

Outline

- Climate Change and weather extremes
- Definitions for changing extremes
- Global warming: current evidence
- Evidence of changing climate in Ohio
- Future climate projections
- Climate projections for Ohio

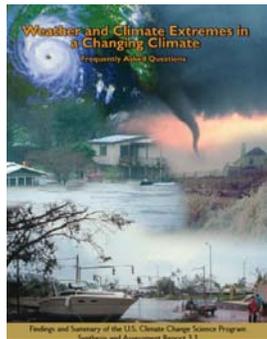
Climatic Change

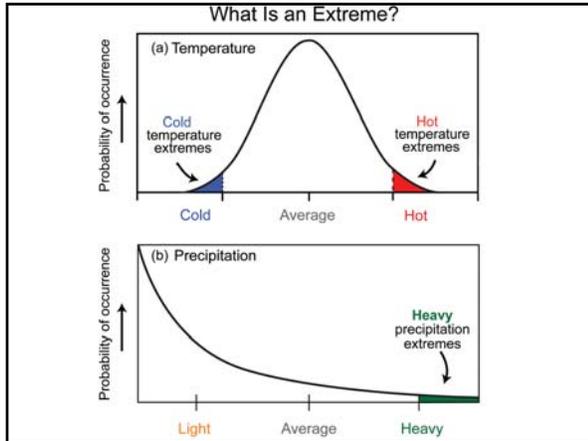
- Definition: Any significant systematic change in the statistical distribution of climate (and weather) patterns over periods ranging from decades to millions of years. *It may be a change in climatic averages or in the distribution of extreme events around that average.*
 - Climate change may be limited to a specific region or may occur across the whole Earth.

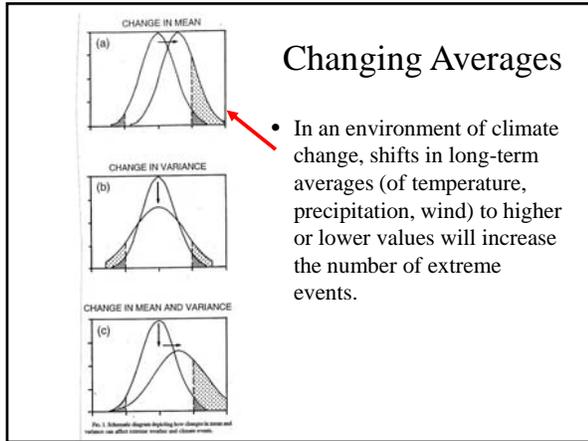
The U.S. Climate Change Science Program (2008)

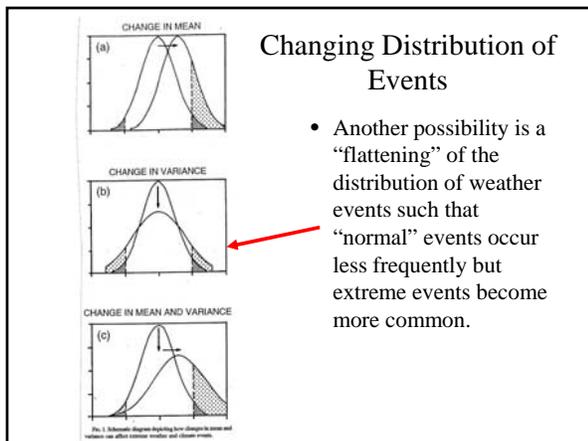
“...biggest impacts of global warming will come in the form of changes in weather and climate extremes.”

- More heat waves
- Drought more frequent & severe in some regions
- Precipitation will be less frequent but more intense, high rainfall events more common.



