

Adaptation to Climate Variability: the Role of the USDA Southern Plains Climate Hub

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Adaptation of Socio-Ecological Systems
to Climate Variability in Oklahoma
NSF EPSCoR Conference, 3 December 2015



Lead: Dr. Jean L. Steiner (Acting), ARS
Co-lead; Doris Washington, NRCS, Little Rock

USDA Steering Committee:
Deborah Finch and Paulette Ford, USFS, Albuquerque
State Conservationists, State FAC Committees

Mission: to develop and deliver science-based, region-specific information and technologies, with USDA agencies and partners, to agricultural and natural resource land managers that enable climate-informed decision-making, and to provide access to assistance to implement those decisions.

Vision: A USDA-led partnership that fosters robust, resilient, and healthy natural- and agro-ecosystems under increasing weather variability and a changing climate.

Core Values:

- Science-driven
- Stakeholder-centered
- Cooperative
- Efficient

Conceptual Framework of a USDA *Regional Hub*

Science and Technology providers:

Federal Partners

NOAA RISA
USGS CSC
DOE
NASA
etc

USDA Intramural
Research
(ARS/FS/ERS/NRCS)

USDA Extramural
funded Research
(NIFA)

Non-Federal Partners

Agricultural
Experiment
Stations

Many others

Links with other Hubs & National Coordinator



CLIMATE HUB

Technology Transfer providers (Tech-Transfer Stakeholders):

Cooperative
Extension

USDA Service
Centers

Forest Service
Threat Centers

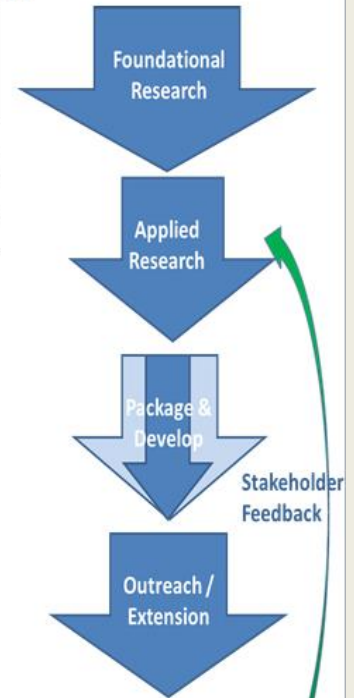
State
Foresters

State
Climatologists

Others

Land Management Stakeholders

Farmers / Ranchers / Forest Managers / Tribes / States / Feds / LCCs / Others



Steering Committee

- USDA Agency Representatives
- Federal Agency Partners

USDA Chief Economist Office

- Randy Johnson, National Leader
- Rachel Steele, National Coordinator
- William Hohenstein, Exec. Comm.

