The Southeast in a Warmer World

The State of Knowledge from the U.S. Global Change Research Program

Webinar Presentation

July, 2009

About Us

- **Southern Alliance for Clean Energy (SACE) has been a leading advocate for clean, responsible energy choices that better our communities, our region and our world for over 20 years.**

- **Since its formal inception in 1985, SACE has grown from a small group of individuals into a dynamic organization, with five offices across the Southeast and initiatives at federal, state and local levels. SACE continues to expand organizationally, to address the needs of a rapidly changing planet.**

- **As we look toward the future, SACE is committed to preserve, restore and protect our environment through the use of innovative technology, community outreach, grassroots and decision-maker education, and dedicated policy advocacy.**

For more information on Southern Alliance for Clean Energy please visit www.cleanenergy.org

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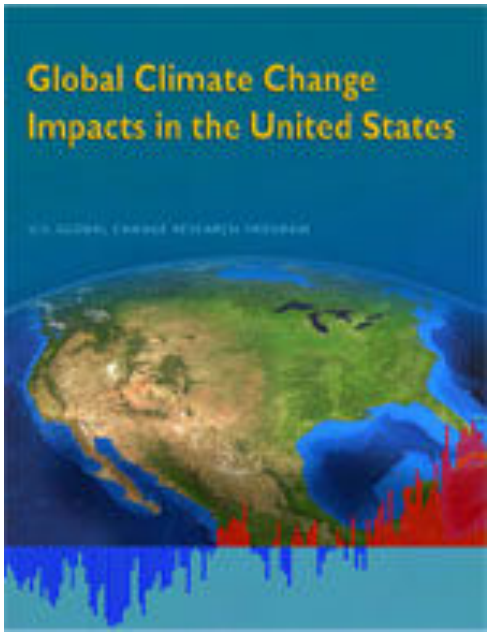
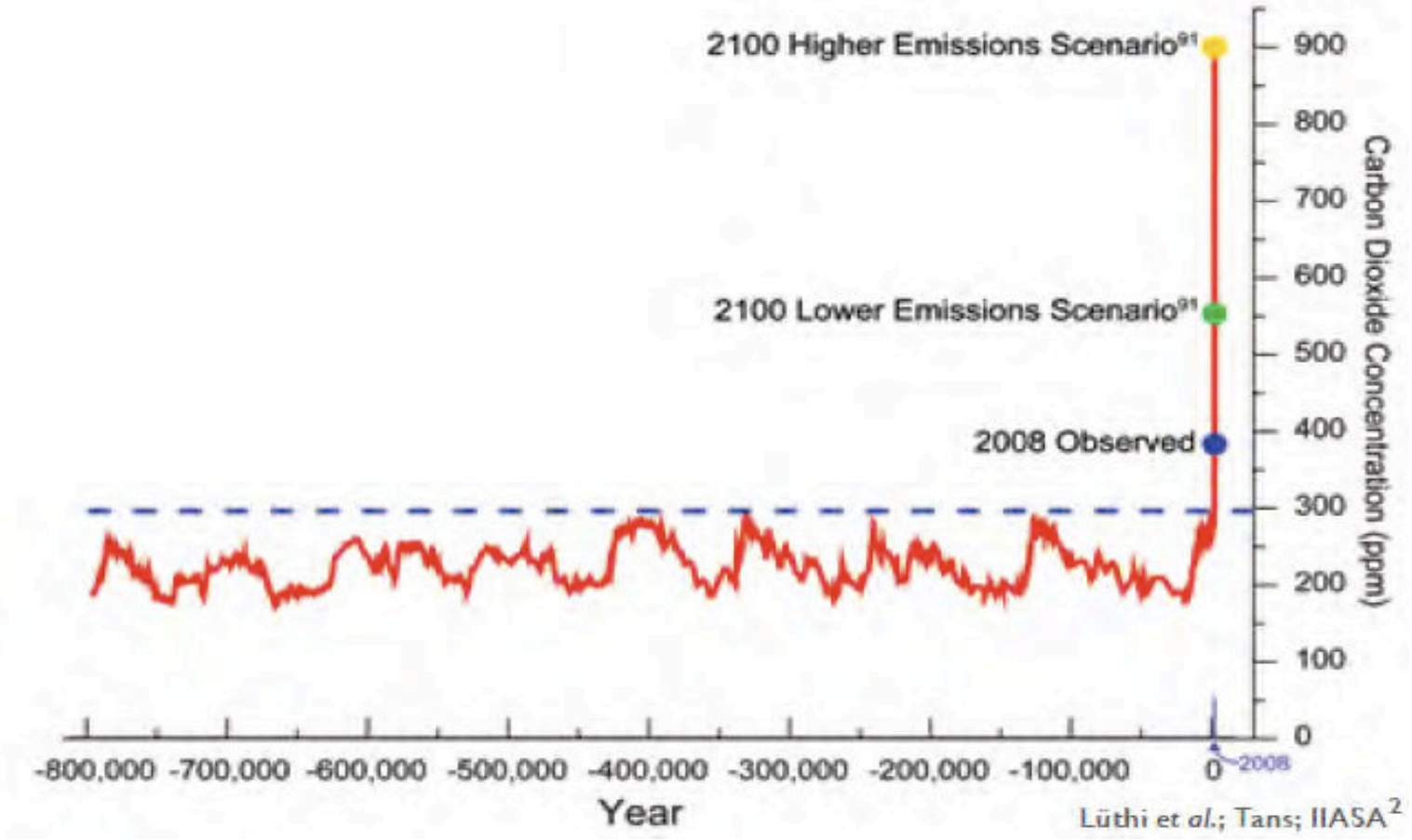
The State of Knowledge