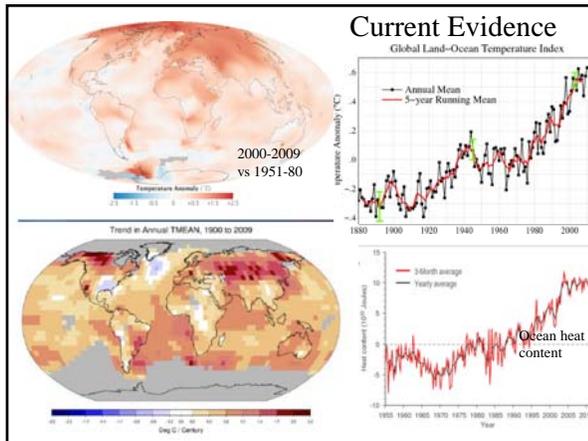


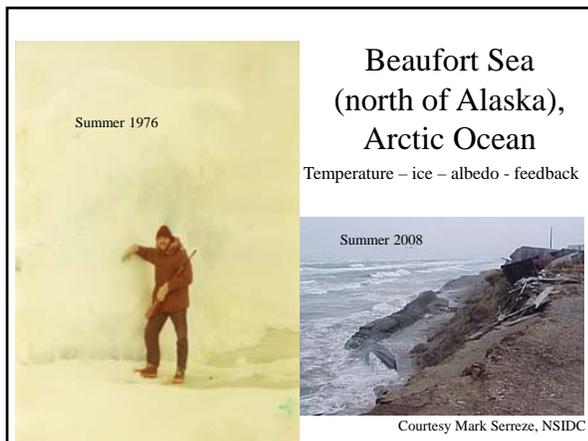




Global Warming

- Definition: The gradual increase in the temperature of the earth's atmosphere, believed to be due to the enhanced greenhouse effect, caused by increased levels of carbon dioxide, methane, and other pollutants and exacerbated by activities such as deforestation.
- What evidence exists for recent climate change or global warming?





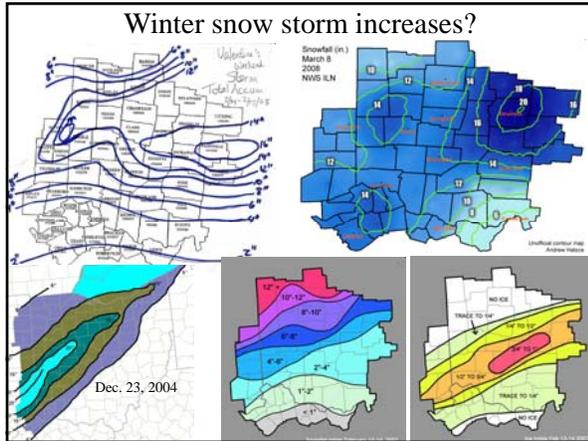
One Inch Rain Days per Year: Ohio

1900-1910

Dayton: 6 days
Columbus: 4.5 days
Cleveland: under 4 days

2000's

Dayton: Over 9 days
Columbus: ~ 8 days
Cleveland: ~ 7 days

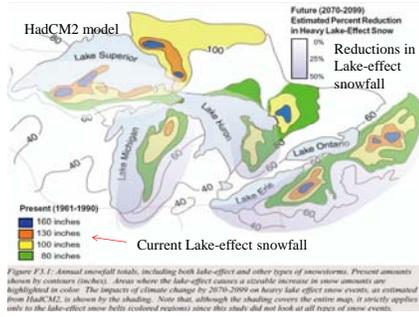


Ohio: Changes in Timing of Natural Events

- Early warm period in March 22-28, 2007 (70s & 80s °F) was followed by a prolonged hard freeze from April 4-10.
- Impacts
 - Forage: alfalfa and grass hay in southern Ohio were substantially reduced or delayed
 - 2007 apple crop wiped out in southern OH
 - Bramble: black- & raspberries largely lost in southern OH

Warmer winters = less lake-effect snow

- Southern Lakes: snows become rain more often.
- Northern Lakes: Less ice but still cold, lake effect snow still common.



Study conducted by Kunkel, Westcott, Kristovich; Illinois State Water Survey

Summary

- Changing climate will involve increases in extreme events.
- Over 80% of the land and oceans are currently warming.
- Ohio is warming (slowly) and has become wetter.
- High precipitation events are more frequent and “badly” timed early weather events may be occurring.
- Future: Ohio may warm 1-2°C in next 20-30 years but precipitation about the same. Snowfall reduced, especially near the Lakes, with occasional extreme snows.
