

# **Regional Induced Seismicity Collaborative: Integrating Research Approaches in the Southern Midcontinent\***

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## **Abstract**

The state geologic surveys of Texas, Oklahoma, Kansas, New Mexico, and Arkansas, in cooperation with the U.S. Department of Energy and the Ground Water Protection Council, have created a Regional Induced Seismicity Collaborative (RISC) to address the issues of induced seismicity in the southern midcontinent of the United States. RISC focuses on improving the communication of research approaches being undertaken by the different state geological surveys and those outside of the state surveys who are also engaged in related research, especially federal laboratories and other research institutions. RISC also facilitates communication to regulators and other stakeholder groups through the role of the state surveys. Specific goals are to integrate approaches for geological interpretations and analyses, improve management of produced water, and address other potential human causes of seismic activity and risks. RISC will also facilitate research by developing a scientific, theme-based framework for collaboration, organizing workshops and targeted scientific meetings, and providing efficient pathways for data and information exchange. The collaborative officially began activities in FY18.

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1- Bureau of Economic Geology, University of Texas at Austin

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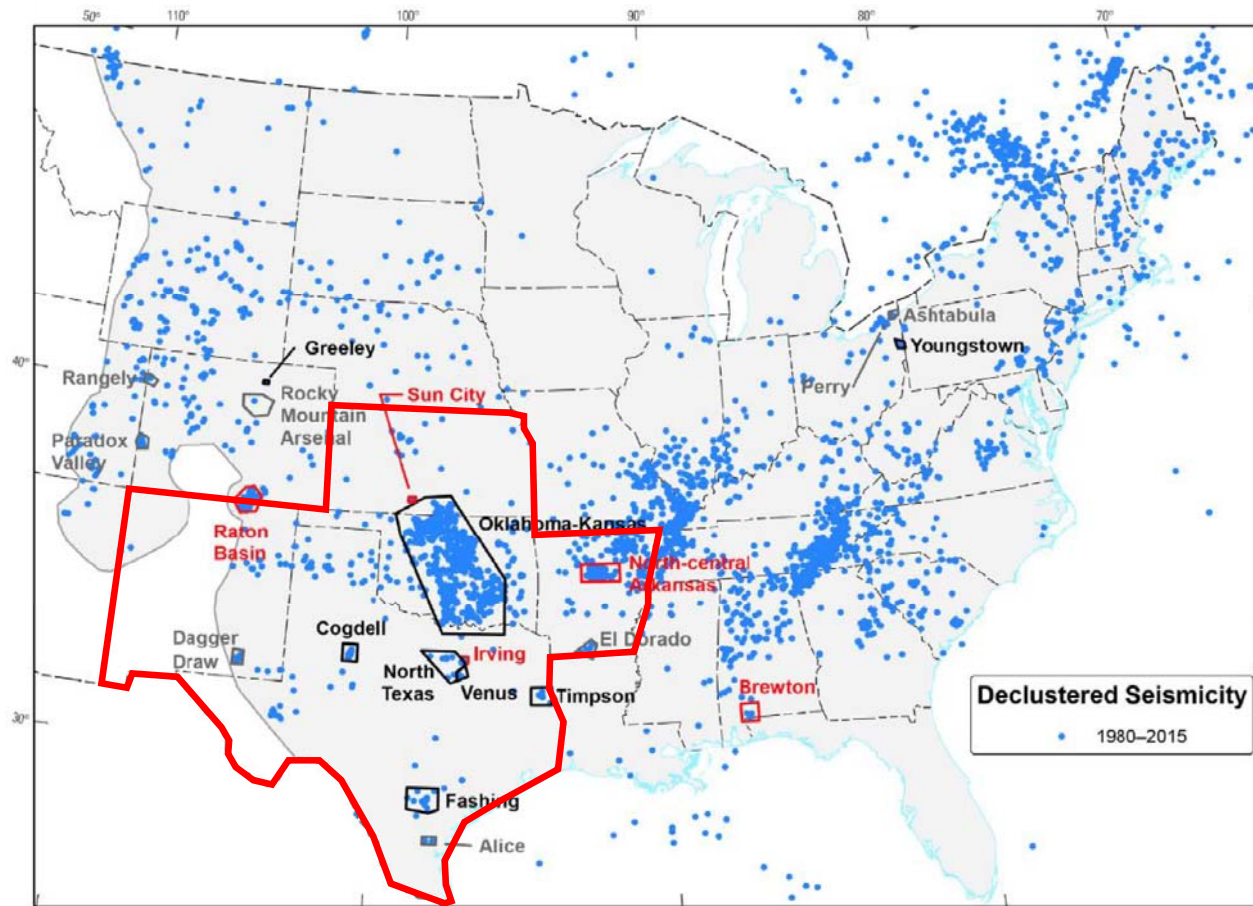
5- Arkansas Geological Survey, State of Arkansas

