

South Central Climate Science Center

2013 Research Workshop

Wrap-up Notes

Sustainability Group

Led by Cynthia Brown and Duncan Wilson

The group very quickly went through the different aspects of social and natural sustainability. They sketched out some best practices on integrating social and natural sciences to think about large-scale spatial changes that are driven by humans. The group decided that social science typically takes longer to get to the root of a problem and so is better suited to funding opportunities on longer (5-year) timescales. They felt that municipal areas were good targets for research and that Oklahoma City may be an ideal case because of new EPSCOR funded infrastructure.

Scott Loss presented an idea for a 2-pronged approach to complete a broad scale assessment that could result in specific actions for increasing sustainability and resilience in vulnerable populations and areas:

1. From a sociological perspective: environmental justice, human securities, socio-economic status, economic and industry diversity.
2. From an ecological perspective: land use/land cover pattern changes, area of parkland/green space, presence of native and non-native species, responses across rural to urban gradients.

A specific example would be to investigate the impacts of the Oklahoma City MAPS development project on the city's vulnerability and resilience to climate change.

Phil Turnipseed presented an idea focused on messaging and communication.

1. Perseverance of message is important.
2. Communicating the vulnerabilities of change to marginalized populations needs to resonate with "boots-on-the-ground" organizations like 4H and Future Farmers of America
3. Use mapping techniques to combine downscaled climate data with survey results to examine change and vulnerability.

Extreme Weather Group

Led by Earl Johnson and Lynne Carter

The group started by sketching out all of the various weather and climate hazards experienced within the region. The list included: heat waves, hurricanes, storm surge, wildfires, floods/intense rainfall, snow and ice, tornados, thunderstorms, high wind events, and pollution events and bad air day.

There was a consensus that there's a lack of data on hazards and on risk perception and communication both due to a lack of appropriate technology and a lack of appropriate human resources to fully utilize available technology.

Victor Rivera-Monroy presented an idea on developing an ecosystem services framework for the region by examining how communities value ecosystems. The group felt the initial step could be a 1-year project with a budget of \$200-300k.

1. Create the framework and determine the most valuable ecosystem services across the region through interviews with natural and cultural resource managers and the use of decision support matrices.
2. Determine how priority services are affected by some case study extreme events such as specific drought, storm or fire events. Examine if there are specific tipping points within the system as the driver shifts from pulse (climate variability) to press (climate change).

April Taylor presented an idea on creating a "Great Plains Vulnerability Research Coordinated Network." Recently the tribes were given the ability to declare their own emergency status and apply for financial assistance from FEMA. In order to qualify, tribes must have operational plans in place ahead of any weather emergencies. The group suggested initially focusing on specific tribes that were already interested in creating an assessment and then scaling up into a tool that would be usable by tribes across the region.

1. Develop vulnerability packages and/or tools that blend natural and economic approaches with cultural sensitivity
2. Design training efforts to share these tools with tribes
3. Help tribal staff with creating and using the vulnerability assessments utilizing these tools

Drought Group

Led by Mike Langston and John Zak

The group compiled a list of critical challenge areas, individually ranked them, and then focused on the three challenges that were collectively ranked highest:

1. How do we use climate information and knowledge of ecological mechanisms to project impacts on species, ecosystems, landscapes, and biomes; and the associated human response?
2. What is the intersection of what we can sustain environmentally, socially, and economically in response to drought?
3. How can society and science learn from the past and apply those lessons to the new circumstances of the future.

Caryn Vaughn presented on the need for a mechanism for understanding and balancing social, economic, and natural needs and priorities during drought. The group wanted to engage stakeholders and decision makers and examine water use efficiency strategies and policy issues in order to understand how to best incentivize water conservation. Specific project ideas included:

1. Agriculture based project to optimize irrigation and environmental needs
2. Better data on ground and surface water interactions in our region.
3. Using traditional ecological knowledge to look at strategies for the restoration of river cane
4. Louisiana Coastal Sustainability Studio as a template

Renee Edwards' group had four parameters that they determine were most important to examine:

1. Thresholds in physical and social dimensions of drought
2. Precipitation gradients across our region
3. Ecological and social responses to drought
4. Current and projected drought severity

Two possible project ideas were shared:

1. Understanding the interaction of the ecological and social factors of drought in our region. How do people value resources?
2. Understanding the impact of land cover and land use change on drought in our region, particularly things like energy demands, reservoirs.

Katharine Hayhoe presented on tracking the changing trajectory of human-landscape-drought interactions. The group wanted to conduct a case study that:

1. Identified four specific locations within our region
2. Examined what a "bad drought" means in each of those locations
3. Identified which models can best reproduce the patterns of variability for each of these locations
4. Looks at paleoclimate proxies and traditional ecological knowledge for those locations to get a better idea of the historic context of current and future drought