

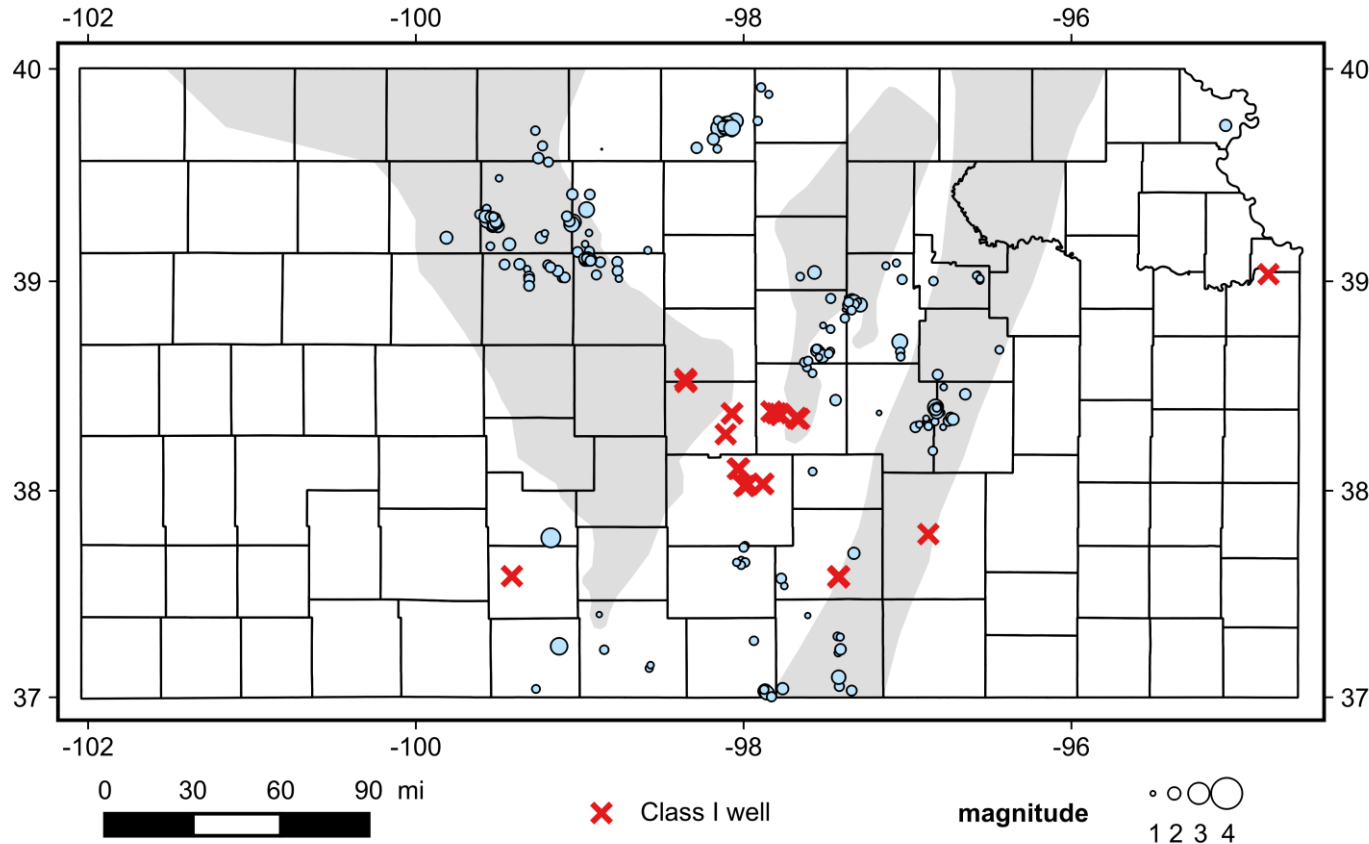
Consortium to Study Trends in Seismicity