AAPG Annual Convention and Exposition

20-23 May 2018



# Seismic Activity in the Central and Eastern US



Bill Ellsworth, Stanford/USGS

## Many Questions Span State Borders

- How best to share fault information, mostly from availability standpoint.
- Can a template be created/shared for Fault Slip Potential input data. This could include uncertainty, geomechanics, etc., and would be useful for both operators and regulators, as well as researchers.
- How can we best share seismicity information across the states, especially network design and analytical methods?
- How should we report seismicity in other states (i.e., our respective networks are picking up events in other states), should we do this?
- What is the impact of the seismicity on infrastructure?
- How can we better communicate results from multi-state research to our regulatory communities and the public?
- ...

Could a regional approach to these questions lead to more consistent and thorough management strategies?

# Regional Collaboration Networks

*Used by Many Other Groups to Address Regional Issues*

The collage features several website screenshots:

- National Science Foundation (NSF):** Shows the NSF logo with the tagline "WHERE DISCOVERIES BEGIN". A navigation menu includes "Research Areas", "Funding", and "A". A sidebar lists "Funding", "About Funding", and "Browse Funding Opportunities A-Z". The main content area is titled "Crosscutting Research Coordination Networks (RCN)".
- Department of Homeland Security (DHS):** Shows the DHS logo and the text "Homeland Security". A navigation menu includes "Topics", "How Do I?", "Get Involved", "News", and "About DHS". A breadcrumb trail reads "Home > Topics > Emergency Communications > SHARES > SHARES Coordination Network Operational Levels". The main content area is titled "SHARES Coordination Network Operational Levels".
- National Institutes of Health (NIH):** Lists "National Institutes of Health (NIH)" and "National Institute of Neurological Disorders and Stroke (NINDS)".
- NIH StrokeNet:** Lists "NIH StrokeNet Regional Coordinating Stroke Centers (U24)".
- NOAA:** Shows the NOAA logo and the text "Performance, Risk and Social Science Office, Office of the Chief Financial Officer". A navigation menu includes "HOME", "ABOUT US", and "BUSINESS OPERATIONS MANUAL (BOM)". The main content area is titled "Regional Collaboration".
- Urban Sciences:** Shows the logo for "URBAN CENTER FOR COMPUTATION AND DATA". The main content area is titled "Regional Collaboration Teams:".

At the bottom left, there is a navigation menu with "HOME" and "NEWS" buttons. Below this, the text reads: "Regional Coordination Network Launches for Veterans, Service Members and Families".

At the bottom right, there is a photograph of a group of people in a meeting. Overlaid on the photograph is the text: "THE URBAN SCIENCES RESEARCH COORDINATION NETWORK".

# Regional Research Collaborative in the Southern Midcontinent

## Issues that Motivate RISC:

- Widely varying data availability, reporting, and analyses
- Lost opportunities to leverage efforts and experience
- More difficult to inform regulators and the public about progress

## RISC Goals:

- Develop effective approaches for addressing geologic issues that span state boundaries
- Create a visible pathway for important involvement of Federal agencies
- Improve meaningful collaboration between universities and state and federal entities

