- South East
Source	Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Tools to monitor, analyze and manage runoff from farms with livestock
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance

Focus Area	- Climate Impacts on Water Resources
Discipline	- Physical Science
Sector	- Infrastructure - Managed Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Tools to redefine flood zones and incorporate flood projections for building permitting, including new policy
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools
Priority	- High
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Tools, models, indicators to research, monitor, and measure drought
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science
Sector	- Natural Ecosystems - Biota
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drought Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

<b>Need</b>	Track and forecast large-scale and local-scale climate forcing within the Northeast region to make observations on boundary forcing as well as key internal climate-system parameters
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Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Hindcasts (climatologies, models)</li> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Region	<ul style="list-style-type: none"> <li>- Regional Or State -- New England</li> </ul>
Source	Northeast Regional Association of Coastal and Ocean Observing Systems (NERACOOS). Northeast Regional Build Out Plan. September 2011.

Need	Track endangered sea turtles, seabirds, major avifauna and bat migratory pathways, benthic communities of flora and fauna, certain pelagic fish, and areas of high trophic support
Type	<ul style="list-style-type: none"> <li>- DATA: In situ Observations</li> <li>- DATA: Surveys and Preliminary Assessments</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Sustainability of Marine Ecosystems</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Ecological and Biological</li> </ul>
Sector	<ul style="list-style-type: none"> <li>- Managed Ecosystems</li> <li>- Natural Ecosystems</li> <li>- Biota</li> </ul>
Source	Massachusetts Climate Change Adaptation Report, September 2011.

Need	Tracking of mitigation efforts for permitted tidal wetlands losses
Type	<ul style="list-style-type: none"> <li>- DATA: Surveys and Preliminary Assessments</li> <li>- DATA: Data Stewardship and Provisions</li> <li>- PRODUCTS: Training and Capacity Building</li> </ul>
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Conservation/ Restoration of Sensitive Species and Habitats</li> </ul>
Discipline	<ul style="list-style-type: none"> <li>- Physical Science</li> <li>- Climate Society Interactions</li> </ul>

Sector	- Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- Mid-Atlantic
Source	Virginia Coastal Management Office. 2011. Section 309 Needs Assessment & Strategy.

<b>Need</b>	Training and support to identify scientific information for use in habitat conservation planning and management
Description	Assistance to identify and provide the best available model projections and other scientific information for the use in habitat conservation recommendation, planning and management decisions.
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making) - PRODUCTS: Regulatory/ Policy Guidance
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Infrastructure - Managed Ecosystems - Natural Ecosystems - Biota
Region	- International - National - Regional Or State
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Training for coastal managers on inundation including mapping and shoreline delineations
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Management Guidance (i.e. structured decision making)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science

Sector	- Public Health and Safety - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Eastern Region Gaps, Needs and Assets Document. Updated in May 2010.

<b>Need</b>	Training in climate adaptation strategies for water supply and wastewater treatment facilities
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	Pennsylvania Climate Adaptation Planning Report: Risks and Practical Recommendations. 2010.

<b>Need</b>	Trainings, guides and/or toolkits could be developed collaboratively among climate and habitat conservation experts for use in fulfilling NOAA's habitat conservation mission
Type	- PRODUCTS: Engagement - PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Climate Society Interactions
Sector	- Managed Ecosystems - Natural Ecosystems - Biota

Region	- National - Regional Or State -- Mid-Atlantic -- Central -- Great Lakes -- South East
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Translation of climate change science and adaptation information for both practitioners and laypeople
Type	- PRODUCTS: Engagement - PRODUCTS: Education - PRODUCTS: Training and Capacity Building
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Transportation related inventory and assessment tools
Description	Develop and distribute transportation related inventory and assessment tools; create a common repository for the information, and provide technical assistance to local entities for modifying existing road structures
Type	- PRODUCTS: Viewers and Web-based Tools
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	People & Nature Adapting to Climate Change: Charting Maine's Course. 2009.

