



## Oklahoma Geological Survey

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### **OGS Statement on 2017 USGS assessment of continued seismic hazard in Oklahoma**

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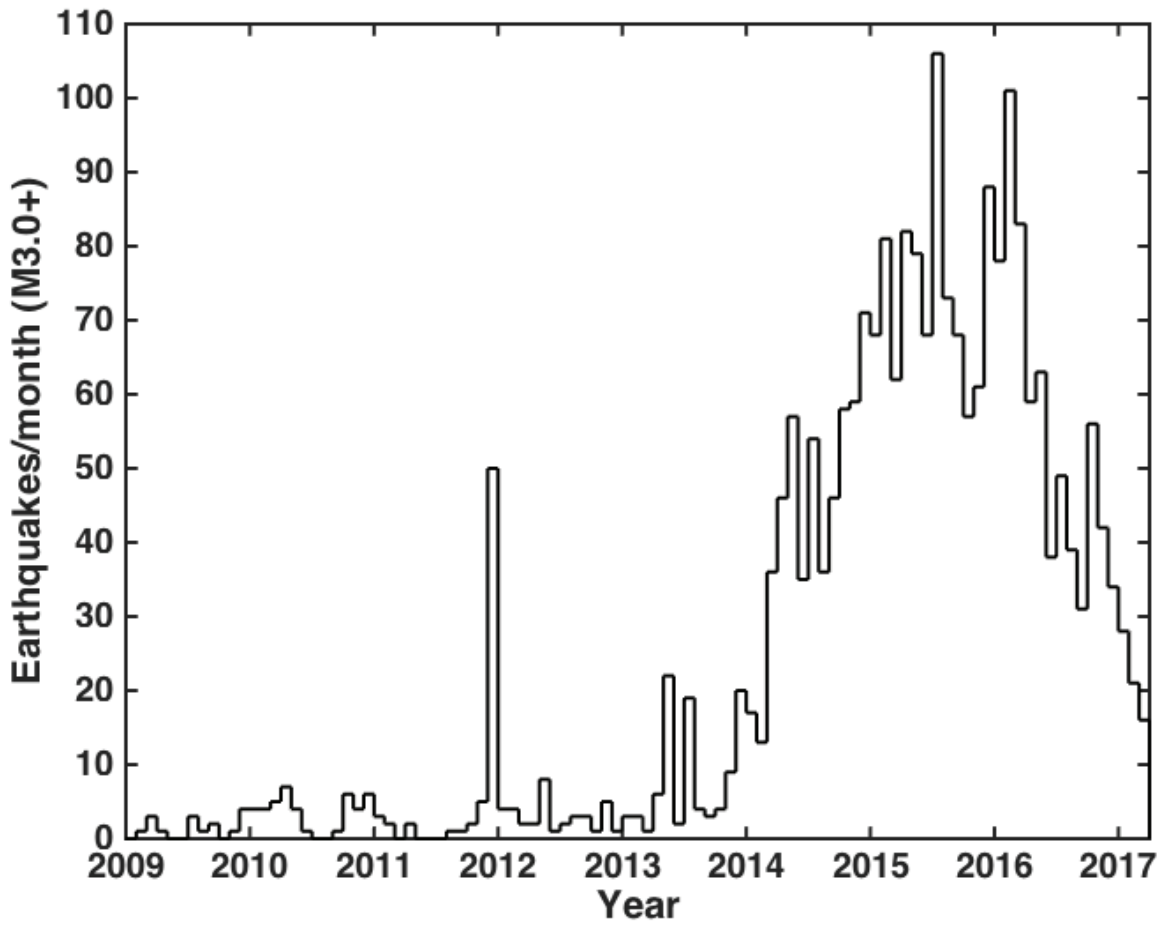
The United States Geological Survey (USGS) has just released a report documenting their assessment of the risk of damage from earthquakes in the central United States. The report describes the updated estimate and suggests that there is a low but significant probability of moderate shaking leading to cracking of plaster and failure of unreinforced masonry during a moderate earthquake in 2017. The USGS release suggests a >1% probability of a moderate earthquake for most of north-central Oklahoma, with a peak of 10-12% probability near Pawnee and Cushing, Okla. A smaller probability exists for more damaging earthquakes like those that damaged structures in the Pawnee and Cushing areas in 2016. The Oklahoma Geological Survey (OGS) considers this USGS publication a quantitative measure of the probability for damage, which can potentially serve as a valuable communication tool in describing these risks to Oklahomans. The OGS has just received the report and will review the findings in greater detail.

In the last few months, the seismicity rate (earthquakes M3.0 and greater) has fallen to levels of seismic activity equivalent to those experienced in early 2014 (See Attachment 1). During January and February of 2017, the state experienced 21 and 16 earthquakes of M3.0, respectively. For comparison, the state experienced 106 earthquakes (M3.0+) during July 2015 (the peak monthly rate) and 101 earthquakes during February 2016 (the second highest monthly rate). The seismicity rate has declined as injection activity has declined throughout the state, due to both Oklahoma Corporation Commission (OCC) directives to curtail wastewater injection rates during 2015 and 2016 and market forces (See Attachment 2). Broad reductions implemented by the OCC on February 24, 2017, should result in further declines in the seismicity rate and limit future widespread seismic activity like the state experienced in 2015-2016.

Oklahoma experienced the largest seismic moment (energy) release in its instrumented history in 2016, due to three large earthquakes (M5.0 and greater). The USGS accounted for these earthquakes in the 2017 earthquake hazard map. The OGS continues to work with the USGS on earthquake hazards in Oklahoma, including detecting and locating earthquakes throughout the state by ingesting and processing data from 100+ seismic stations in real-time. The OGS is leading research projects to better understand seismicity and how it sometimes culminates in larger earthquakes. These efforts are in addition to those aimed at a deeper understanding of injection into the Arbuckle Group and the physical properties of that formation and basement rocks. The OGS will continue our work with stakeholders, federal and state agencies, and Oklahomans to better understand the seismicity.

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Attachment 1



Attachment 2

