



Northeast Climate Impacts Assessment

Download the new report [Climate Change in Pennsylvania: Impacts and Solutions for the Keystone State](#), released October 1, 2008. Download the [Executive Summary](#).

[Northeast Climate Data](#) This web-based database provides registered users with free access to most of the climate data generated for the NECIA project, including projected changes this century in temperature, precipitation, relative humidity, snow cover, and more that can be expected in the Northeast under higher and lower emission scenarios.

Download the full report of the Northeast Climate Impacts Assessment (NECIA), [Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions](#), released July 11, 2007. (pdf)

The Northeast Climate Impacts Assessment (NECIA) is a collaboration between the Union of Concerned Scientists (UCS) and a team of [more than fifty independent](#) experts to develop and communicate a new assessment of climate change, impacts on climate-sensitive sectors, and solutions in the northeastern United States. Launched in May, 2005, the goal of the assessment is to combine state-of-the-art analyses with effective outreach to provide policymakers, opinion leaders, and the public with the best available science upon which to base informed choices about climate change mitigation and adaptation.

In Phase I of the Northeast Climate Impacts Assessment (completed in October, 2006) collaborating scientists developed a core set of climate projections for the Northeast region. These projections were used as the basis for Phase II of the assessment (completed in spring, 2007), which explored impacts of projected climate change on key climate-sensitive sectors. NECIA reports and related technical papers are available for download following the links below.

For more on the NECIA core design features, download this [two page overview](#).

Climate Research and Findings

The NECIA climate research draws on recent advances in climate modeling to assess how global warming may further affect the Northeast climate. Using projections from three state-of-the-art global climate models, researchers compared the types and magnitude of climate changes that will result from higher versus lower future emissions of heat-trapping gases.

The research and findings are presented in [Climate Change in the U.S. Northeast](#), a report of the NECIA. (pdf)

The findings are also presented in [three technical papers](#) and summarized by UCS in a publicly accessible format at www.climatechoices.org/ne

Impacts Research and Findings

Teams of NECIA collaborators have undertaken new analyses to assess impacts of climate change on the Northeast coast, marine resources, forests, agriculture, winter recreation, health and water resources, and to assess key options for meeting the climate challenge through strategic mitigation and adaptation.

A major synthesis report of these findings, [Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions](#), was released by the NECIA in July, 2007.

The findings presented in this report are based primarily on the peer-reviewed research of the NECIA collaborators listed below. Most of this research is also presented in more technical detail in the formal scientific literature, including a special issue of the journal *Mitigation and Adaptation Strategies to Global Change* (in press, 2008). These thirteen papers, as well as several additional peer-reviewed NECIA technical papers and technical appendices, are [available for download](#).

The NECIA Team

NECIA Synthesis Team

NECIA oversight and guidance is provided by a multidisciplinary Synthesis Team of senior scientists, listed below.

Peter Frumhoff, (*Chair*) *Union of Concerned Scientists, Cambridge, MA*
James McCarthy, (*Vice-Chair*) *Harvard University, Cambridge, MA*
Jerry Melillo, (*Vice-Chair*) *Marine Biological Laboratory, Woods Hole, MA*
Susanne Moser, *National Center for Atmospheric Research, Boulder, CO*
Don Wuebbles, *University of Illinois, Urbana-Champaign, IL*

NECIA Project Manager

Erika Spanger-Siegfried, *Union of Concerned Scientists, Cambridge, MA*

NECIA Climate Team

Katharine Hayhoe, *Co-lead, Texas Tech University, Lubbock, TX*

Cameron Wake, *Co-lead, University of New Hampshire, Durham, NH*

Bruce Anderson, *Boston University, Boston, MA*

James Bradbury, *University of Massachusetts, Amherst, MA*

Art DeGaetano, *Cornell University, Ithaca, NY*

Thomas Huntington, *United States Geological Survey, Augusta, ME*

Xin-Zhong Liang, *Illinois State Water Survey, Champaign, IL*

Lifeng Luo, *Princeton University, Princeton, NJ*

Edwin Maurer, *Santa Clara University, Santa Clara, CA*

Mark Schwartz, *University of Wisconsin-Milwaukee, Milwaukee, WI*

Justin Sheffield, *Princeton University, Princeton, NJ*

David Wolfe, *Cornell University, Ithaca, NY*

Don Wuebbles, *University of Illinois, Urbana-Champaign, IL*

Eric Wood, *Princeton University, Princeton, NJ*

Coastal Team

Coastal Flooding

Paul Kirshen (Lead), *Tufts University, Medford, MA*

Ellen Douglas, *University of Massachusetts, Boston, MA*

Allan Gontz, *University of Massachusetts, Boston, MA*

Yong Tian, *University of Massachusetts, Boston, MA*

Chris Watson, *University of Massachusetts, Boston, MA*

Shoreline Change

Andrew Ashton, *Woods Hole Oceanographic Institution, Woods Hole, MA*

Jeff Donnelly, *Woods Hole Oceanographic Institution, Woods Hole, MA*

Rob Evans, *Woods Hole Oceanographic Institution, Woods Hole, MA*

Marine Team

Michael Fogarty (Co-lead), *National Oceanic and Atmospheric Administration, Woods Hole, MA*