Regional Hubs

- Director
- Program Coordinator
- Agency Liaison
- Climate Hub Fellow

Key SP partners

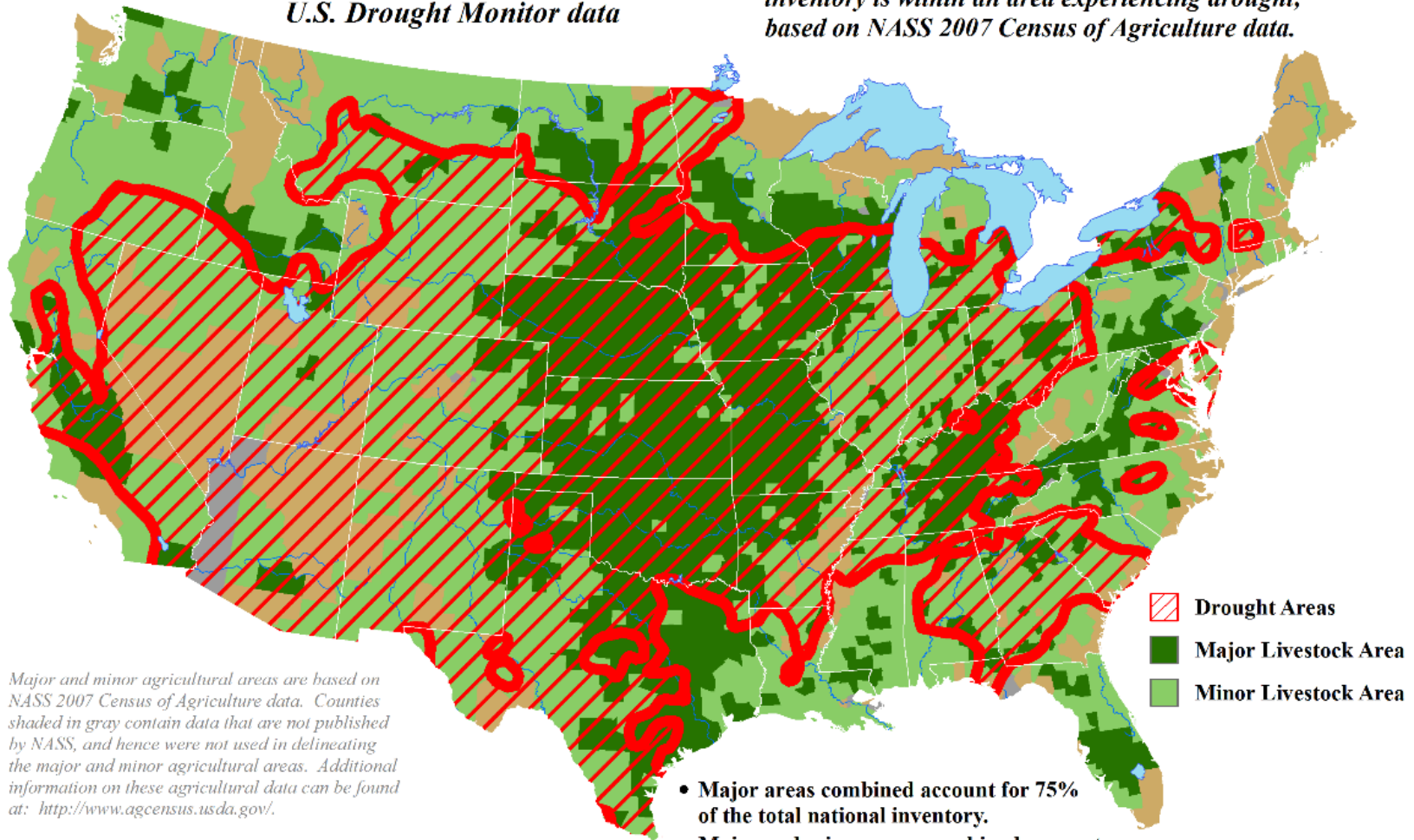
- Land Grant Universities on Texas, Oklahoma, and Kansas
- Other Universities: OU, Texas Tech, Redlands Community College
- South Central Climate Science Center (SC-CSC)
- South Climate Impacts Planning Program (SCIPP)
- LCC's
- Grazing CAP
- Oklahoma EPSCoR
- USDA Long Range Agroecosystem Research network (LTAR)

Southern Plains Partners

U.S. Cattle Areas Experiencing Drought helping

Reflects July 17, 2012
U.S. Drought Monitor data

Approximately 73% of the domestic cattle inventory is within an area experiencing drought, based on NASS 2007 Census of Agriculture data.

