

Michigan's Public Health Response to Climate Change

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Anticipated Health Impacts from Climate Change

(adapted from Frumkin et al 2008, Balbus et al 2008)

- **Extreme Weather Events**
- **hazards:** Heat waves, storms or floods, droughts, wild fires
- **health impacts:**
- Injuries, heat-related illnesses, hypothermia, death
- Anxiety, depression, other mental health conditions
- Disruption of health care services
- Housing displacement

- **Environmental / Infrastructure Degradation**
- **hazards:** Quality/quantity of drinking water; air quality; sewage/septic breakdown; food safety, security
- **health impacts**
- Vector-borne infectious diseases
- Water- or food-borne diseases


Need to identify vulnerable populations



July 2009

Confronting Climate Change in the U.S. Midwest

MICHIGAN




From its diverse farmlands and boreal forests to its many inland lakes and thousands of miles of shoreline, Michigan has been strongly shaped by its climate. However, that climate is changing due to global warming, and unless we make deep and swift cuts in our heat-trapping emissions, the changes should be dramatic. This report presents new projections showing some of the potential impacts of global warming on Michigan, including severe summer heat, more dangerous storms and floods, and new threats to agricultural production.


GLOBAL WARMING AND THE MIDWEST

Global warming is caused by an increase of pollutants in the atmosphere, including carbon dioxide produced by human activities such as the burning of fossil fuels

and the clearing of forests. Carbon dioxide acts like a blanket that traps heat in our atmosphere and warms our climate: oceans, forests, and land can absorb some of this carbon, but not as fast as we are creating it. As a result, heat-trapping emissions are building up in our atmosphere to levels that could produce severe effects including extreme heat, prolonged drought, intense storms, corrosive ocean acidification, and dangerous sea-level rise.

The climate of the Midwest has already changed measurably over the last half century (De Gaetano 2002; Kunkel et al. 1999). Average annual temperatures have risen, accompanied by a number of major heat waves in the last few years. There have been fewer cold snaps, and ice and snow are melting sooner in the spring and arriving later in the fall. Heavy rains are occurring about twice as frequently as they did a century ago, increasing the risk of flooding.





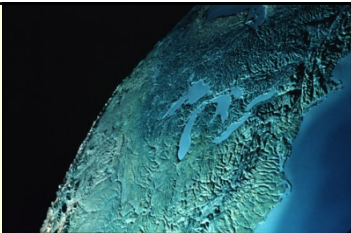
Michigan's Climate Migrates South

Changes in average summer "heat index"—a measure of how hot it actually feels based on a specific combination of temperature and humidity—could strongly affect Midwesterners' quality of life in the future. For example, the red outlines track what summers in Michigan could feel like over the course of the century under the high-emissions scenario; the yellow outlines track what summers could feel like under the lower-emissions scenario.

What might be expected for Michigan?

- **Warmer, drier climate**
fires, particulates
- **More frequent severe storm injuries**
- **More flooding**
water contamination
- **Increased insects**
insect-borne diseases (eg. West Nile)
- **Heat events**
hospitalizations, death
- **Ozone, Aeroallergens**
asthma





How can we in Michigan prepare for these potential health effects?



2009 MDCH planning grant

- 1 year of funding to:
 - Conduct public health needs assessment: knowledge and capacity gaps
 - Create a strategic plan for addressing gaps
 - Provide training to public health practitioners
 - Raise awareness
- Partners from state agencies, academia, LHDs, non-profits participated & helped create state plan, including goals and priorities
- Partners are key to plan implementation

Plan building blocks

- Key parts of Community Health:
 - Environmental Health
 - Office of Public Health Preparedness
 - Communicable, Chronic Diseases
- Other state gov't. partners
 - Agriculture, Environment, State Police
- Academia: U of Mich, MSU
- Non-gov't orgs: MPHA, MI Environ Council, Sierra Club, Ecology Center, MI Assoc. of Planners, etc.