- An authoritative report written with the goal of better informing public and private decision making at all levels.
- Requested by the U.S. Government
- Draws from a large body of scientific information
- Focuses on impacts, but highlights mitigation and adaptation options

Full report: http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts

800,000yr Record of CO_2



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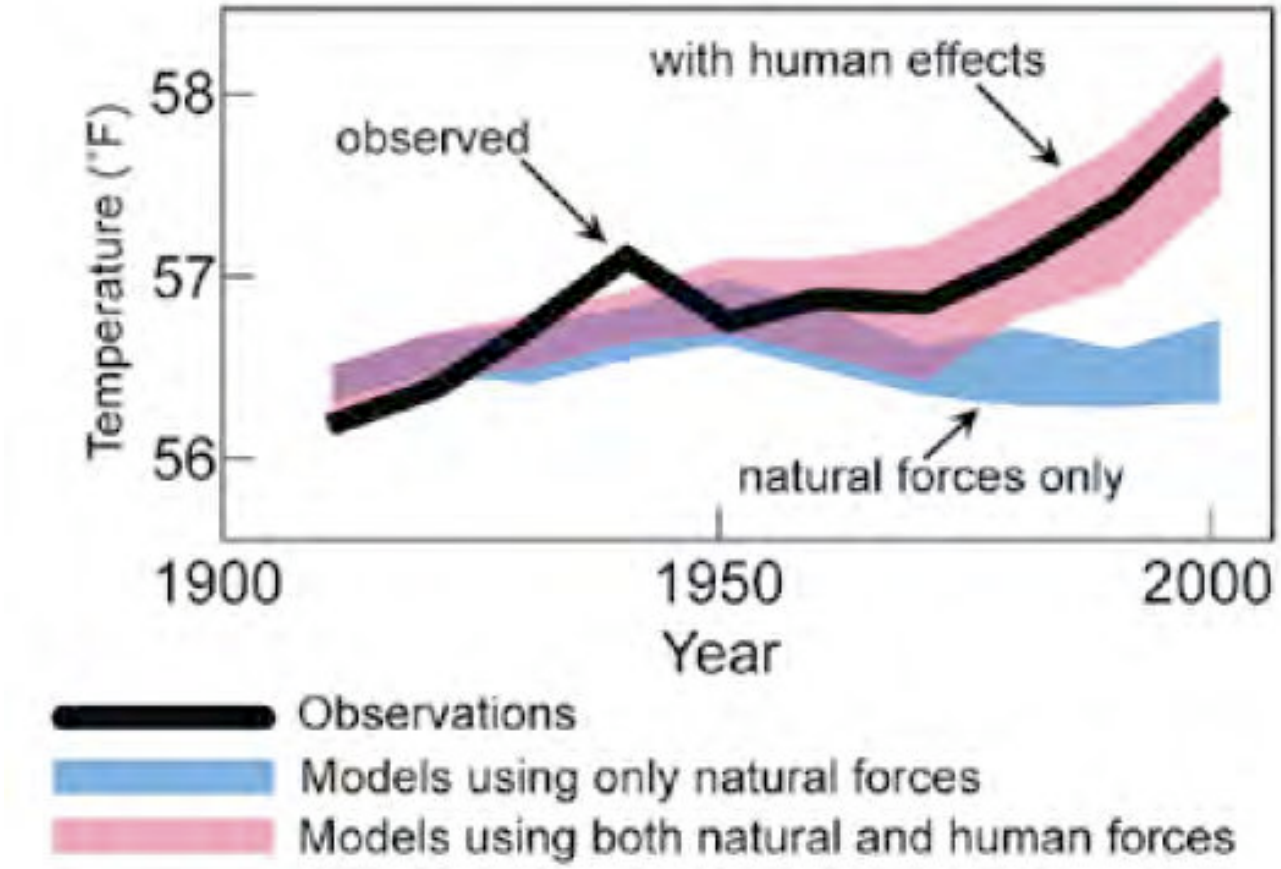
Global Warming is Unequivocal and Primarily Human-induced