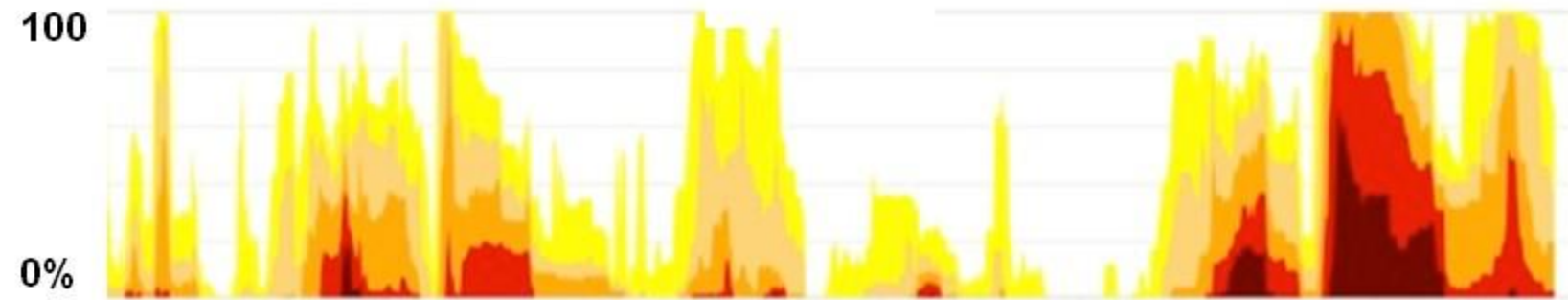


Major and minor agricultural areas are based on NASS 2007 Census of Agriculture data. Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: <http://www.agcensus.usda.gov/>.

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: <http://www.drought.unl.edu/dm/monitor.html>.

- Major areas combined account for 75% of the total national inventory.
- Major and minor areas combined account for 99% of the total national inventory.