Quarterly Report July 1 to September 30, 2023

Rex Buchanan, Shelby Peterie, Rick Miller, *Kansas Geological Survey*

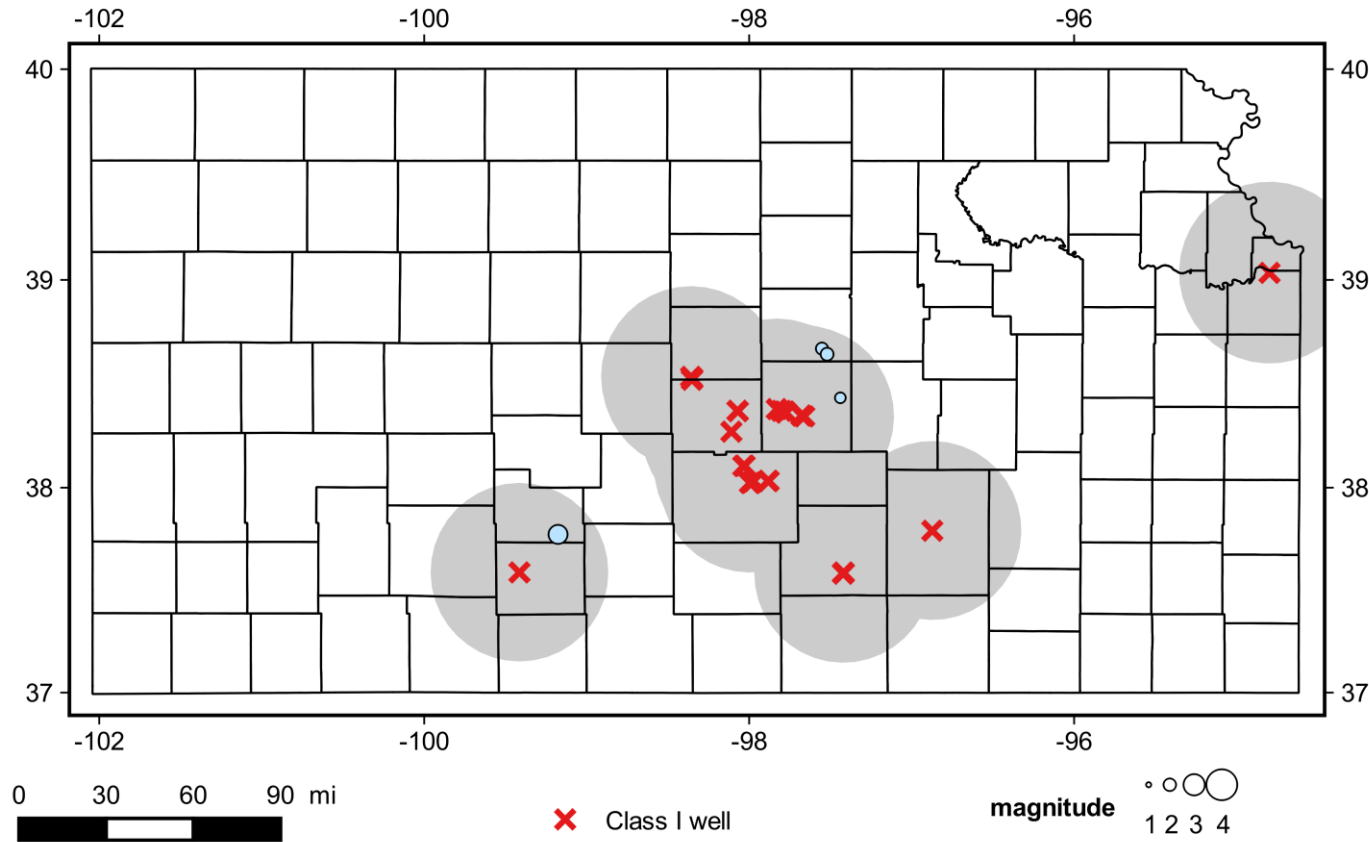


Statewide Earthquakes



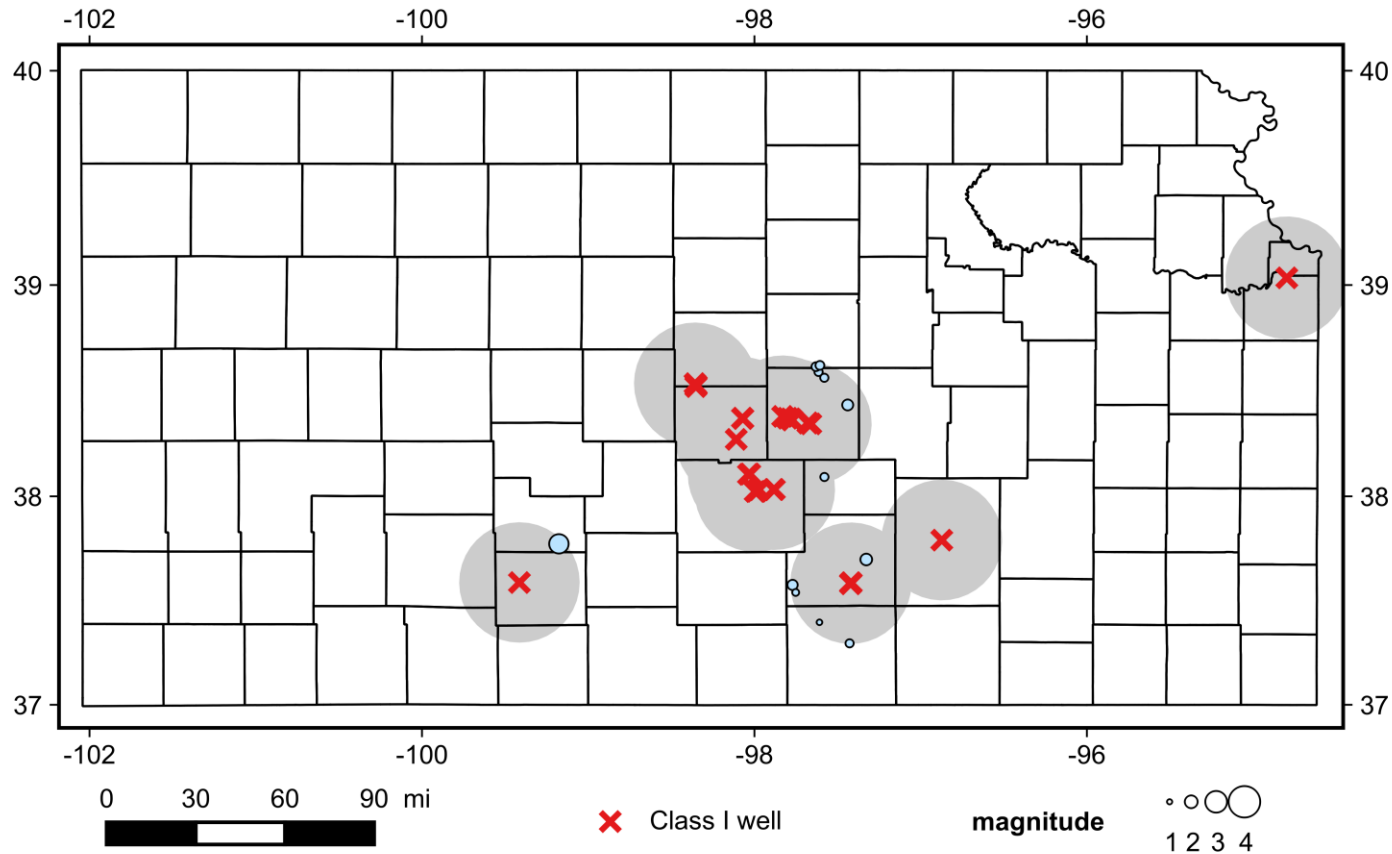
- Statewide earthquakes
 - This quarter: 206
 - Last quarter: 234
 - Largest = M 3.1 in ED
- Saline County
 - last quarter: 23 (M 2.4)
 - this quarter: 17 (M 2.3)
 - Nearby
 - Dickinson: 11 (M 2.4)
 - Ottawa: 2 (M 2.3)
- MN-CS county line
 - 24 events, largest = M 2.6
- Jewell area
 - 18 in Jewell Co (M 2.9)
 - 9 in Nebraska (M 3.4)