Needs Assessment

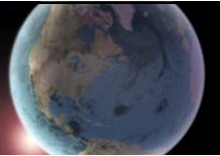
- **34** Local Health Dept. staff interviewed in person or via web-based tool
- **15** other Public Health Partners rec'd in-person key informant interviews
- Local Public Health Emergency Response plans reviewed

Needs Assessment: Results

- Most LHDs had **some CC knowledge**, but **few resources** to plan or respond
- Other Key Partners wanted **more info**, & to engage with others in the CC area
- Local PH Emergency Response plans **inadequate** to deal with CC events
- MDCH role: leadership & guidance re CC information; technical support

The Michigan Strategic Plan MICHAP

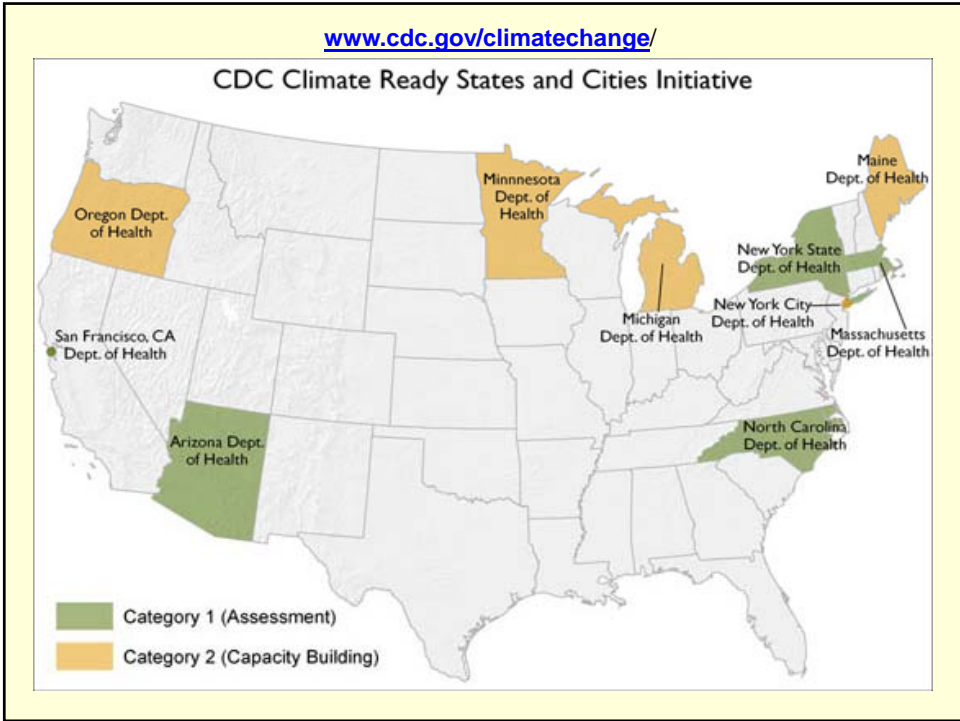
- Strategic planning meetings
- > 40 LHDs, Key Partners participated
- 3 goals, related principles and issues
- Priority focus, activities to reach the goals
- 3-yr CDC grant for implementation; part of National 'Climate Ready' initiative



MICHAP Goals

1. Climate change is recognized as PH issue & integrated into PH practice.
2. PH agencies will have tools, resources, & activities to respond to climate change impacts within existing programs.
3. Vulnerable populations must be explicitly considered in programs and policies addressing Climate Change impacts

Initial Priority area: Extreme Heat Events



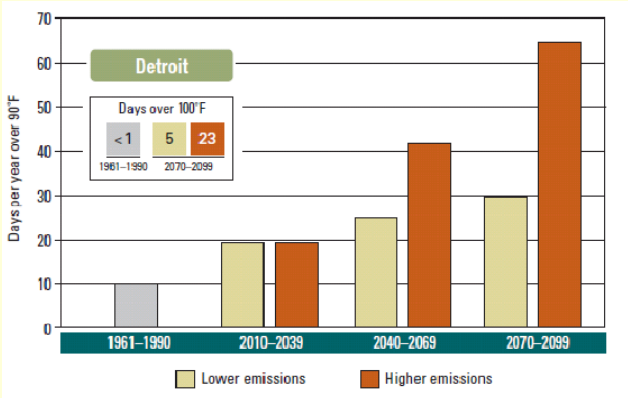
MICHAP Activities of Interest to Local Planners