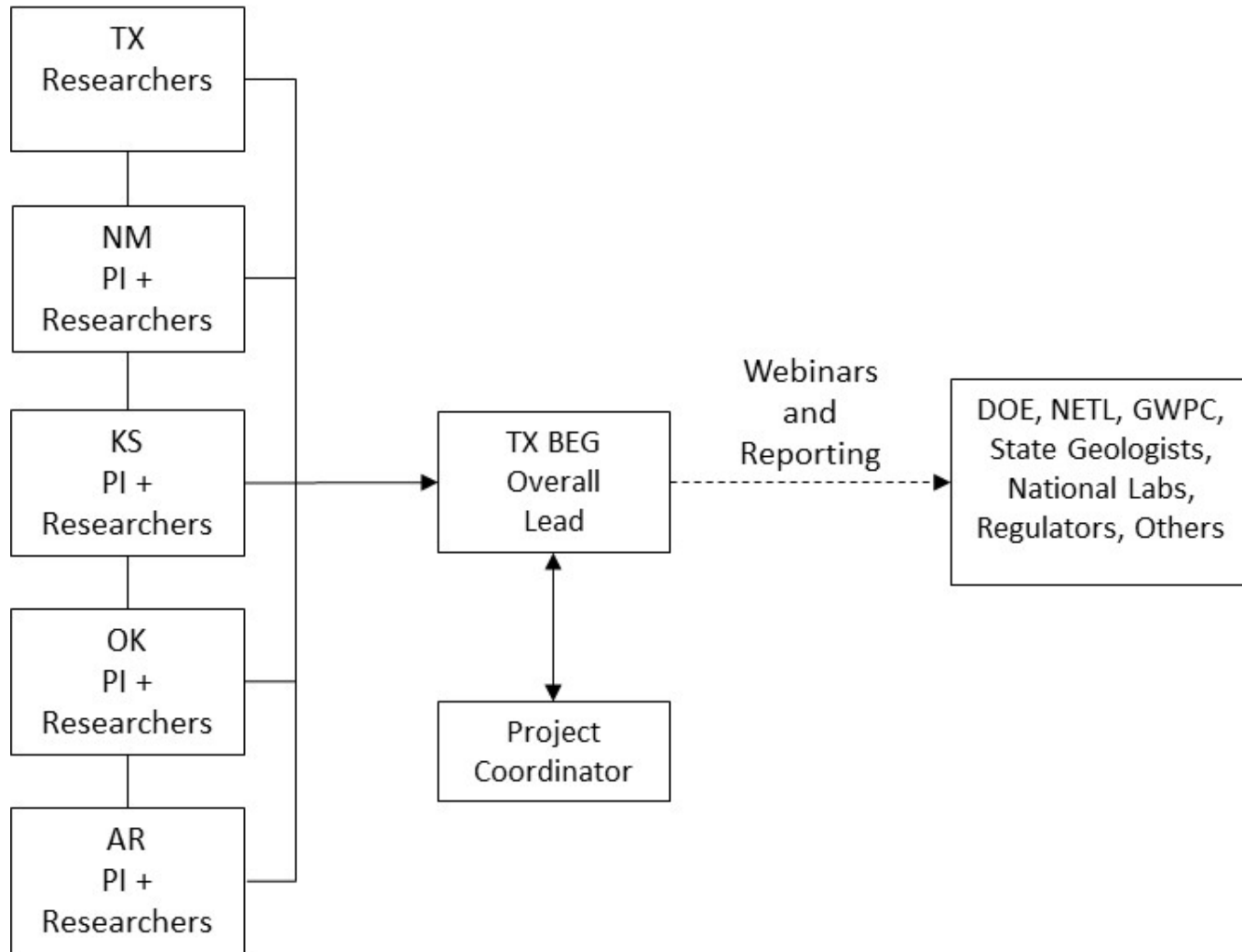


## Initial Description of Tasks and Deliverables

- Develop scientific theme-based framework for collaboration
- Organize workshops and meetings
- Facilitate inter-state scientific projects. Examples:
  - ✓ Create RISC information library to improve discoverability of state survey outcomes (papers, presentations, reports, etc.)
  - ✓ Unify seismological analyses and network design
  - ✓ Development of geological models that more effectively span jurisdictions
  - ✓ Communicate more effectively to stakeholders and decision makers



# Management Approach





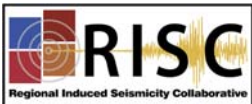
## RISC: Upcoming Events

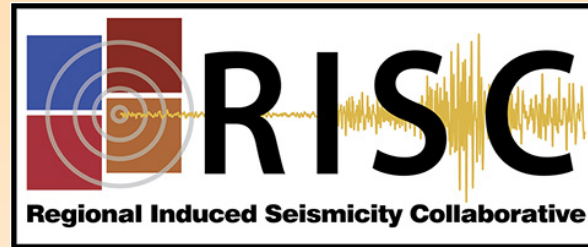
### Webinars (open to all)

- July 9 –
  - Introduction to state survey activities
  - Discussion and status of scientific topics
  - Assessment of gaps and overlaps
- Webinars to be organized approximately every two months thereafter

### All-hands Technology Transfer Meeting

- January 15-16
  - Deep discussions into collaborative research
  - Planning for future RISC-facilitation research





## Acknowledgements