CSTS Alerts



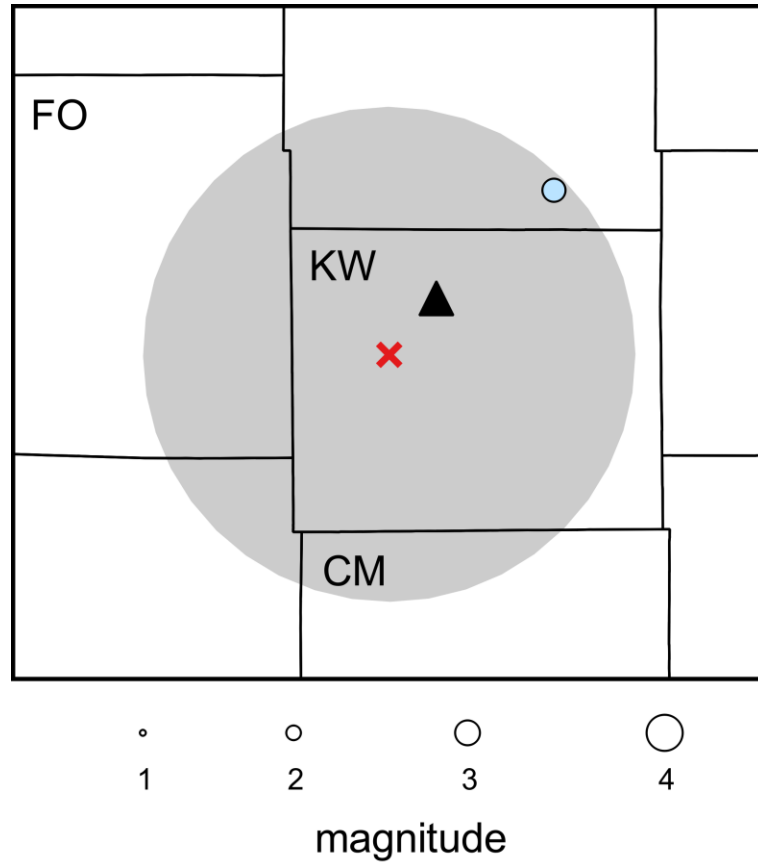
- Criteria
 - $M \geq 2$
 - 30 mi of tier I wells
- Alerts
 - This quarter: 4
 - Last quarter: 8

Earthquakes Within 20 miles



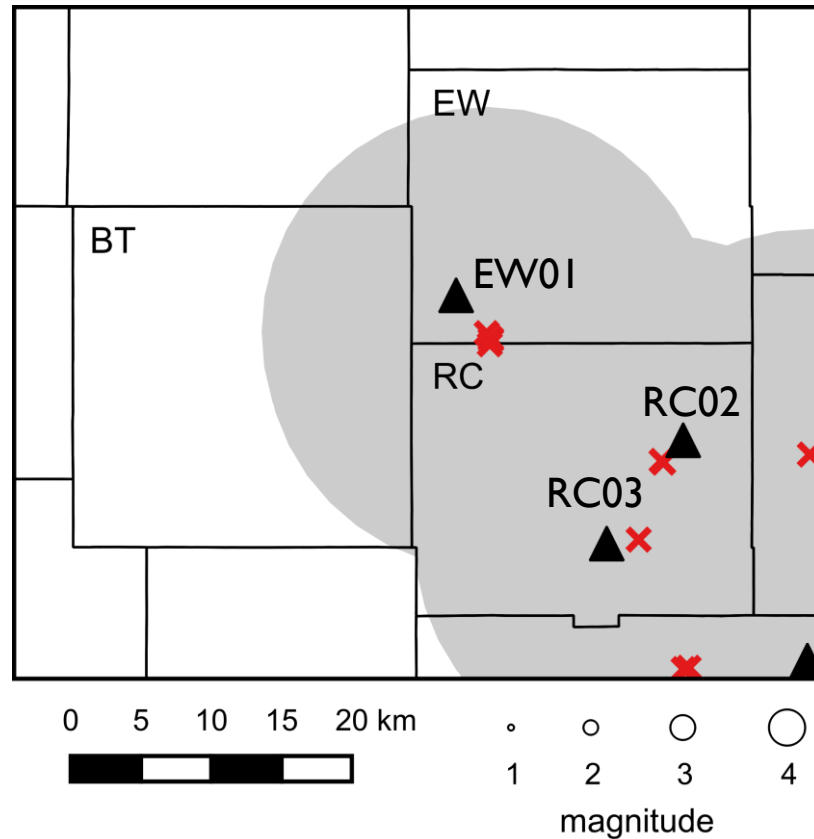
- Earthquakes w/in 20 mi
 - This quarter: 12
 - Last quarter: 23