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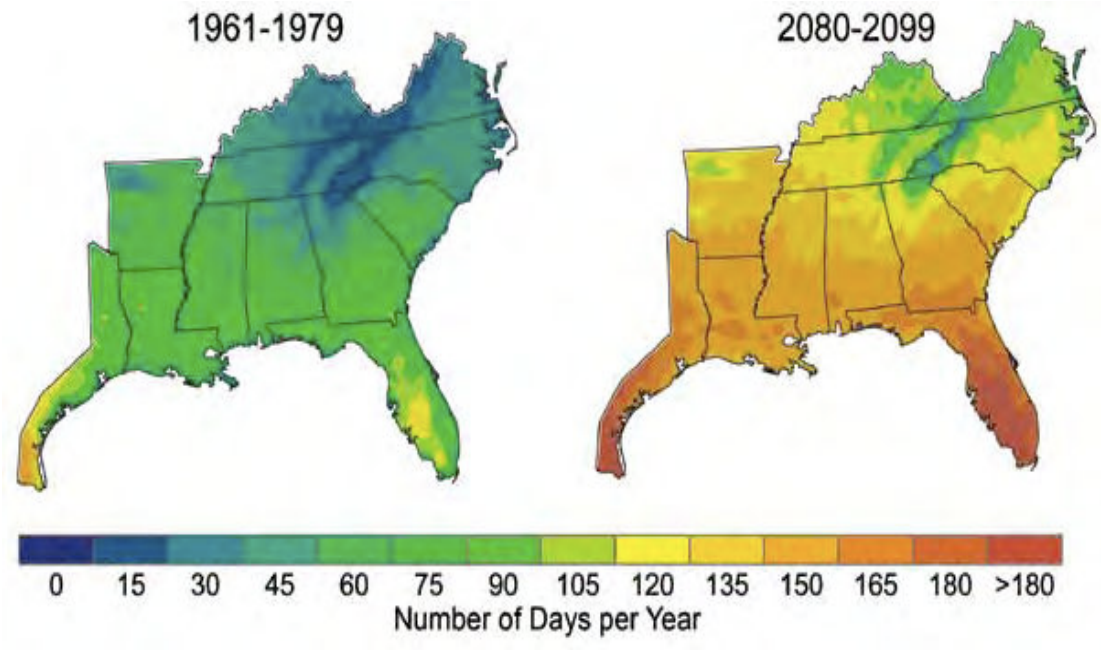
Temperature Changes

