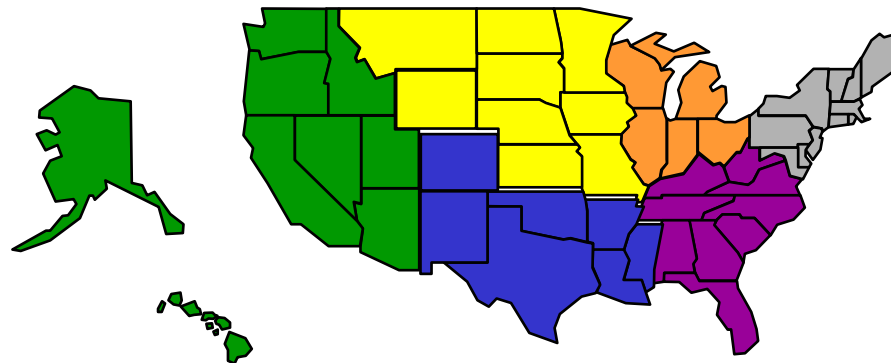




South Central Regional Center (SCRC) Proposed Work plan for FY2004

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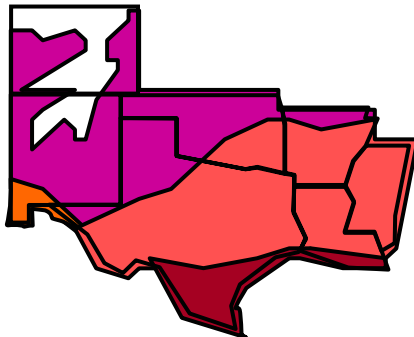
SCRC Workshop

*New Orleans
June 18, 2004*

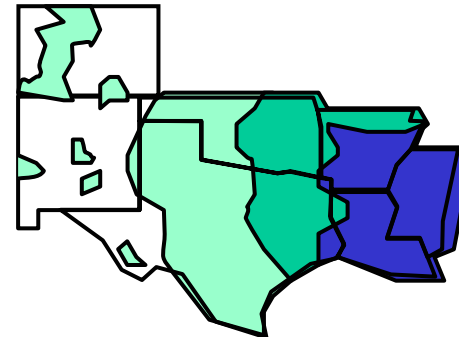
Description of the South Central Region

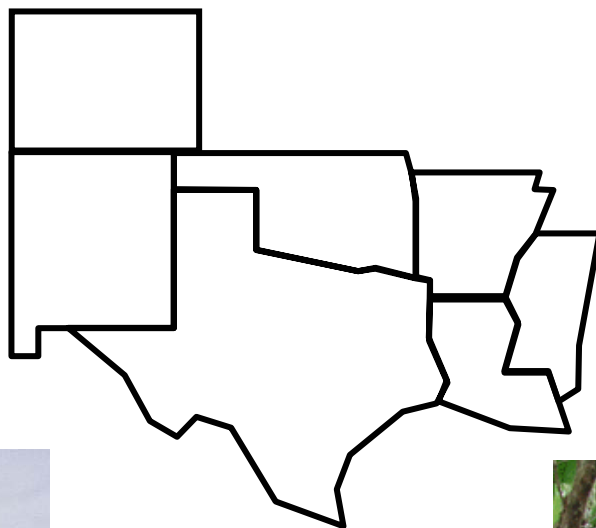
- ✓ *The region contains 16% of the US population and 22% of the total area*
- ✓ *Nearly half of the region's population is in Texas*
- ✓ *Regional climate is characterized by strong N-S and E-W gradients*
- ✓ *Bottomland forests, agriculture, grasslands, cattle*

Summer Temperatures



Annual Precipitation







SCRC Strategic Vision

The South Central Regional Center (SCRC) will provide sound and accurate scientific findings to enhance the understanding of the response of key ecosystems and important regional economic sectors to global environmental changes associated with energy production.