Kiowa County



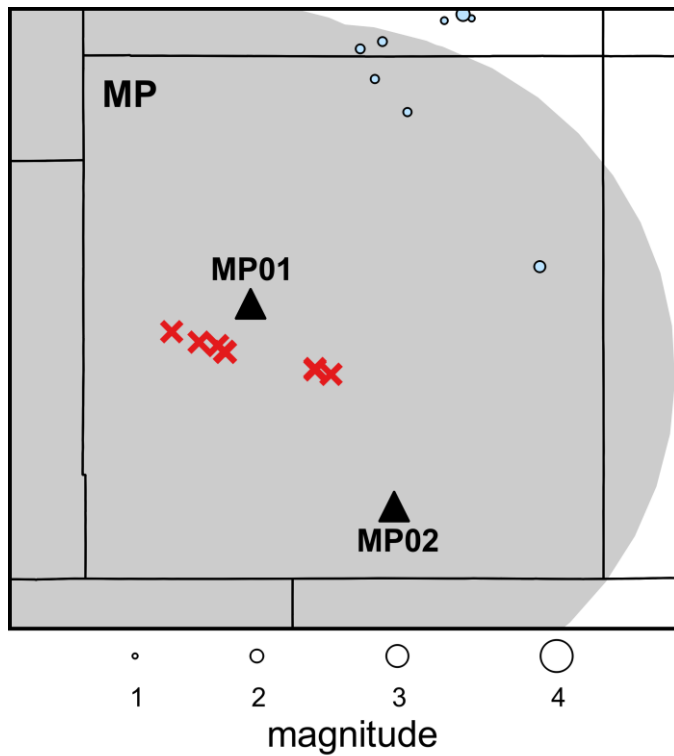
- Located earthquakes
 - M 3.2 in Edwards
- Subnetwork events
 - None

Rice and Ellsworth Counties



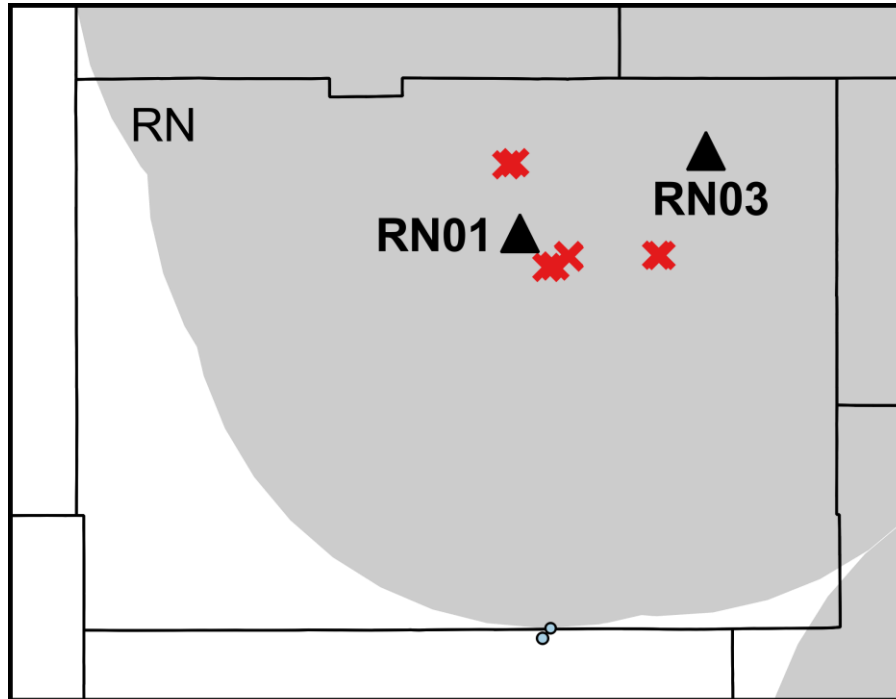
- Located earthquakes
 - None w/in 20 mi
- Subnetwork events
 - None w/in 20 mi

McPherson County



- Located earthquakes
 - 6 within 20 miles
 - M 2.0 on July 27 in eastern MP
- Subnetwork events
 - MP02: three M 0 to 0.8
 - MP01: one M 0.9