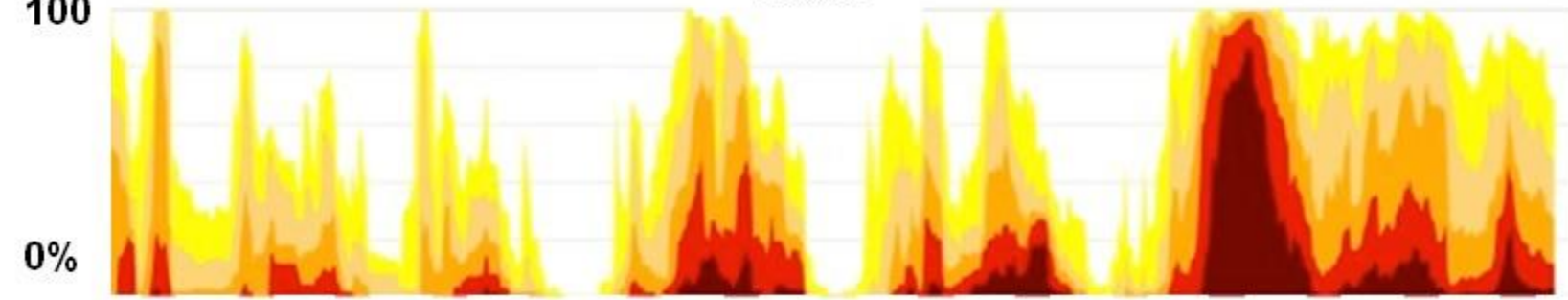
Kansas



Oklahoma



Texas

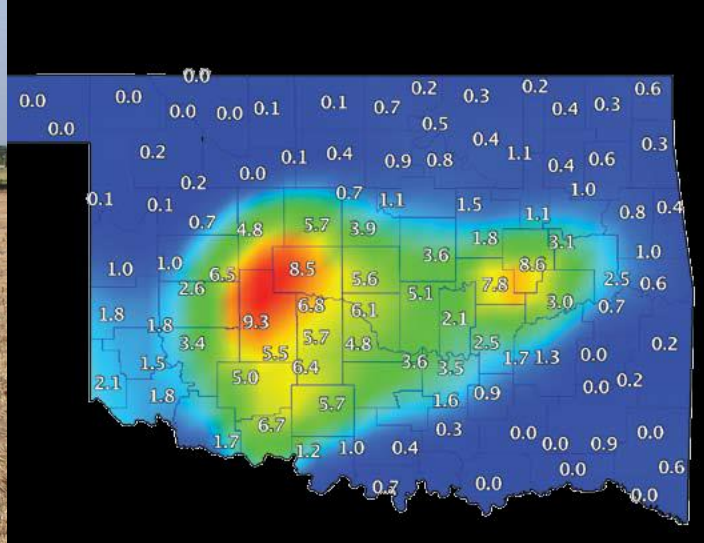


2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