Lewis Incze (Co-lead), *University of Southern Maine, Portland, ME*

Richard Wahle, *Bigelow Laboratory for Ocean Sciences, West Boothbay Harbor, ME*

James Manning, *National Oceanic and Atmospheric Administration, Woods Hole, MA*

David Mountain, *National Oceanic and Atmospheric Administration, Woods Hole, MA*

Andrew Pershing, *University of Maine and Gulf of Maine Research Institute, Portland, ME*

Forest Team

Forest Ecosystem Processes

Scott Ollinger, *University of New Hampshire, Durham, NH*

Christine Goodale, *Cornell University, Ithaca, NY*

Tree Species Habitat

Louis Iverson, *U.S. Forest Service, Delaware, OH*

Bird Species

Nicholas Rodenhouse (Lead), *Wellesley College, Wellesley, MA*

Louis Iverson, *U.S. Forest Service, Delaware, OH*

Daniel Lambert, *Vermont Institute of Natural Science, Quechee, VT*

Stephen Matthews, *The Ohio State University, Columbus, OH*

Kent McFarland, *Vermont Institute of Natural Science, Quechee, VT*

Hemlock Woolly Adelgid

Ann Paradis, *University of Massachusetts, Amherst, MA*

Joe Elkinton, *University of Massachusetts, Amherst, MA*

Coldwater Fish

Clifford Kraft, *Cornell University, Ithaca, NY*

Agriculture Team

David Wolfe (Lead), *Cornell University, Ithaca, NY*

Larry Chase, *Cornell University, Ithaca, NY*

Curtis Petzoldt, *Cornell University, Ithaca, NY*

Lewis Ziska, *United States Department of Agriculture, Beltsville, MD*

Winter Recreation

Daniel Scott, *University of Waterloo, Waterloo, Ontario, Canada*

Health Team

Don Wuebbles, *University of Illinois, Urbana-Champaign, IL*

Jennifer Cox, *City University of New York, New York, NY*

Paul Epstein, *Harvard Medical School, Boston, MA*

Patrick Kinney, *Columbia University, New York, NY*

Christine Rogers, *University of Massachusetts, Amherst, MA*

Cynthia Rosenzweig, *Columbia University, New York, NY*

William Solecki, *City University of New York, New York, NY*

Lewis Ziska, *United States Department of Agriculture, Beltsville, MD*

Meeting the Climate Challenge Team

William Moomaw, *Tufts University, Medford, MA*

Susanne Moser, *National Center for Atmospheric Research, Boulder, CO*

Water Team

David Ahlfield, *University of Massachusetts, Amherst, MA*

Sarah Dorner, *University of Massachusetts, Amherst, MA*

Paula Sturdevant Rees, *University of Massachusetts, Amherst, MA*

Economics Team

(Provided technical input and review of multiple sections of this assessment)

Tom Tietenberg, *Colby College, Waterville, ME*

Gary Yohe, *Wesleyan University, Middletown, CT*

Technical Papers and Background Material

Climate Research and Findings (all links are PDFs)

Hayhoe, K., C.P. Wake, T.G. Huntington, L. Luo, M. Schwartz, J. Sheffield, E. Wood, B. Anderson, J. Bradbury, A. DeGaetano, T. Troy, and D. Wolfe. 2007. [Past and future changes in climate and hydrological indicators in the U.S. Northeast](#). *Climate Dynamics* 28:381-407.

Hayhoe, K., C.P. Wake, B. Anderson, X.-Z. Liang, E. Maurer, J. Zhu, J. Bradbury, A. DeGaetano, A. Hertel, and D. Wuebbles. 2008. [Regional climate change projections for the Northeast U.S.](#) *Mitigation and Adaptation Strategies for Global Change*. In press.

Hayhoe, K., C.P. Wake, B. Anderson, J. Bradbury, A. DeGaetano, A. Hertel, X.-Z. Liang, E. Maurer, D. Wuebbles, and J. Zhu. 2006. Quantifying the regional impacts of global climate change: Evaluating AOGCM simulations of past and future trends in temperature, precipitation, and atmospheric circulation in the northeast US. *Bulletin of the American Meteorological Society*. In review.