Goals

- 1: To increase our understanding and reduce measurement uncertainty with terrestrial ecosystem carbon exchange processes.**
- 2: To improve our knowledge on the effects of multiple environmental changes associated with energy production on important terrestrial ecosystems in the region.**

Specific objectives-RFP-04

- The mechanisms controlling the ecosystem carbon fluxes, and the dependence of these mechanisms on seasonal and interannual changes in climate and plant phenology.
- The effect on carbon exchange dynamics in forests and grasslands caused by extreme conditions such as drought or seasonal flooding.
- The effect on carbon exchange processes by various air pollutants, such as O₃, and the influence of the climate variability on such effects.
- The effects of environmental changes associated with energy production on woody encroachment into grasslands and pastures in the region. Also, the effect of these environmental changes on the growth of the encroachment, yield and species composition in the grasslands and pastures.
- The role of climatic variability in grassland composition and productivity, and the effect of increased variability at different time scales (diurnal, seasonal, and/or interannual) on the grasslands in the region.
- The effect of environmental measurement uncertainty on the NEE and the development of methods for the reduction of uncertainty and measurement errors.

Specific objectives-RFP-05

- The mechanisms that control the ecosystem carbon fluxes, and the dependence of these mechanisms on seasonal and interannual changes in climate and plant phenology.
- The effect on carbon exchange dynamics in forests and grasslands, caused by extreme conditions such as drought or seasonal flooding as well as pollutants and the influence of the climate variability on such effects.
- The effect of environmental changes associated with energy production on woody encroachment into grasslands and pastures in the region. The effect of these environmental changes on the encroachment, the yield and species composition in the grasslands and pastures.
- The role of climatic variability in grassland composition and productivity, and the effect of increased variability at different time scales (diurnal, seasonal, and/or interannual) on the grasslands in the region.
- The effect of environmental measurement uncertainty, on the modeling of carbon exchange and ecosystems.
- The development of modeling tools for the integration and extrapolation of experimental and field conclusions.
- The SCRC will participate in the new NIGEC aerosol-climate interaction research initiative.

Summary Proposed Work Plan (FY04-05)

- **Grasslands – Observational studies**
 - **Jackson** (year 3) Investigation of woody plant encroachment effect on C storage in paired native grasslands along a natural precipitation gradient.
 - **Heilman** (year 2) NEE and its components will be quantified for an oak-juniper savanna and a grassland on the Edwards Plateau.
- **Grasslands – Manipulative studies**
 - **Briske** (year 3) Altered precipitation and warming study in Post Oak Savanna, investigating dominant oak, C₄ grass, and aggressive evergreen invader.
 - **Pockman** (year 2) Construct water addition plots in existing rainout shelters in grassland, scrubland, and mixed communities at Sevilleta and LTER sites.
 - **Reddy** (year 1) Response of Mississippian C₃ and C₄ plants to environmental change.
 - **Dyer** (year 1) Investigation on the effect of climate change on multi-trophic interactions in natural grasslands and agriculture.
- **Uncertainty and error evaluation/reduction studies**
 - **Michaelides/Leclerc** (year 1) Numerical modeling of drainage flows and quantification of the errors and uncertainties associated with the eddy covariance method. Effect of complex environmental flows on carbon sequestration measurements (co-funded with SERC).
- **Niwot Ridge Ameriflux Site (Subalpine Forest)**
 - **Monson** (year 2) – Ameriflux and related measurements with focus on how winter snow regime (and soil processes) influences carbon uptake.
- **The effect of snow and frozen ground**
 - **Zhang** (year 3) Spatial and temporal distribution of frozen ground for the entire USA.

Measures of performance

- Number of peer-reviewed publications resulting from and acknowledging NIGEC support.
- Coordination with other Centers and the National Office.
- Education and training of future scholars. Measures of success in this area include the numbers of post-doctoral associates, graduate students, and undergraduates involved in the projects, and degrees awarded.
- Leverage of funds.
- Sharing of data, samples, models and computer codes among the investigators supported by the SCRC and also among the general scientific community.
- Participation in regional and national fora and ability to address questions and concerns of the general public and, especially, of policymakers.

PI WORKSHOP-2004

Goals

- Update PIs with respect to NIGEC activities and future directions.
- Promote, develop and strengthen research interactions for the SCRC program and the other Centers' programs.
- Identify accomplishments and research gaps (future directions).
- Identify sources for leverage (results, data as well as funds).