<b>Need</b>	Update 25, 50 and 100-year storm specifications, as well as flood plain and coastal area management designations
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Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> </ul>
Priority	- High
Focus Area	<ul style="list-style-type: none"> <li>- Coasts and Climate Resilience (including sea-level rise)</li> <li>- Climate Impacts on Water Resources</li> <li>- Changes in Extremes of Weather and Climate</li> </ul>
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England
Source	Facing Our Future: Adapting to Connecticut's Changing Climate. March, 2009.

<b>Need</b>	Update Maine's coastal Marine Geologic Environments layers
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise)
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Natural Ecosystems</li> </ul>
Region	- Regional Or State -- New England
Source	Maine Coastal Program. 2012. Maine Coastal Plan: Assessment and Strategy under Section 309 of the Coastal Zone Management Act.

<b>Need</b>	Updated flood records using statistical analysis of recorded floods in 10-15 year intervals
Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Maps (Imagery, geo-referenced data)</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	<ul style="list-style-type: none"> <li>- Public Health and Safety</li> <li>- Infrastructure</li> </ul>
Region	- Regional Or State -- New England -- Mid-Atlantic

Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.
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<b>Need</b>	Updated floodplain maps
Description	States need to updated floodplain maps to plan for climate impacts.
Type	- PRODUCTS: Maps (Imagery, geo-referenced data)
Priority	- High
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Infrastructure - Managed Ecosystems - Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	Virginia Governor's Commission on Climate Change. 2008. Final Report: A Climate Change Action Plan. , (and other state plans)

<b>Need</b>	Updated freshwater flood maps, sea level rise maps, and 100 year flood maps
Description	Updated flood and sea level rise maps are necessary to determine risk factors for engineering assessments
Type	- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- South East
Source	Facing Our Future: Adapting to Connecticut's Changing Climate. March, 2009., Sensitivities to Weather and Climate in North Carolina, Southeast Regional Climate Center (SERCC) Interview of Ryan Boyles, NC State Climatologist. June 2011.

<b>Need</b>	Updated peak flood flow frequency regional regression equations to produce more accurate flood level predictions
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Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	- Regional Or State -- New England -- Mid-Atlantic
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Urban heat research
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report. New York State Energy Research and Development Authority (NYSERDA). 2011.

<b>Need</b>	Vector-born infectious disease forecasts and maps of at risk areas
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	U.S. Global Change Research Program. National Climate Assessment Health Sector Workshop. Charleston, S.C. February 2012. Meeting notes.

<b>Need</b>	Vulnerability assessment for all critical public facilities (hospitals, schools)
Description	Investigate the vulnerability of all critical public facilities (hospitals, schools)
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- New England
Source	Preliminary Assessment of Rhode Island's Vulnerability to Climate Change and its Options for Adaptation Action. February 2010., Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Vulnerability assessment for forest types most vulnerable to climate change
Description	Assess vulnerable species. Identify forest types most vulnerable to climate change, and practices that may mitigate these effects.
Type	- PRODUCTS: Plans, Assessments, Studies
Priority	- High
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Physical Science - Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Vulnerability assessment for species, habitats, and ecosystems at multiple scales (national, regional, and watershed)
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Description	Assessments of the vulnerability of species, habitats, and ecosystems are required for adaptation planning and action at multiple scales (national, regional, and watershed).
Type	- PRODUCTS: Plans, Assessments, Studies - PRODUCTS: Other
Priority	- High
Focus Area	- Sustainability of Marine Ecosystems - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological
Sector	- Managed Ecosystems - Natural Ecosystems - Biota
Region	- National - Regional Or State - Local/City
Source	NOAA Office of Habitat Conservation. Priority Climate-Related Science, Product and Engagement Needs For Conservation of Marine and Coastal Habitats in a Changing Climate. June 2010.

