

Potential Impacts of Global Climate Variability: Great Lakes Region

Shallow and Recreational Harbor Workshop
Friday, November 30, 2007
Grand Traverse Resort
Acme, MI

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Overview

- What are we talking about?
- Climate change causes
- Anticipated GL impacts
- What does it mean for the GL?
- Where are we now?
- What might the future look like?

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What Are We Talking About?

- ***Climate change*** refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer).

- USEPA Climate Change <http://www.epa.gov/climatechange/basicinfo.html>
Retrieved 11-28-07

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Climate Change: Causes

- **natural factors**, e.g., changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- **natural processes** within the climate system (e.g. changes in ocean circulation);
- **human activities** that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.)

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GL Climate Impacts




- Global warming is real but Regional predictions are difficult
- Most GL regional models predict more frequent & intense storm activity but total precipitation is ???
- Most GL models predict lower water levels but there is No consensus yet
- Mean climate change factors are changing but annual fluctuations will Always trump mean changes

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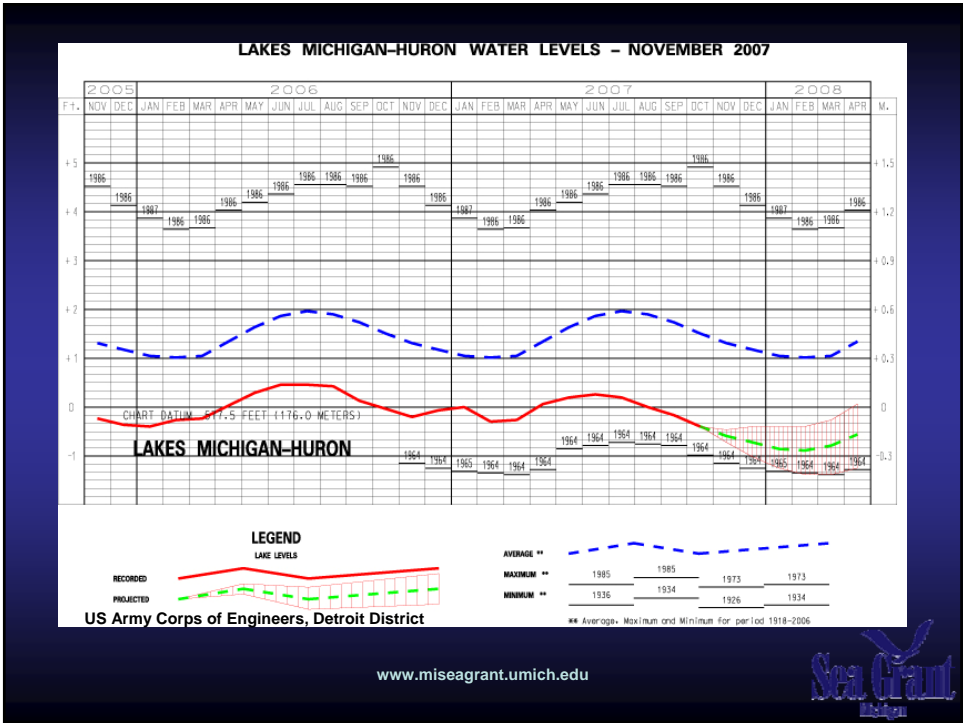
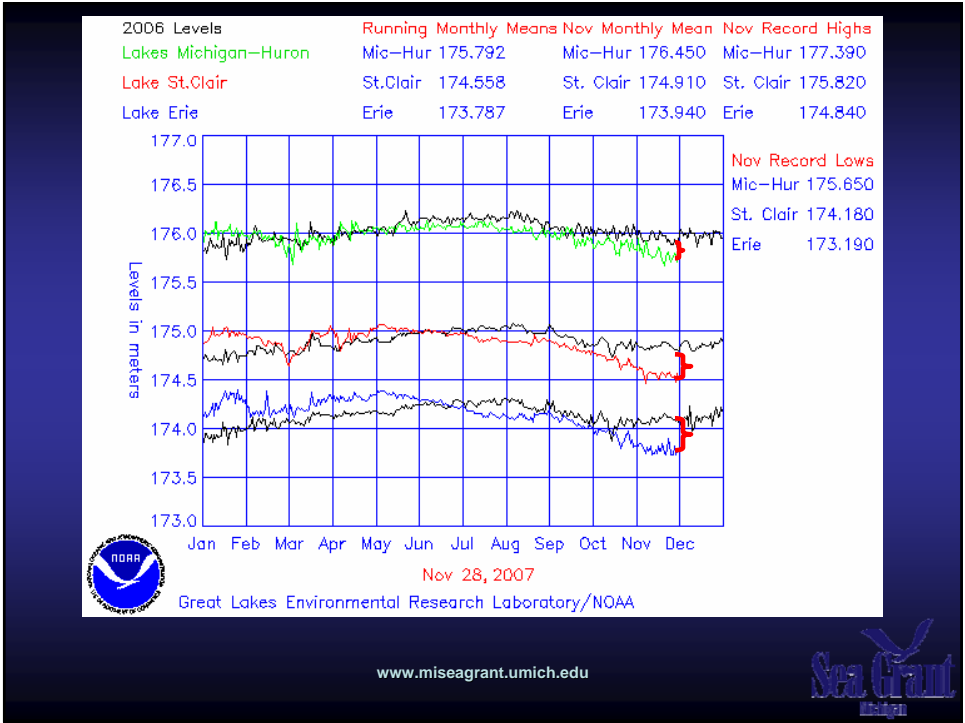
What does it mean for GL?