Gradual onset and pervasive nature of drought

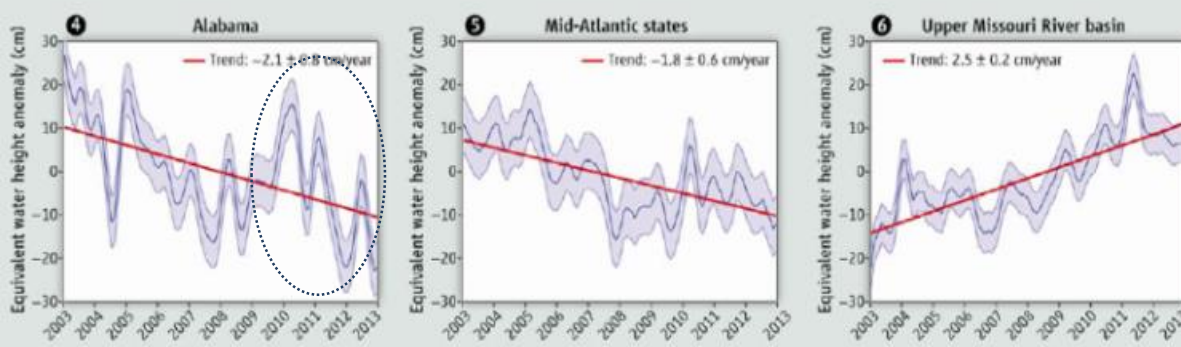
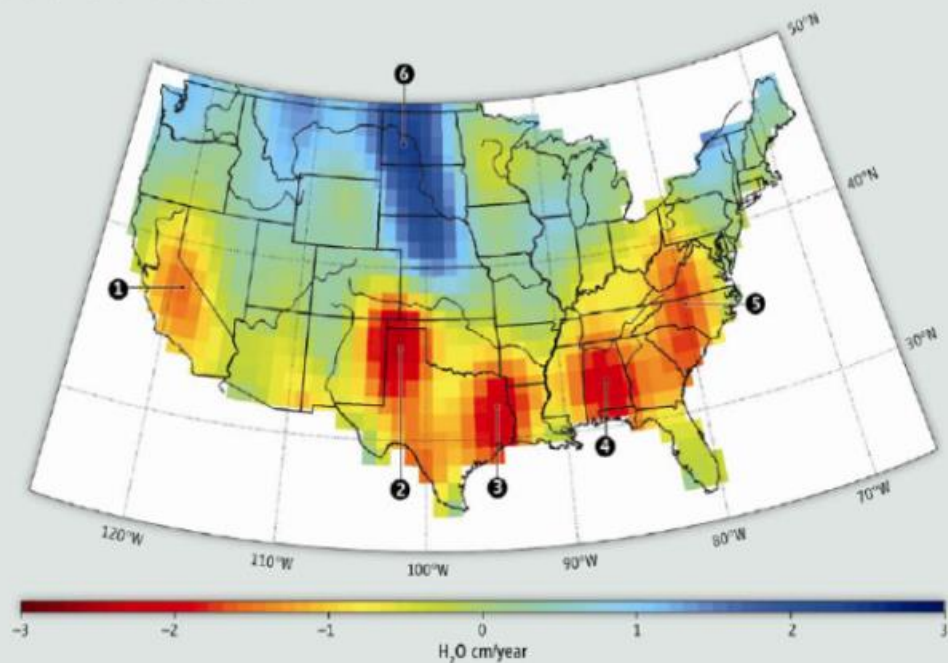
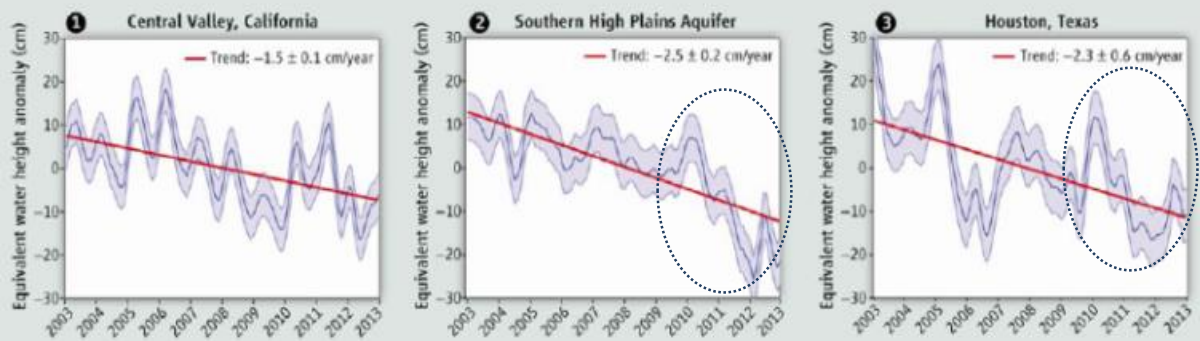