<b>Need</b>	Vulnerability assessment related to occupational health and safety regulations to protect outdoor workers, particularly for vulnerable populations
Type	- DATA: Surveys and Preliminary Assessments - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety
Region	- Regional Or State -- New England
Source	Massachusetts Climate Change Adaptation Report. September 2011.

<b>Need</b>	Vulnerability assessments and initiatives targeting small farms and their capacity to adapt to climate change
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science - Ecological and Biological

Sector	- Managed Ecosystems - Economic Resources
Region	- Regional Or State -- New England -- Mid-Atlantic -- Central - - Great Lakes -- South East
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, N.Y. August 2011. Meeting notes.

<b>Need</b>	Vulnerability assessments related to drought induced saltwater intrusion into coastal lands
Description	Vulnerability assessment with respect drought induced saltwater intrusion into coastal lands; potential subjects include public health and safety, ecology, and infrastructure
Type	- PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Changes in Extremes of Weather and Climate
Discipline	- Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems
Region	- Regional Or State -- South East
Source	National Drought Information System (NIDIS) Carolinas Drough Pilot Project Scoping Workshop. July/August 2012. Meeting notes.

<b>Need</b>	vulnerability maps comparing scenarios of future climate changes with other data
Description	vulnerability maps comparing scenarios of future climate changes, such as changes in temperature, vegetation patterns, or hydrology, with contemporary layers, such as the locations of priority habitats, focal species distributions, or current land use practices
Type	- PRODUCTS: Maps (Imagery, geo-referenced data) - PRODUCTS: Plans, Assessments, Studies
Focus Area	- Coasts and Climate Resilience (including sea-level rise) - Conservation/ Restoration of Sensitive Species and Habitats
Discipline	- Ecological and Biological - Climate Society Interactions
Sector	- Public Health and Safety - Infrastructure - Natural Ecosystems - Biota

Region	- Regional Or State -- Mid-Atlantic -- Great Lakes
Source	Gregg, R. M., K. M. Feifel, J. M. Kershner, and J. L. Hitt. 2012. The State of Climate Change Adaptation in the Great Lakes Region. EcoAdapt, Bainbridge Island, WA.

<b>Need</b>	Water management tools that integrate planning with saltwater intrusion risks, temperature changes, and water availability changes
Type	- PRODUCTS: Training and Capacity Building - PRODUCTS: Viewers and Web-based Tools - PRODUCTS: Regulatory/ Policy Guidance
Focus Area	- Climate Impacts on Water Resources - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Public Health and Safety - Infrastructure
Region	- Regional Or State -- Mid-Atlantic
Source	New York State Energy Research and Development Authority (NYSERDA). 2011. ClimAID: Integrated Assessment for Effective Climate Change Adaptation Technical Report.

<b>Need</b>	Wetland inundation maps and models
Type	- PRODUCTS: Forecasts and outlooks (monthly to annual, models) - PRODUCTS: Maps (Imagery, geo-referenced data)
Focus Area	- Sustainability of Marine Ecosystems - Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Natural Ecosystems
Region	- Regional Or State -- New England -- Mid-Atlantic -- South East
Source	NOAA Climate Team. Eastern Region Gaps, Needs and Assets Document. Updated May 2010.

<b>Need</b>	Wind speed prediction to guide development and testing of building materials for transportation infrastructure
Description	Material strength, testing and design factors will all need to be adjusted based on local wind speed predictions

Type	<ul style="list-style-type: none"> <li>- PRODUCTS: Forecasts and outlooks (monthly to annual, models)</li> <li>- PRODUCTS: Projections (intra-annual to multi-decadal, including SLR and model down-scaling)</li> </ul>
Focus Area	- Changes in Extremes of Weather and Climate
Discipline	- Physical Science
Sector	- Infrastructure
Region	<ul style="list-style-type: none"> <li>- National</li> <li>- Regional Or State</li> </ul>
Source	NOAA and Northeast Regional Climate Center (NRCC) Inland Impacts of Climate Change Meeting. Ithaca, NY. August 2011. Meeting notes.