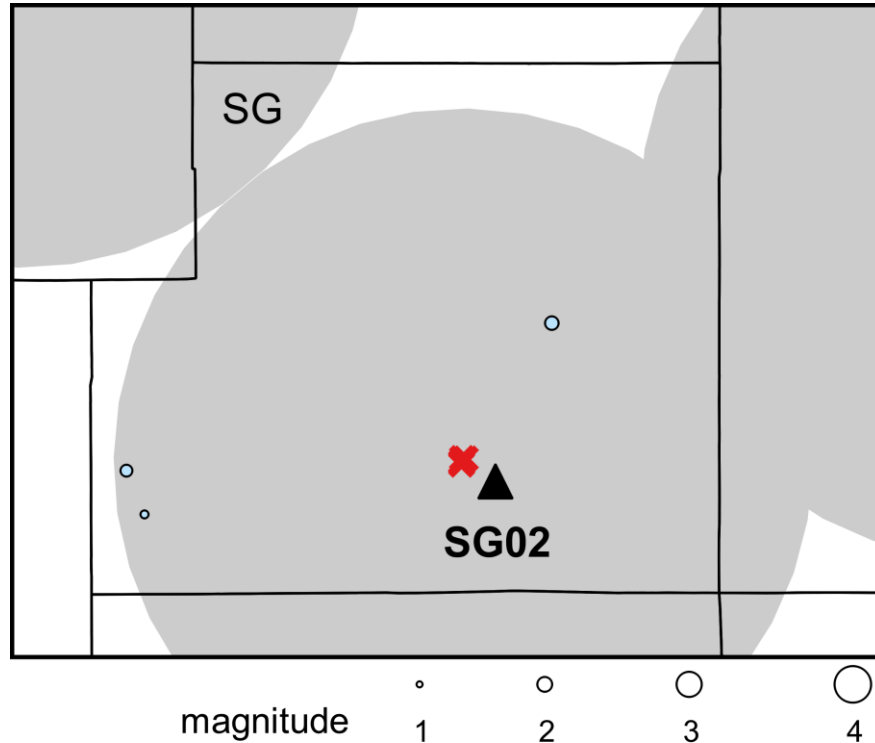
Reno County



magnitude • ○ ○ ○
 1 2 3 4

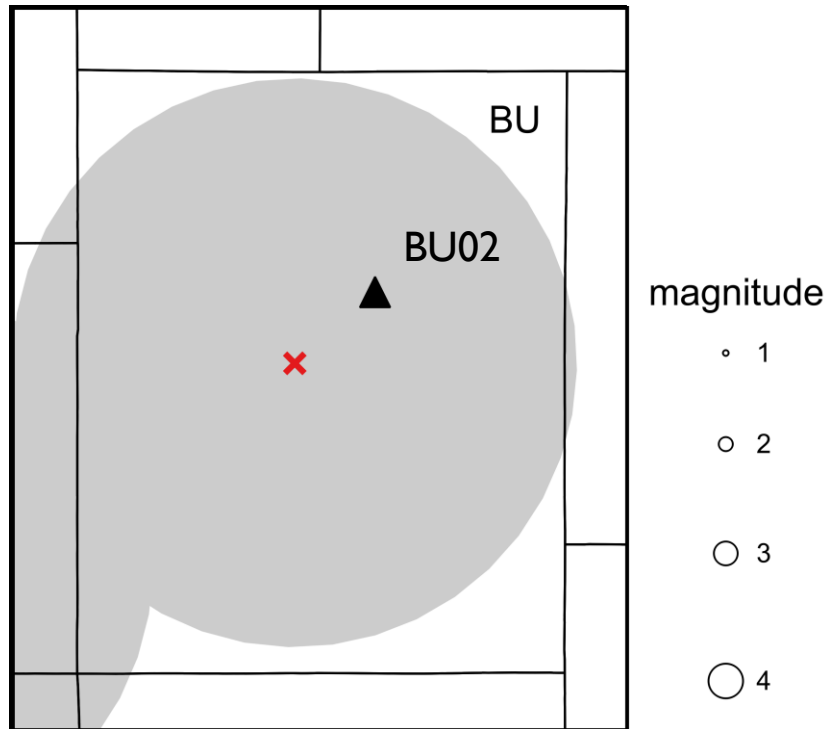
- Located earthquakes
 - two microearthquakes ≥ 20 mi at Reno–Kingman county line
- Subnetwork events
 - None

Sedgwick County



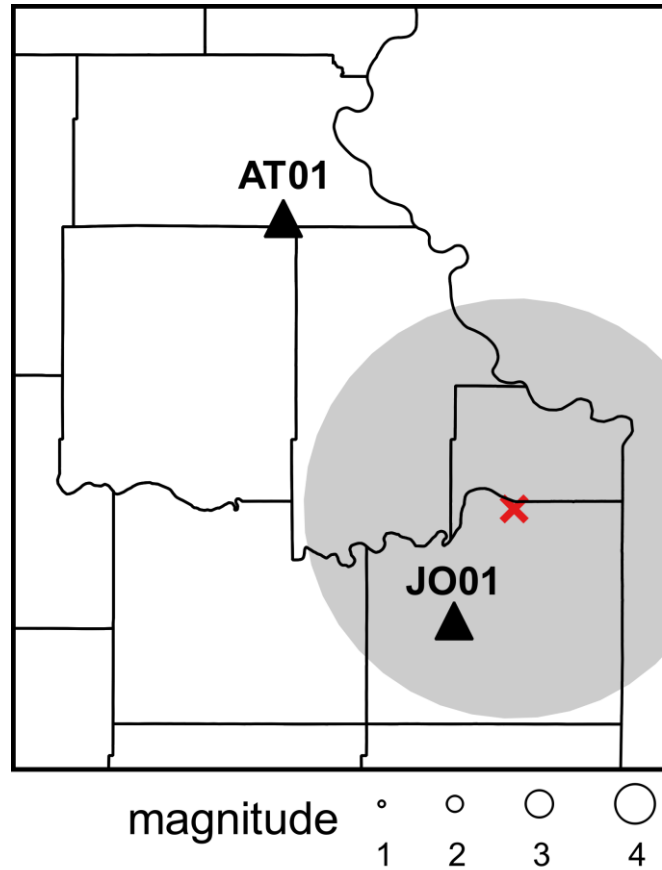
- Located earthquakes
 - M 1.7 10 mi from wells
 - two microearthquakes near Cheney
- Subnetwork events
 - One: M -0.2