Altered climate = changed water availability and quality

-  average summer and winter temps
 - Reduced ice cover
 - Increased evaporation
- Changes to seasonal precipitation patterns
 -  winter and spring (flooding)
 -  summer (lower lake levels, habitat and tributary impacts)

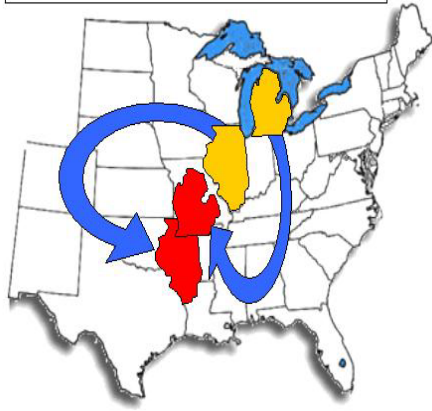
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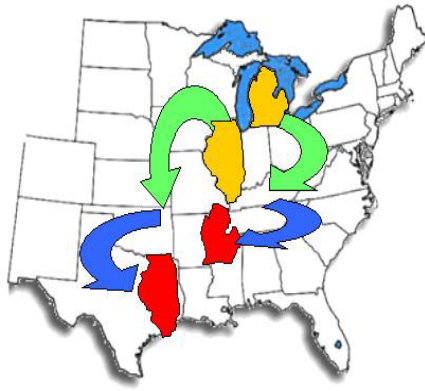


Climate Warming will Impact the Future Weather we "Feel"

Changing IL and MI Winters (DJF)
By 2030 – no change By 2095



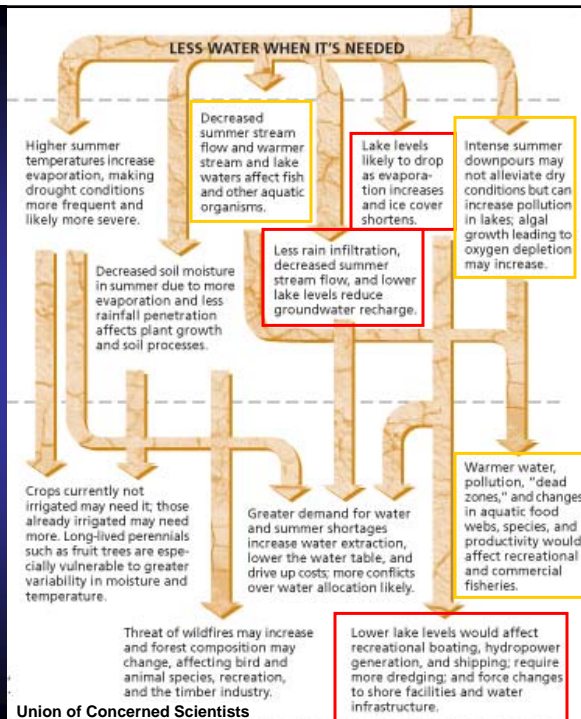
Changing IL and MI Summers (JJA)
By 2030 By 2095



Union of Concerned Scientists

Potential Implications

Potential Societal Impacts



Union of Concerned Scientists



Sources

- Great Lakes Environmental Research Lab
<http://www.glerl.noaa.gov/data/now/wlevels/levels.html>
- US Army Corps of Engineers
<http://www.lre.usace.army.mil/greatlakes/hh/greatlakeswaterlevels/waterlevelforecasts/monthlybulletinofgreatlakeswaterlevels/>
- US EPA
<http://www.epa.gov/climatechange/>
- Union of Concerned Scientists
<http://www.ucsusa.org/greatlakes/index.html>

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