Impacts and Solutions Research and Findings (all links are PDFs)

The following peer-reviewed papers explore sectoral impacts of climate change as well as key options for mitigation and adaptation. These papers will appear in an early 2008 special issue of the journal *Mitigation and Adaptation Strategies for Global Change*.

Fogarty M., Inzce L., Hayhoe K., Mountain D., Manning J.. 2008. [Potential Climate Change Impacts on Atlantic Cod \(*Gadus morhua*\) off the Northeastern United States](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Iverson, L., A. Prasad, and S. Matthews. 2008. [Potential changes in suitable habitat for 134 tree species in the northeastern United States](#). *Mitigation and Adaptation Strategies for Global Change*. In press. [Appendix](#)

Kirshen, P., C. Watson, E. Douglas, A. Gontz, J. Lee, and Y. Tian. 2008. [Coastal flooding in the northeastern United States due to climate change](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Kunkel, K.E., H.-C. Huang, X.-Z. Liang, J.-T. Lin, D. Wuebbles, Z. Tao, A. Williams, M. Caughey, J. Zhu, and K. Hayhoe. 2008. [Sensitivity of future ozone concentrations in the northeast U.S. to regional climate change](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Moomaw, W., and L. Johnston. 2008. [Emissions mitigation opportunities and practice in northeastern United States](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Moser, S.C., R.E. Kasperson, G. Yohe, and J. Agyeman. 2008. [Adaptation to climate change in the northeast United States: Opportunities, processes, constraints](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Ollinger, S.V., C.L. Goodale, K. Hayhoe, and J.P. Jenkins. 2008. [Potential effects of climate change and rising CO₂ on ecosystem processes in northeastern U.S. forests](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Paradis, A., J. Elkinton, K. Hayhoe, and J. Buonaccorsi. 2008. [Effect of winter temperatures on the survival of hemlock woolly adelgid, *Adelges tsugae*, and the potential impact of global warming on its future range in eastern North America](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Rodenhouse, N.L., S.N. Matthews, K.P. McFarland, J.D. Lambert, L.R. Iverson, A. Prasad, T.S. Sillett, and R.T. Holmes. 2008. [Potential effects of climate change on birds of the Northeast](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Scott, D., J. Dawson, and B. Jones. 2008. [Climate change vulnerability of the US northeast winter recreation-tourism sector](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Wolfe, D.W., L. Ziska, C. Petzoldt, L. Chase, and K. Hayhoe. 2008. [Projected change in climate thresholds in the northeastern United States: Implications for crops, pests, livestock, and farmers](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

Ziska, L.H., P.R. Epstein, C.A. Rogers. 2008. [Climate change, aerobiology, and public health in the northeast United States](#). *Mitigation and Adaptation Strategies for Global Change*. In press.

In addition, the following peer-reviewed papers are part of a NECIA technical paper series.

Ashton A., Donnelly J., and Evans, R. [A Discussion of the Potential Impacts of Climate Change on the Shorelines of the Northeastern USA](#)

Cox J., Rosenzweig C., Solecki W., Goldberg R., Kinney P. [Social Vulnerability to Climate Change: A Neighborhood Analysis of the Northeast U.S. Megaregion](#)

Climate Change Impacts on the Water Resources of the Northeastern United States
Dorner S., Rees P., Kkochendorfer J., Ahlfeld D. (*pdf coming soon...*)

Fogarty M., Inzce L., Wahle R., Mountain D., Robinson A., Pershing A., Hayhoe K., Richards A., Manning J. [Potential Climate Change Impacts on Marine Resources of the Northeastern United States](#)

Finally, the following appendices provide additional technical information related to several of the analyses.

[Appendix: Model reliability assessment scores, percentage of range in the eastern United States, and the top two variables defining the model](#), Iverson, et.al.

[Appendix A: GEV frequency analysis](#), Kirshen

[Appendix: Additional technical background](#), Kirshen, et.al.

[Appendix: Analyses of Daily Ozone Exceedences for the Northeast](#), Kunkel, et.al.

[Appendix: Potential Effects of Climate Change on Birds of the Northeast](#), Rodenhouse et al.

For more on the NECIA core design features, contact Erika Spanger-Siegfried, esiegfried@ucsusa.org

About UCS

The Union of Concerned Scientists (UCS) is the leading science-based nonprofit working for a healthy environment and a safer world. For more information visit the UCS website at <http://www.ucsusa.org>.