Butler County



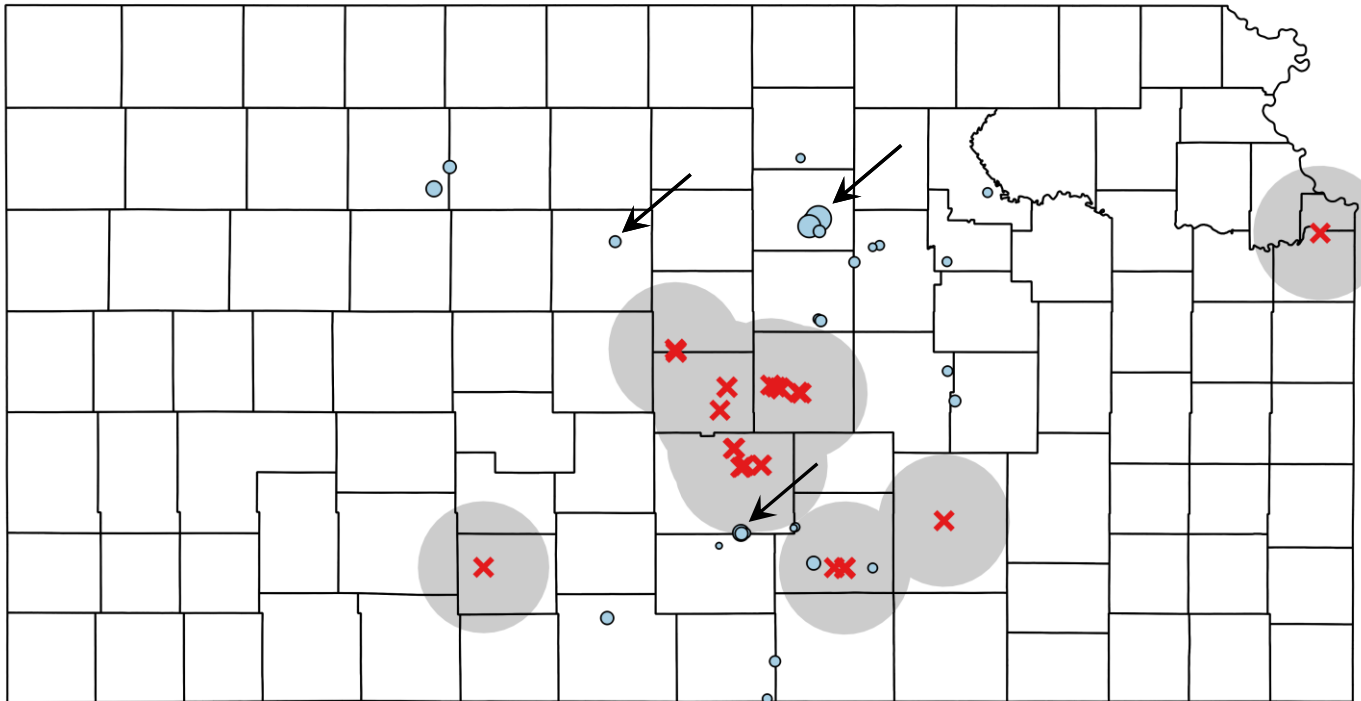
- Located earthquakes
 - None
- Subnetwork Events
 - None