- Tools and Resources in development
- Academic partners

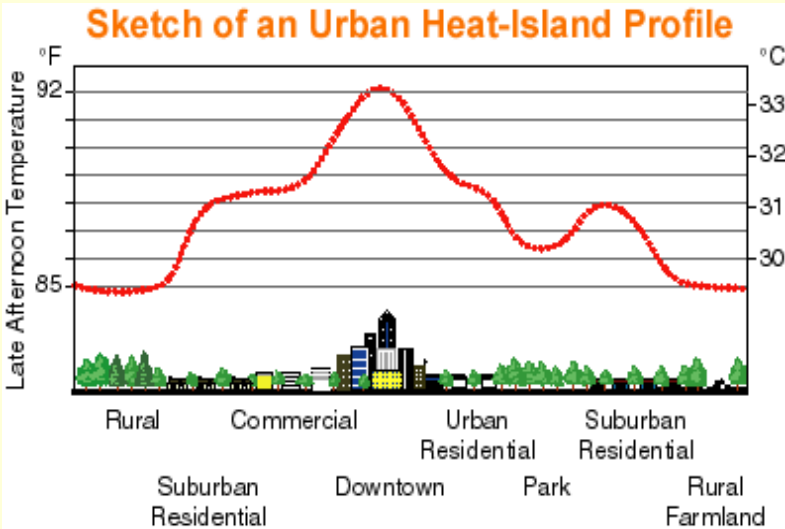
The figure shows three screenshots of CDC resources:

- Top Screenshot:** A CDC page titled "Tips on Managing Heat and Heat-Related Illnesses" with a "MEDIA RELATIONS" banner. It includes a "CDC News" sidebar and a main content area with a "Tip on Managing Heat" section.
- Bottom Left Screenshot:** A CDC page titled "Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety" under the "Emergency Preparedness and Response" section. It features a "HIGHLIGHTS" section with bullet points.
- Bottom Right Screenshot:** The cover of the "Excessive Heat Events Guidebook" featuring a hand reaching towards a bright sun.