Number of Days per Year with Peak Temperature over 90°F



- Since 1970, annual average temperatures have risen 2°F
- By 2080, we could expect temperature increases 4.5°F - 9°F
- The rate of warming will increase to more than double since 1975

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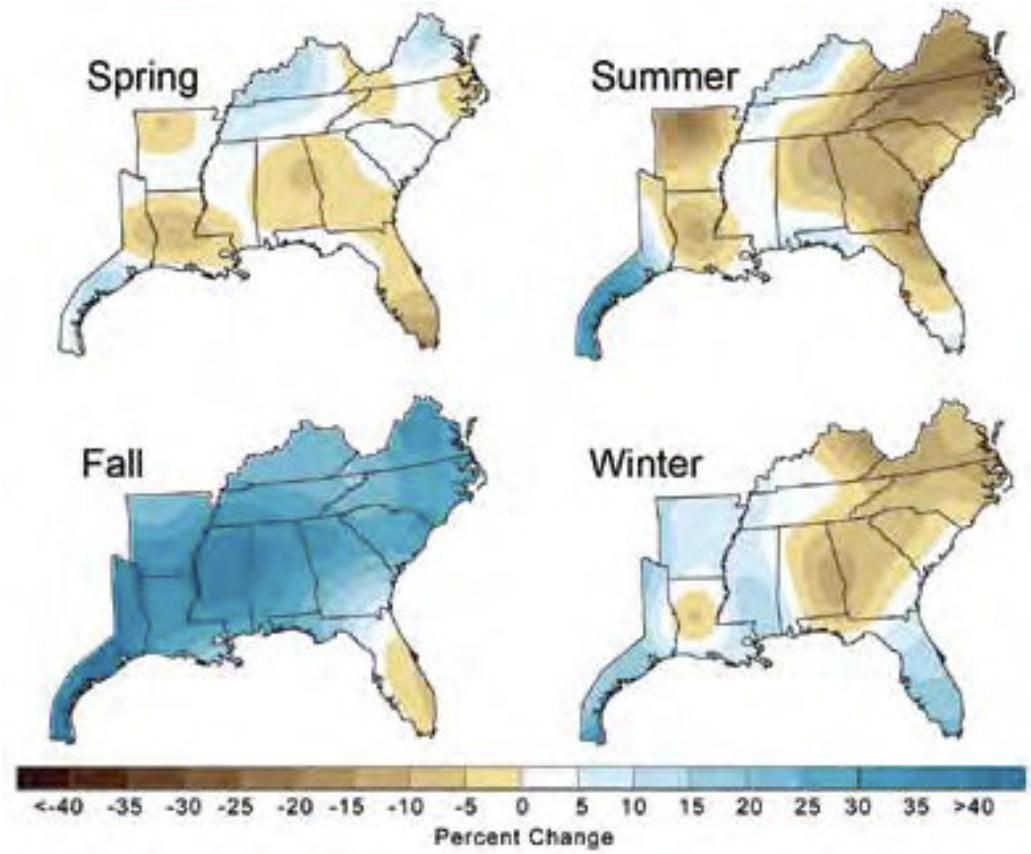
Shifting Precipitation Patterns

Observed Changes in Precipitation1901 to 2007



- Fall precipitation has increased 30%, summer and winter decreased by 10%; drought has increased

- Climate models provide divergent prediction results for SE

When it Rains it Pours:
http://www.environmentamerica.org/home/reports/report-archives/global-warming-solutions/global-warming-solutions/when-it-rains-it-pours

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Water resources at risk

- Higher temps lead to more evaporation; drought conditions to intensify
- Longer periods of time between rainfall events coupled with an increase in demand will have significant economic and societal impacts

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Planning can Protect Water Resources

- Olympia, WA relocated drinking water resource to wells on higher ground
- King County, WA deals with runoff
- Adaptation strategies incorporated into city planning