Johnson and Atchison Counties



- Located earthquakes
 - None
- Subnetwork events
 - None

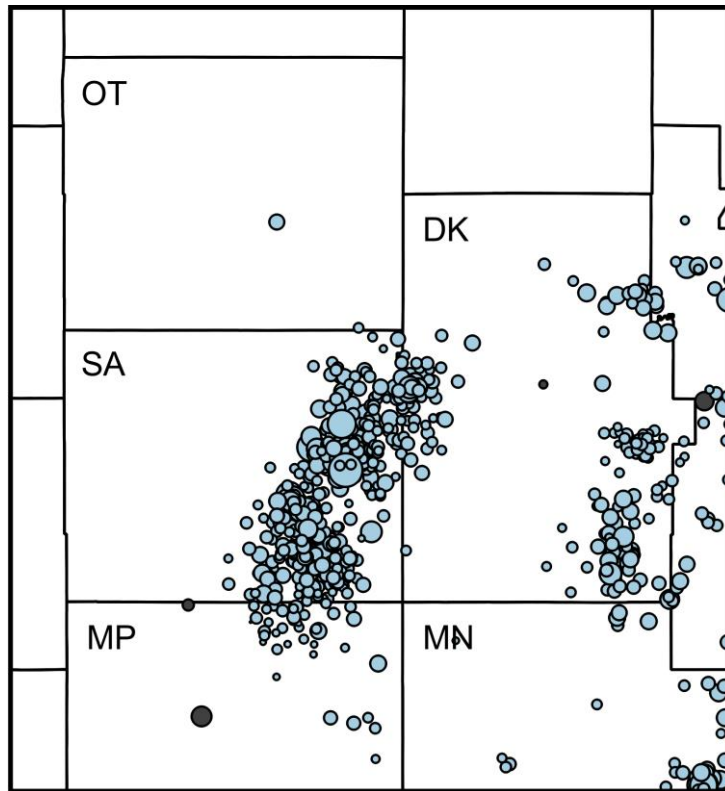
Current Quarter



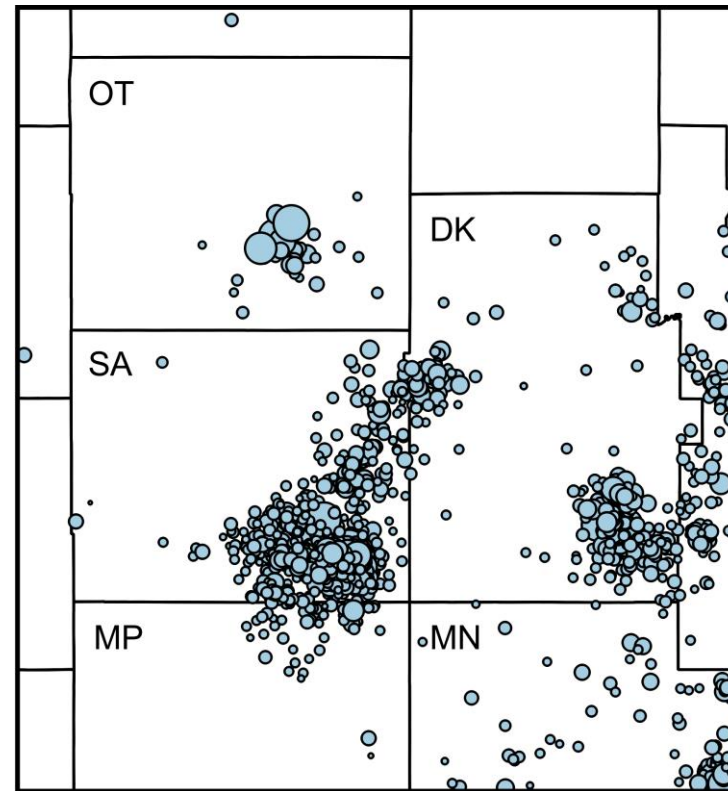
- **Ottawa County**
 - continued seismicity
 - 8 M > 2
 - M 4.1 on November 11
- **Russell County**
 - M 2.2 on October 25
 - automatic system located in Ellsworth Co
- **Reno County**
 - three M ~2
- **Sedgwick County**
 - M 2.5 on October 25