Pond near Buffalo,
Oklahoma
Credit: Gary McManus,
Oklahoma Mesonet



On 8/19/2007, Fort Cobb received > 9" of intense rain. A no-till field (above) withstood the storm, but the adjacent field (right) eroded to the plow pan.





Long-term
groundwater height
anomaly across U.S.

Acreage patterns have changed considerably since the early 2000s, dominated nationally and regionally by expanding corn acreage*

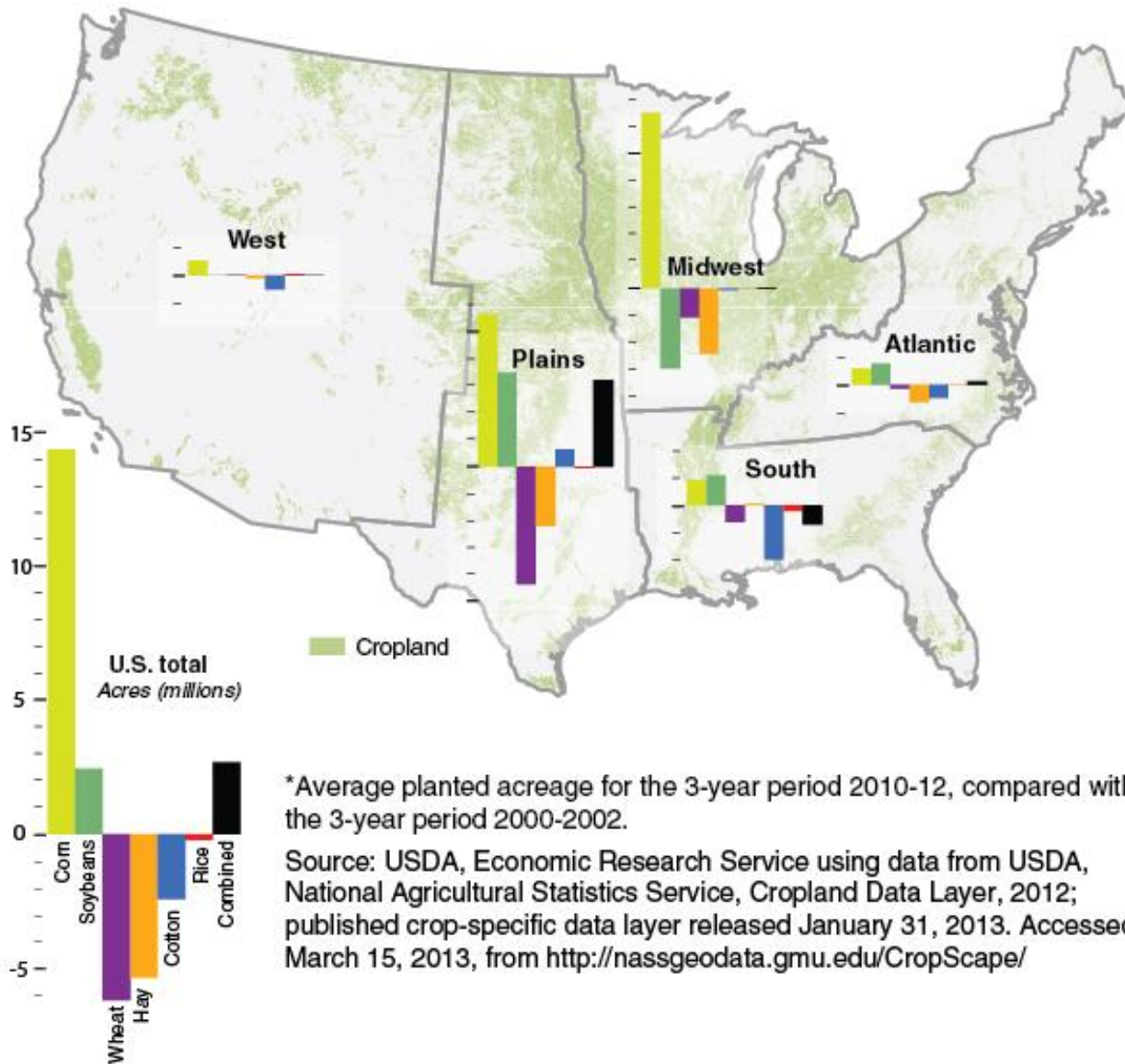
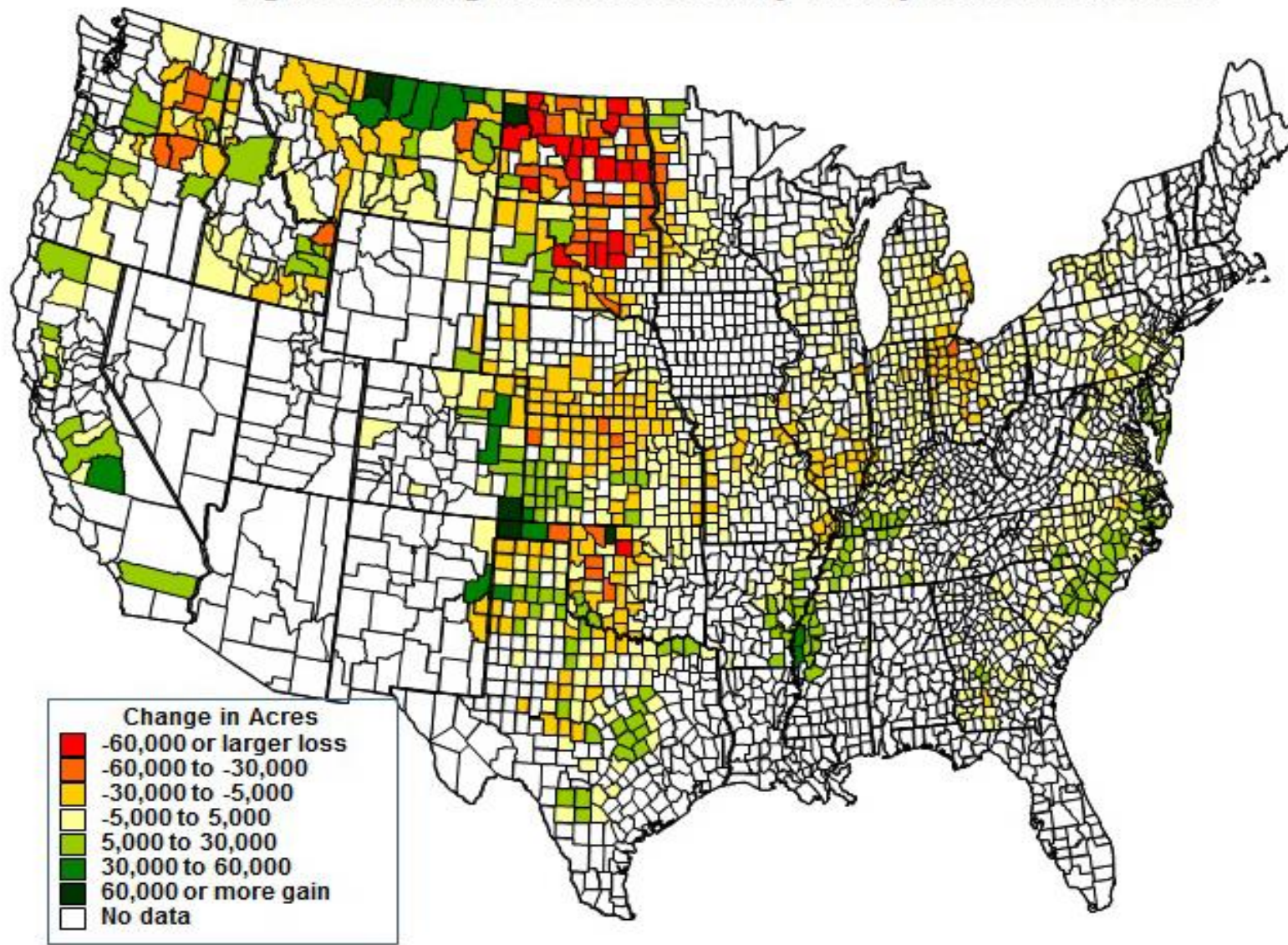
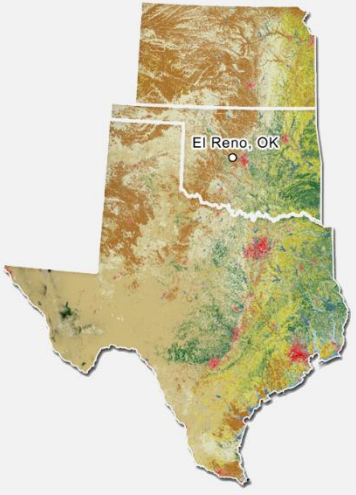
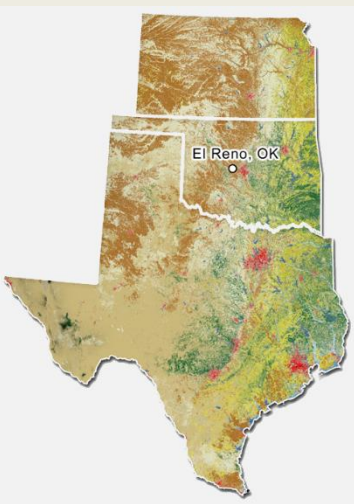