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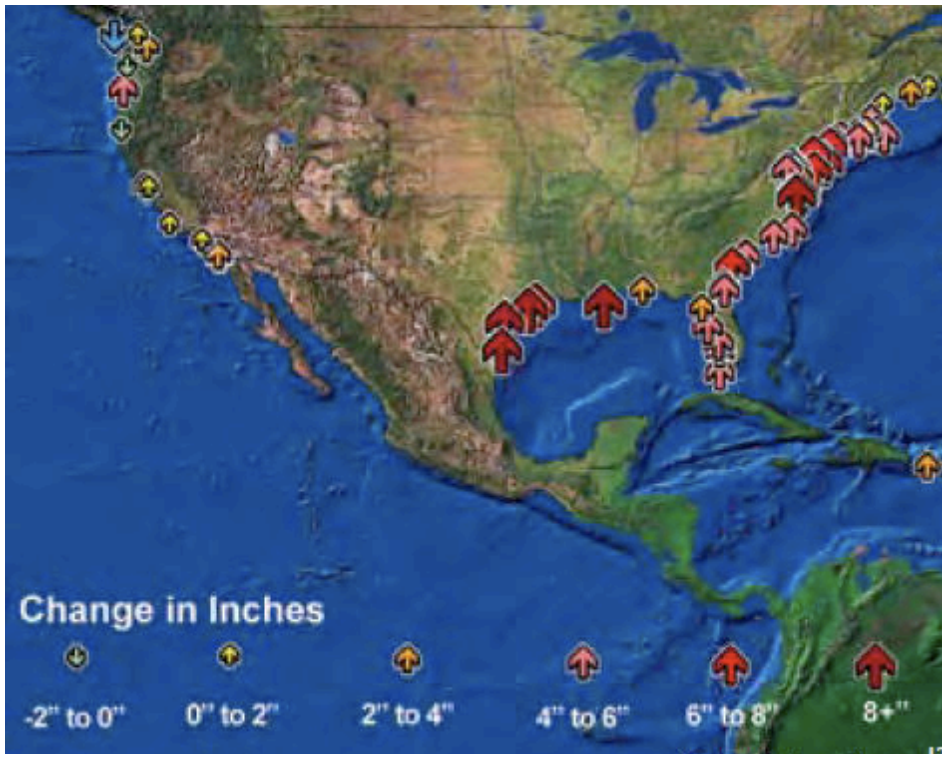
Rising Seas

- Human-induced sea level rise is occurring globally, but the SE has experienced higher rates

- At minimum, we can expect 2 feet of sea level rise by 2100*

- With rising seas comes coastal erosion, inundation, storm surges, salt water intrusion and impacts on ecosystems

Relative Sea-Level Changes on U.S. Coastlines, 1958 to 2008



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Rising Seas

Charleston, SC with 3ft of sea level rise

Video: http://www.cleanenergy.org/index.php?/Video.html?form_id=23&item_id=5

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Rising Seas

Savannah,GA with 3 meters of sea level rise

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Rising Seas

Ft. Lauderdale with 4ft of sea level rise

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Coping with Sea Level Rise

- Hard structures such as levees and seawalls
- Elevating or redesigning structures
- Enhancing wetlands
- Beach renourishment
- Planned retreat

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Hurricanes will Intensify

- Since 1970, the destructive potential of Atlantic hurricanes have increased
- Strong correlation between sea surface temperatures and hurricane intensity
- We can expect an increase in hurricane wind speeds, rainfall intensity and storm surge strength and height