Ottawa County Earthquakes

1977 to 2019

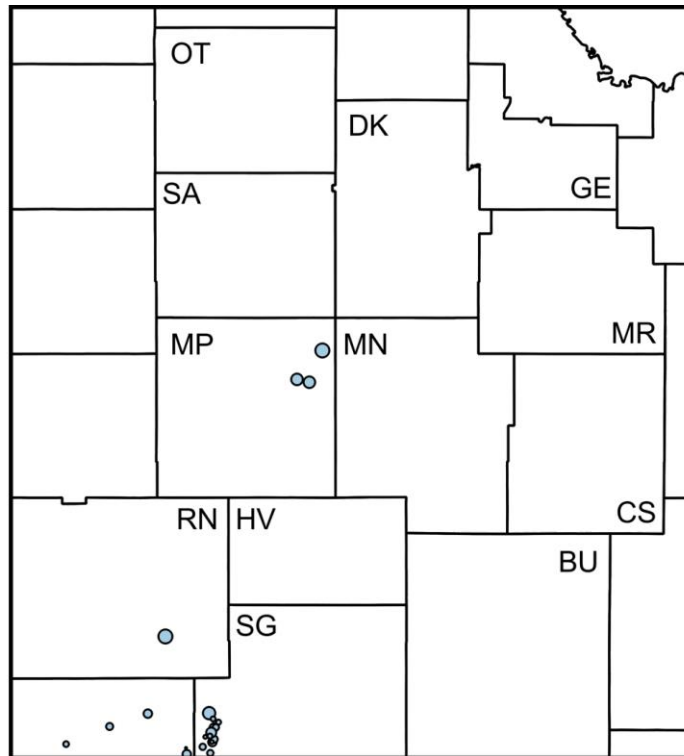


2020 to present

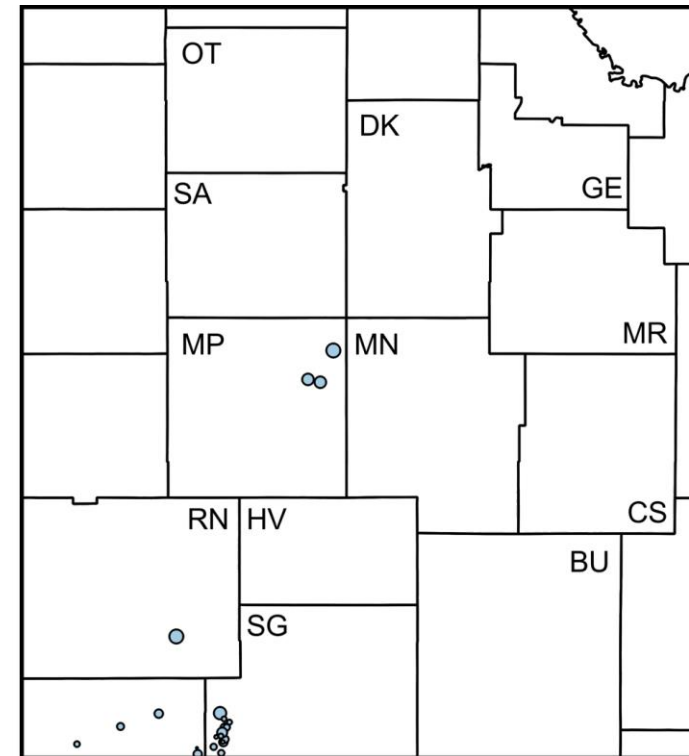


Progression from 2015 to Present

6 month intervals

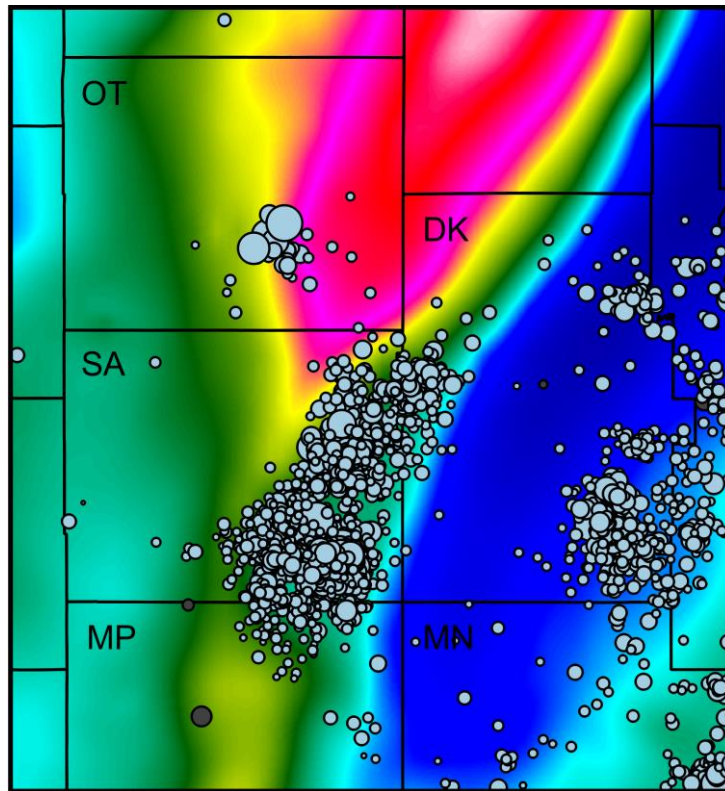


6 month cumulative

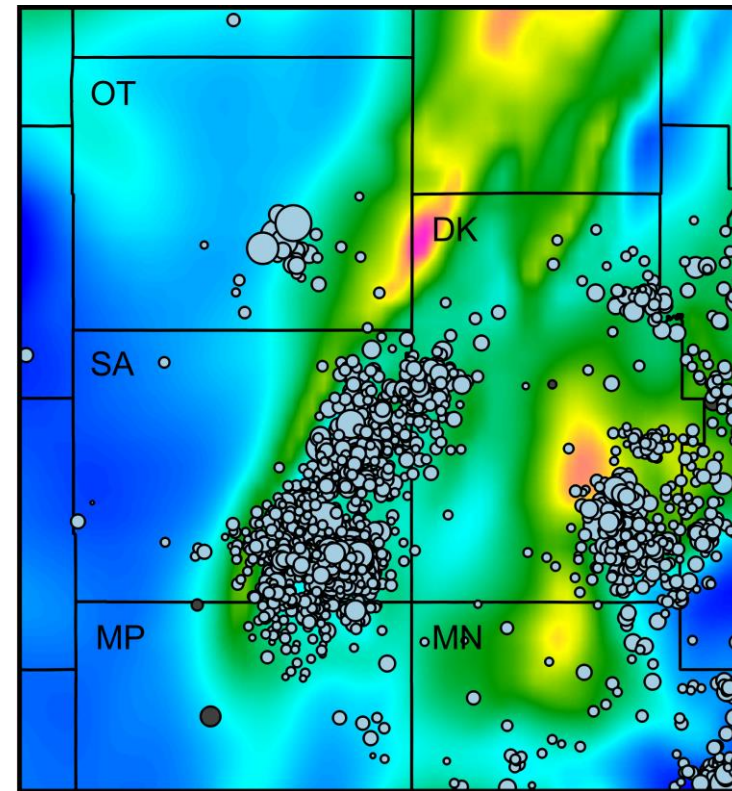


Midcontinent Rift

Bouguer gravity anomaly



aeromagnetic



Consortium to Study Trends in Seismicity

Quarterly Report July 1 to September 30, 2023

Rex Buchanan, Shelby Peterie, Rick Miller, *Kansas Geological Survey*