Figure 3. Change in Wheat Acres by County from 2006 to 2012.



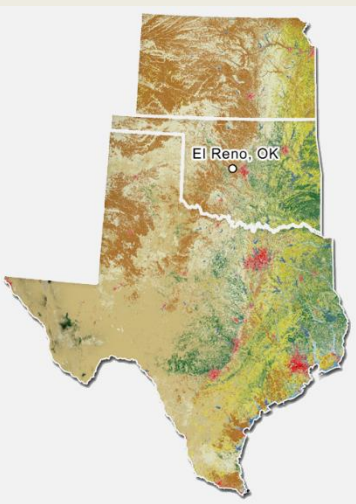


- The USDA Southern Plains Climate Hub strives to be a trusted and easy-to-use **source for guidance on adapting agricultural practice to ongoing climate change**, primarily for **producers, landowners, foresters, and their advisors**.
- Resources will be an **evolving collection of information and timely links to resources** produced by everyone working on aspects of this problem for this region.
- This will be achieved through a **robust, regional partnership** across USDA-University-Private Sector research, Extension, and technical support entities.



2015 Accomplishments of Southern Plains Climate Hub

- Engaged stakeholders at over 50 producer, Tribal, and conservation meetings
- Published Southern Plains Vulnerability Assessment <http://climatehubs.oce.usda.gov/>
- Convened state level workshops to develop implementation plans to implement USDA Climate Change Mitigation Strategy and identified how the 10 Building Blocks also contribute to more adaptive and resilient systems
- Developed or supported collaborative research and Extension projects related to grazinglands management, water use efficiency, soil health, climate communications, and land use dynamics.



Status of Southern Plains Climate Hub Staffing

- **Director** recruitment is underway with Human Resources.
- **Coordinator** role is being provided by CSP LLC, Clay and Sarah Pope, in partnership with Redlands Community College
- NRCS **Liaison** to the National Agroforestry Center in Lincoln, NE, will help develop education and outreach in riparian management, silvopasture, woodlot management, urban forestry, wildlife plantings and other topics
- Climate Hub **Fellow** will be hired to support soil health research for cropping and grazing systems in the SP

Work Plan Elements:

- Partnerships and Coordination
- Research Outreach
- Information Synthesis
- Assessments
- Education
- Communication and Delivery Strategy
- Adaptation and Mitigation Demonstrations



2016 Work Plan Focus Areas

- Convene regional meetings to develop implementation plan for USDA Building Blocks of the Climate Change Mitigation Strategy
- Work with other Climate Hubs to leverage resources across regions
- Work with LGU's on outreach and communication activities within states



*2016 Work Plan Focus Areas:
Partnerships and Coordination*

- Develop a long-term strategic plan to identify key knowledge and tool gaps and develop working teams to address highest priority needs.
- Collaborate with and support proposals for R&D relevant to Hub initiatives.



2016 Work Plan Focus Areas:
Research Outreach

- Coordinate with cross-Hub database development team.
- Partner with Grazing CAP project on outreach efforts.
- Support a regional Soil Health Exchange
 - leverage resources across USDA, Extension, and private sector
 - support producers who manage demonstration farms and ranches



*2016 Work Plan Focus Areas:
Information Synthesis*

- Synthesize findings of SP Vulnerability Assessment for special issue of journal.
- Work with different agricultural sectors to identify knowledge or tool gaps.
- Develop a database of unresolved decision support need.



*2016 Work Plan Focus Areas:
Assessments*

- Develop climate science curriculum for Extension and conservation professionals. (KSU)
- Pilot test training with KSU Extension staff
- Refine and extend training to USDA and Extension staff within region.



*2016 Work Plan Focus Areas:
Education*

- Develop regional Webinar series with SC-CSC
- Engage ARS researchers in Great Plains to identify maturing technologies and decision support tools.
- Meet with sub-state and state level Extension and NRCS groups to solicit field-to-Hub input
- Speak and hold listening sessions at producer meetings and partnership events
- Develop content for SP Hub website



*2016 Work Plan Focus Areas:
Communication and Delivery Strategy*

- Facilitate and partner with demonstration sites of innovative adaptation strategies and resilient systems
- Support Ranch Planning Schools (with Texas AgriLife and West Texas A&M)
- Establish on-farm soil health research with Grazing CAP and farmer demonstration sites



*2016 Work Plan Focus Areas:
Adaptation and Mitigation Strategies*

Questions?

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