Increasing numbers of Heat Events



UCS, 2009

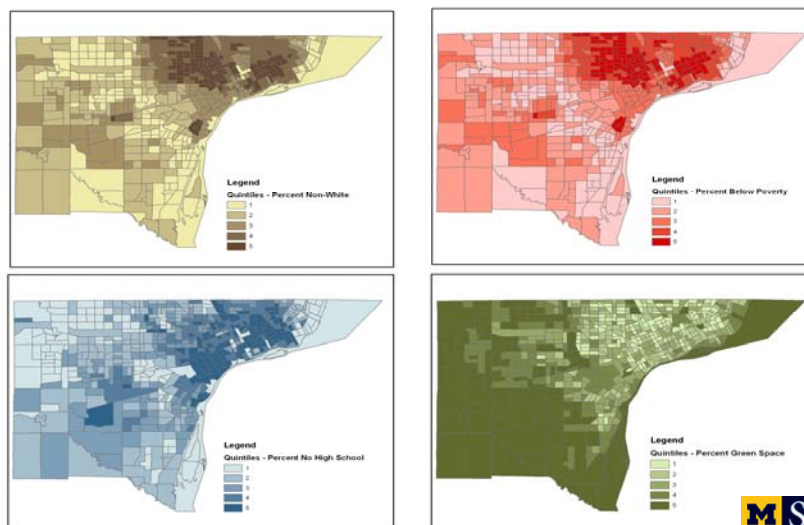


U Michigan Climate Research

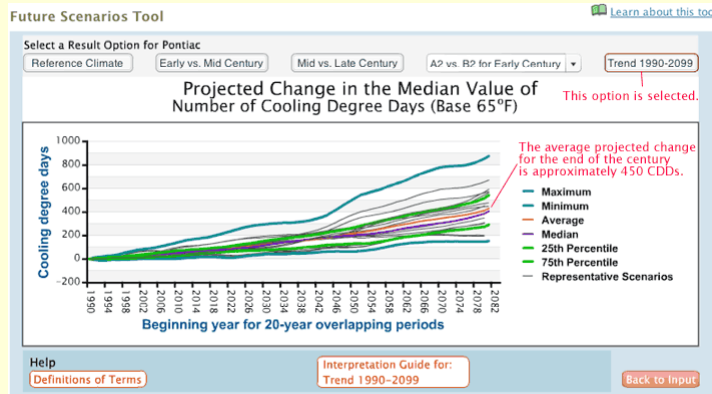
- Marie O'Neill and team studies of heat waves and health in SE Michigan:
 - Risk Factors for Heat Vulnerability
 - Develop (w ICLEI) Heat Decision Tool & Heat Warning Tool for communities
 - Identify characteristics of high Heat Risk homes in Detroit



Census tract level data from Detroit showing green space and population characteristics relevant to vulnerability



MSU Climatology resources



MICHIGAN STATE
UNIVERSITY

Pileus Project 
Climate Science for Decision Makers

GLISA

GREAT LAKES INTEGRATED SCIENCES + ASSESSMENTS

- NOAA-funded regional center for adaptation to climate change and variability
- Joint activity of UM, MSU, OSU, & MI Sea Grant
- Goals: Contribute to long-term sustainability; and
- Improve use of scientific knowledge in decision-making via Downscaled Climate Projections
 - Heat and Health Dynamic Model (Olabisi)
- www.GLISA.umich.edu

Educational Resources



- The Climate Leadership Initiative in Oregon has developed **Public Health and Climate Change Guidebooks**.

<http://climlead.uoregon.edu/node/168>



- George Mason University's **Center for Climate Change Communication** provides tools and resources.

<http://www.climatechangecommunication.org/>



- MDCH is developing/adapting resources for MI, w links to CDC and EPA materials

<http://www.michigan.gov/climateandhealth>

Tools for local assessments



ICLEI Local Gov'ts for Sustainability has an adaptation planning guidebook and is developing planning resources and tools: <http://www.icleiusa.org>



CDC has a Health Impact Assessment page with HIA tools and resources

<http://www.cdc.gov/healthyplaces/hia.htm>



NACCHO toolkits for HIAs, PACE-EH

<http://www.naccho.org/toolbox/>

Many needed tools are still under development

Health Impact Assessment

- Tool to incorporate Health into Community Planning & Decision-making
- Quantify health risk/benefit to population using an objective and scientific approach
- Ensure that health and health disparities are considered in decision-making
- Engages stakeholders in the process
- Training in August by Human Impact Partners
<http://www.humanimpact.org/hia>
- MDCH to be a resource for HIAs in MI

More Resources for Planners



- Lessons Learned on Local Climate Adaptation from the Urban Leaders Adaptation Initiative (Feb 2011)

<http://www.ccap.org/index.php>



- Comprehensive Planning for Public Health: results of the Planning and Community Health Research Center survey (Mar 2011)

www.planning.org/research/publichealth

Thank you!

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- MCAC - 35 Members

- Chaired by DEQ Director with staff support

- Functioned through March 09

State Agency Heads: DEQ, MDA, DELEG, DMB, DNR, PSC, MI Strategic Fund, State Climatologist, etc.

27 Others Appointed: Dow Chemical, MUCC, Consumers Energy, MI Environmental Council, DTE Energy, GVSU, Tribal Government, SEMCOG, FoMoCo, City of Ann Arbor, Detroit & Grand Rapids, MSU, Chrysler, UofM, Delta Airlines, MI Agri-Business Assn., Ecology Center, Cliffs Natural Resources, Bazzani & Associates, UAW, NMU, GM, MI Municipal Electric Assn., Wilcox Associates



Final MCAC Report (Mar 09)

- Final Emission Inventory & Forecast
- Recommended Policy Positions for Michigan
- 54 Final Recommendations (not all unanimous)
- Proposed Goals for Reducing GHG Emissions