Hurricane Hugo 1989

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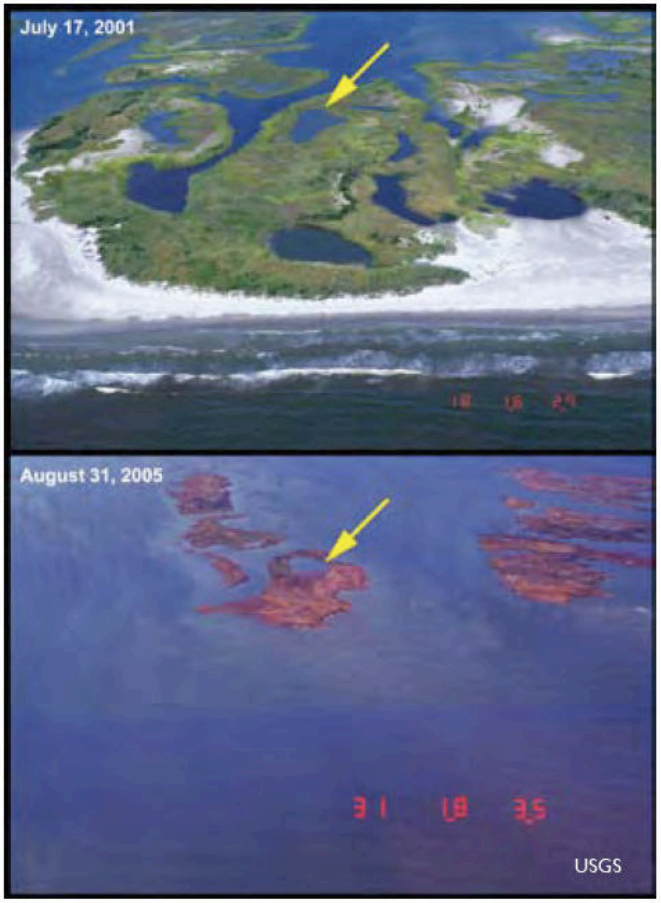
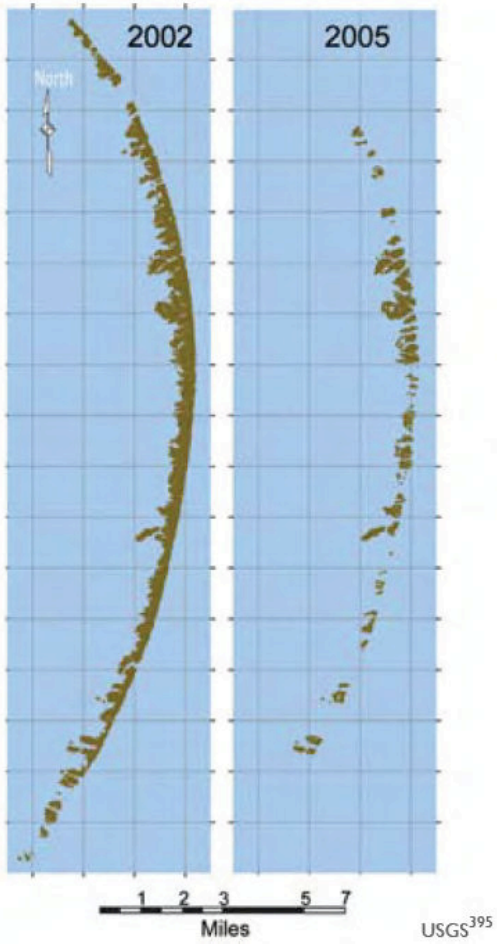
Land Lost during 2005 Hurricanes





- 217 mi^2 of land and wetlands lost from Hurricanes Rita and Katrina

Chandeleur Islands, east of New Orleans

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Threats to Human Health will Increase

- Heat stress
- Waterborne diseases
- Poor air quality
- Extreme weather events
- Diseases caused by insects and rodents
- Pollen increase
- Children, the elderly, and the poor most vulnerable

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Impacts to Agriculture

- Droughts can decrease yields and wither crops
- Plant zones will shift
- Possible pest infestations
- CO_2 will encourage some crop growth as well as weeds

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Agricultural Opportunities

- Diversification of crops and livestock essential
- Transition from irrigated to rain-fed agriculture
- Producers who can adapt are likely to see their businesses survive and possible thrive

