### Objective

The objective of the earthquake monitoring program at Wellington Oilfield is to ensure safe CO₂ injection in the Mississippian and Arbuckle reservoirs with regards to induced seismicity. The research also provides information on the stress field of the shallow basement and the location of faults. This data can be used to advance the understanding of induced seismicity in the region as well as inform the regulation of fluid injection in the midcontinent.

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### Results

- **Stress analysis from focal mechanisms correlates well to in-situ well measurements**
- CO₂ injection at Wellington Field completed in summer 2016 did not cause seismicity
- Regional seismicity likely caused from increased pore fluid pressure in basement and Arbuckle
- The regions affected by induced seismicity are growing

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### References


### Acknowledgements

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**Monitoring induced seismicity in southern Sumner County, South Central Kansas**

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**Induced Seismicity**

- Events cataloged from August to October 2016
- Magnitudes range from M₀.₄ to M₀.₃₆
- Distance to the event is calculated from a predefined velocity model
- P-wave velocity calculated from well logs of KGS 2-32
- Moment Magnitude
- Magnitude of Completeness
- Magnitude of Completeness (Mc) is the earthquake magnitude for which an array can confidently pick all events of that magnitude and larger in a certain area [Vorobieva, 2012]

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**Earthquake focal mechanisms**

- **Magnitude of Completeness (M₀)** is the earthquake magnitude for which an array can confidently pick all events of that magnitude and larger in a certain area [Vorobieva, 2012]
- M₀ for the Wellington array is ~1.1 M₀ for the Area of Interest