MCAC Recommendations



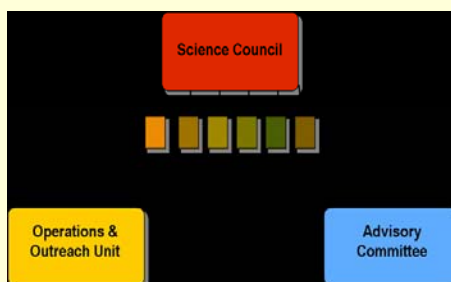
- GHG Reduction Goals
 - 20 percent below 2005 levels by 2020
 - 80 percent below 2005 levels by 2050
- 54 policy recommendations
 - Net cumulative savings of \$10 billion between 2009 and 2025
 - 987 million metric tons CO₂ equivalent
- Exceeds 2020 Goal by 7.3 MMTCO₂E

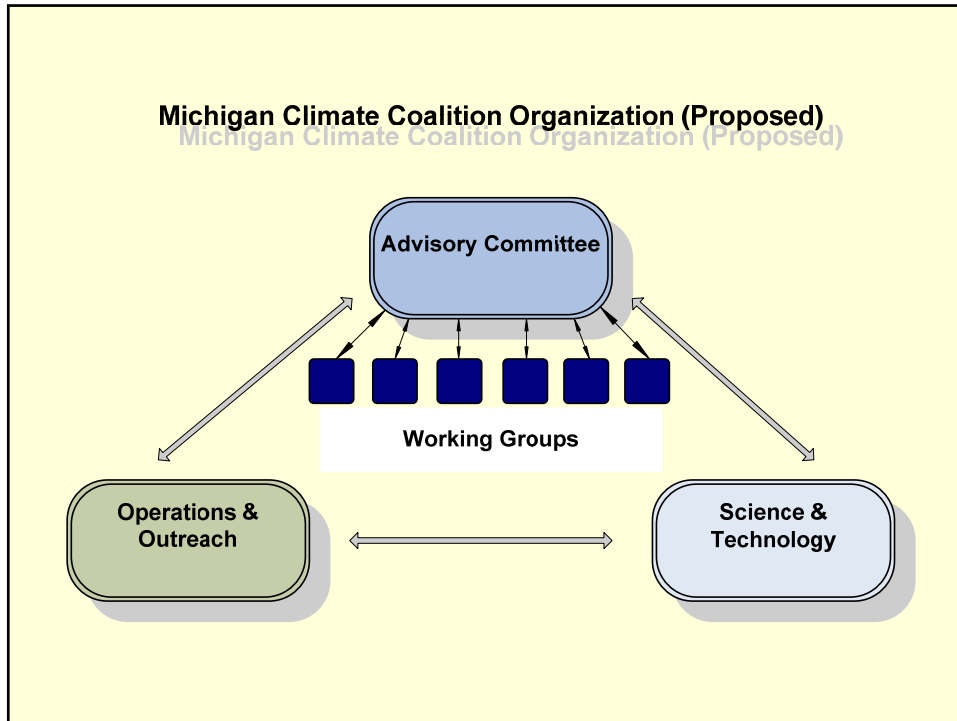
10 Most Cost Effective Actions	Cost Effectiveness per Ton CO2e
Land Use Planning & Incentives-Smart Growth (TLU-6)	\$189 Savings
Eco-Driver Program (TLU-2)	\$176 Savings
Source Reduction/ Advanced Recycling (AFW-9)	\$112 Savings
Truck Idling Policies (TLU-3)	\$85 Savings
Congestion Mitigation (TLU-5)	\$81 Savings
Expanded Use of Bio-Based Materials (AFW-4)	\$62 Savings
More Stringent Building Codes-Energy (RCI-4)	\$35 Savings
Incentives for Improved Design & Construction (RCI-7)	\$31 Savings
Existing Buildings Energy Efficiency Incentives (RCI-2)	\$28 Savings
Utility Side Demand Management (RCI-1)	\$19 Savings

Governance Model Options

Wisconsin Initiative on Climate Change Impacts (WICCI) – Adaptation Oriented

- Collaborators:
 - Federal/State/Tribal/Local government
 - Universities
 - NGOs
 - Private Sector





MCC Organizational Structure

- MCC - more of a professional organization or networking communication group than something similar to WICCI's structure
- MCC - take on role of information czars and marketers of research
- Identification of data gaps
- help coordinate stakeholders, interested "parties" & work groups
- Outreach