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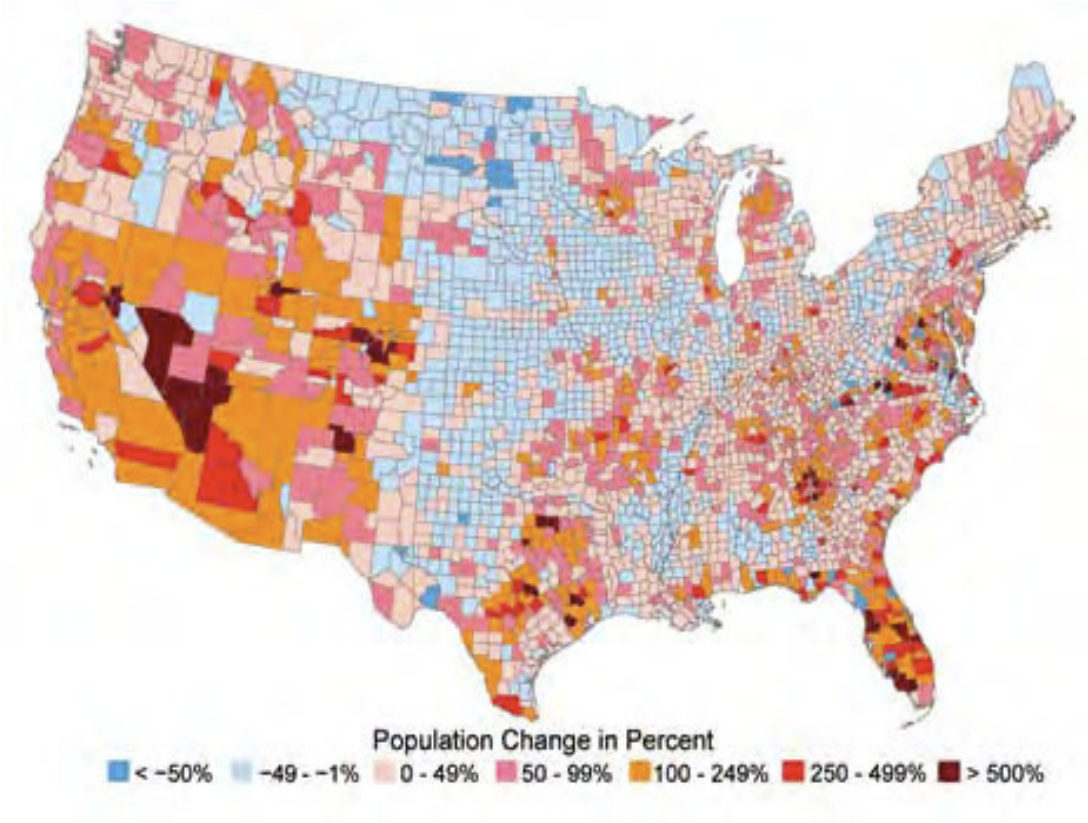
Quality of Life will be Impacted



Quality of life will be affected by increasing heat stress, water scarcity, severe weather events, and reduced availability of insurance for at-risk properties.

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Impacts on Energy Supply and Use

- Demand for cooling energy will increase resulting in increases in electricity use and higher peak demand
- Energy production to be constrained by rising temperatures and limited water
- Energy production and delivery systems are exposed to sea-level rise and extreme weather events in vulnerable regions

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Diversify our Energy Resources

http://www.cleanenergy.org/index.php?/Reports-and-Publications.html

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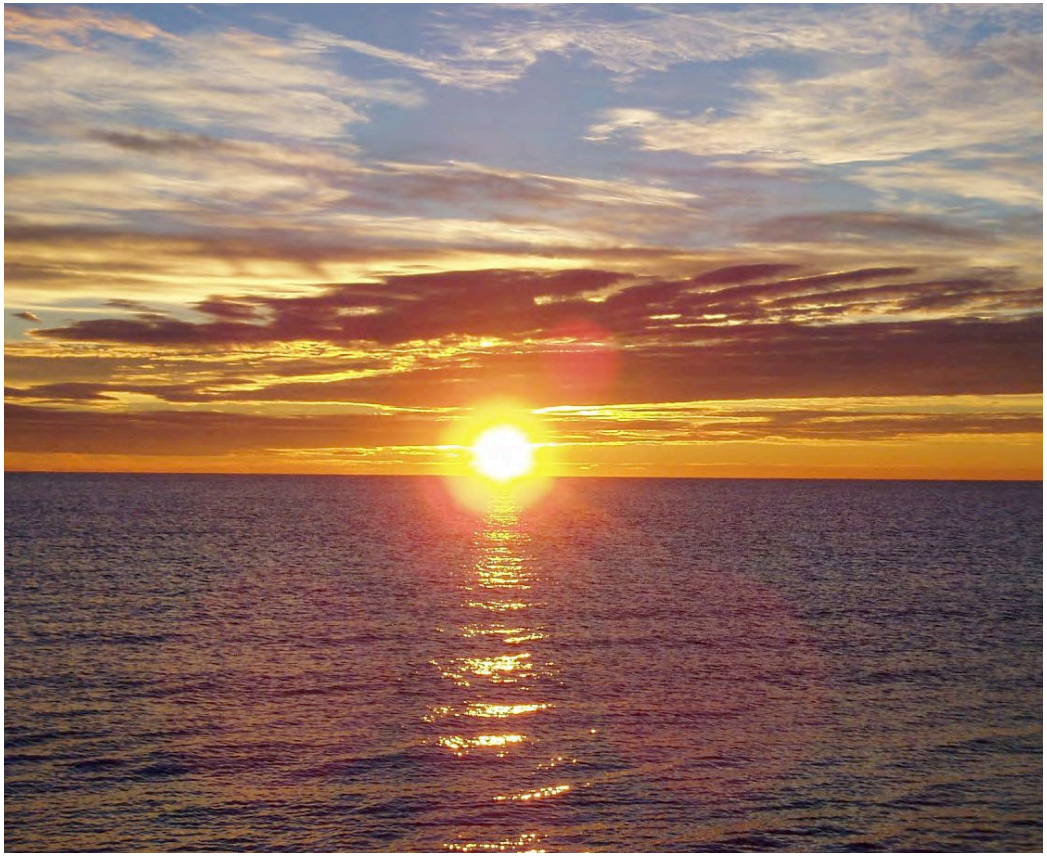
Future Climate Change and its Impacts Depend on Choices made Today

- Mitigation
- Must change how we produce and consume energy
- Must be prepared to adapt to unavoidable impacts



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What You Can Do

The Southeast Coastal Climate Network

www.seccn.groupsite.com

The Florida Climate Alliance

www.floridaclimatealliance.groupsite.com

Join our Efforts on Federal Climate and Energy Policy

Southeast Coastal Climate Network

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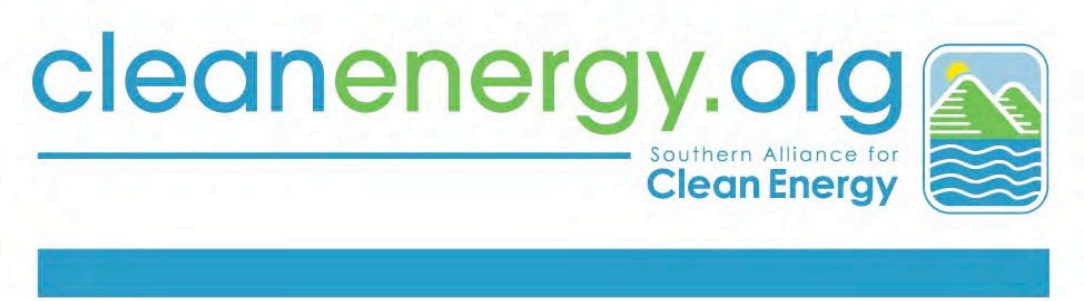

Contact Toni Reale at toni@cleanenergy.org

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and our blog at http://blog.cleanenergy.org

Full report:
http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts