RUMBLE ON THE PRAIRIE

THE 1909 NORTHERN GREAT PLAINS

EARTHQUAKE

THAT SHOOK NORTH DAKOTA

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An estimated M 5.3 earthquake that occurred well over a century ago in the late evening hours of May 15, 1909 (May 16, 1909 UTC), is thought to have occurred in southeastern Saskatchewan (Horner and Hasegawa, 1978), near the junction of the borders of Montana and North Dakota. This historic temblor was felt by residents from Williston to Wahpeton and is the largest earthquake ever reported for our (N.D.) region and continental intraplate setting. The ground-shaking effects of this event were reported from as far north as Prince Albert, Saskatchewan, across North Dakota, and as far southeast as St. Paul, Minnesota. The highest intensity of ground shaking related to the earthquake was determined by seismologists in California, Montana (Mike Stickney-Montana Bureau of Mines and Geology), and British Columbia (Bakun and others, 2011) to have been focused near the town of Scobey in northeastern Montana; along a pre-existing northwest-trending fault near the border with Saskatchewan (Morgan, 2012). Although the event was recorded by seismographs over 4,000 miles away in Sweden and Germany (Bakun and others, 2010), determining an actual epicenter for this earthquake has been difficult and not without debate since there were no operating seismic stations in the area at the time (fig. 1). Felt reports were received and published

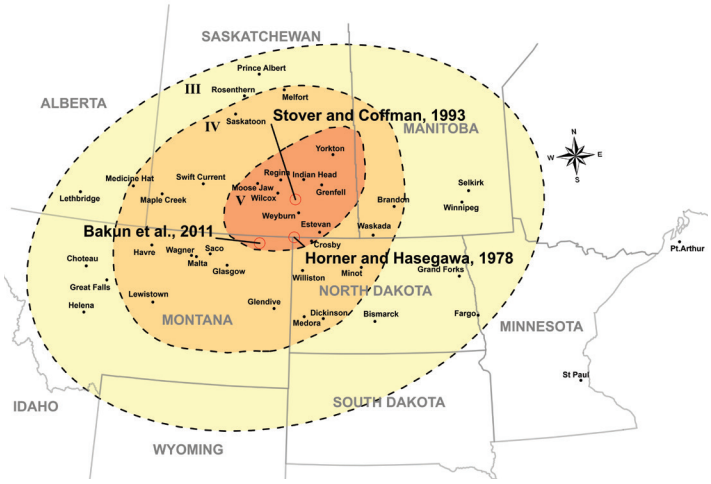


FIGURE 1.
Approximate felt area and possible earthquake epicentral locations determined from previous authors (red circles) from reported Modified Mercalli Intensity Scale values for the May 16, 1909 northern plains earthquake (adapted and modified from Nuttli, 1976 and Bakun and others, 2010).

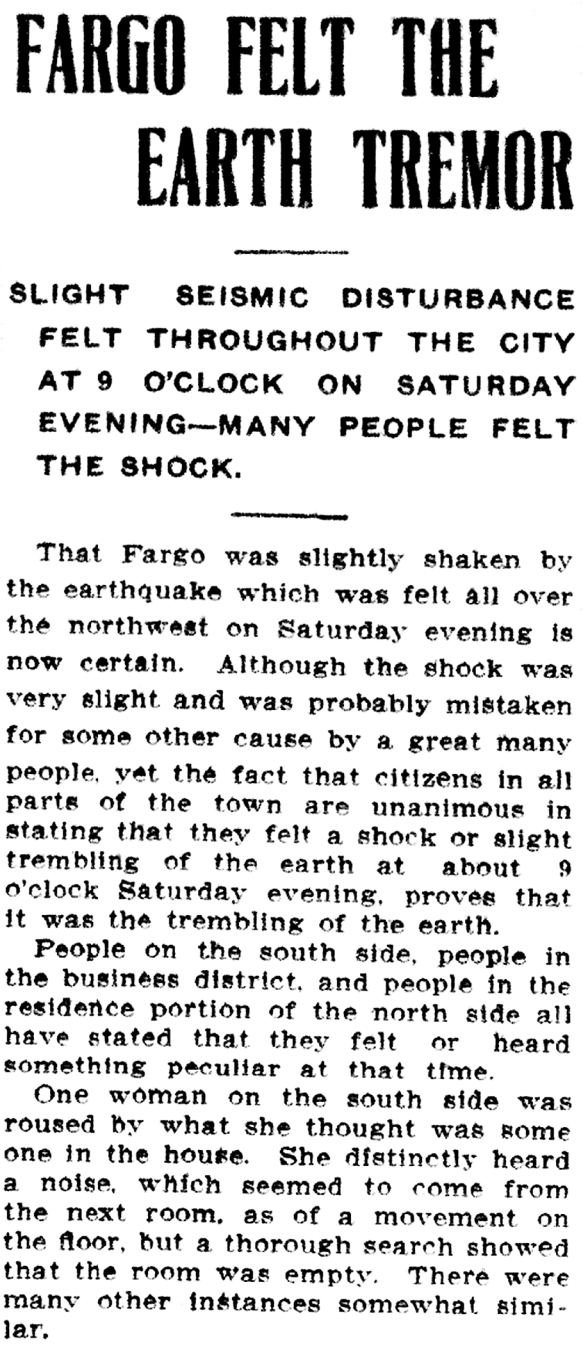
TABLE 1. Summary of reported newspaper accounts for North Dakota related to the May 16, 1909 Northern Plains Earthquake.

CITY	Intensity Value Assigned (MMI)	Reported Effects Felt from the Earthquake	Source of Report
Crosby	IV	"...distinct trembling of the earth...", "...jarring of buildings..."	Minot Weekly Optic – Fri., May 21, 1909
Williston	III	"...slight earthquake shock was felt..."	Williston Graphic – Thurs., May 20, 1909
Minot	IV	"...houses and beds shook..."	Minot Weekly Optic – Fri., May 21, 1909
Dickinson	IV	"...the falling of a wall which succumbed and crashed in like an egg-shell"	Dickinson Press – Sat., May 22, 1909
Medora	IV	"...slight earthquake shock was felt...", "Dishes rattled, houses shook and many were frightened..."	Fargo Forum and Daily Republican – May 17, 1909
Bismarck	IV	"...a distinct vibration, felt inside houses...a sort of trembling of floors and walls", "Dishes were rattled on the shelves and furniture shaken, and doors and walls quivered as they might in a heavy wind."	Bismarck Daily Tribune Tues., May 18, 1909
Fargo	III, IV	"...felt a shock or slight trembling of the earth."	Fargo Forum and Daily Republican May 17, 1909

MMI = Modified Mercalli Intensity Scale
Note: The Modified Mercalli Intensity Scale is a qualitative measure of perceived ground-shaking experienced during an earthquake and is variable depending on location.

in local North Dakota newspapers from the cities of Crosby, Williston, Dickinson, Bismarck, Fargo and reportedly Grand Forks, and were originally compiled into an isoseismal map by Nuttli (1976). Two additional accounts, recently uncovered from the Minot area by the author, have also been included (Table 1). Although this event was felt across a large area and apparently frightened many, little damage was actually reported (Bakun and others, 2011).

As mentioned previously, several felt reports of the earthquake were received by local newspapers in Crosby, Williston, Minot, Dickinson, Bismarck, and Fargo (fig. 2), and add some interesting color to the descriptions of the event.



FARGO FELT THE EARTH TREMOR

SLIGHT SEISMIC DISTURBANCE FELT THROUGHOUT THE CITY AT 9 O'CLOCK ON SATURDAY EVENING—MANY PEOPLE FELT THE SHOCK.

That Fargo was slightly shaken by the earthquake which was felt all over the northwest on Saturday evening is now certain. Although the shock was very slight and was probably mistaken for some other cause by a great many people, yet the fact that citizens in all parts of the town are unanimous in stating that they felt a shock or slight trembling of the earth at about 9 o'clock Saturday evening, proves that it was the trembling of the earth.

People on the south side, people in the business district, and people in the residence portion of the north side all have stated that they felt or heard something peculiar at that time.

One woman on the south side was roused by what she thought was some one in the house. She distinctly heard a noise, which seemed to come from the next room, as of a movement on the floor, but a thorough search showed that the room was empty. There were many other instances somewhat similar.

FIGURE 2.
Newspaper excerpt from the Monday evening edition of the Fargo Forum from May 17, 1909 reporting the event from eastern North Dakota.

In Crosby, "There was a distinct trembling of the earth which lasted from thirty seconds to a minute and strong enough to cause a jarring of buildings that was quite noticeable" (Minot Weekly Optic, Friday edition, May 21, 1909). In Williston, "A great many of our citizens were alarmed Saturday night when a slight earthquake shock was felt. Parties in dwelling houses and those living upstairs in the flats in the business portion of the city noticed more of a shock than others" (Williston Graphic, Williston, Williams County, N.D., Thursday, May 20, 1909).

In Minot, "Even the steadiest persons in town claim that their homes and beds shook Saturday night about 10 o'clock. One high school teacher jumped out of bed with visions of the whole South hill slipping down town…" (Minot Weekly Optic, Friday edition, May 21, 1909). In Dickinson, "The train dispatchers in the new Northern Pacific depot were frightened from their telegraph instruments and ran out of the building. They were prevented from returning to their keys for some time owing to the falling of a wall which succumbed and crashed in like an egg-shell" (Glasgow Democrat, Thursday, 20 May 1909, p. 5). It was also reported that, "Dishes rattled, houses shook and many were frightened" (Dickinson Press, May 22, 1909). In Medora, "A slight earthquake shock was felt here Saturday evening about 9 o'clock. Dishes rattled and pictures on the wall were disturbed." "Fargo was slightly shaken by the earthquake which was felt all over the northwest on Saturday evening is now certain" (Fargo Forum and Daily Republican, May 17, 1909. In Bismarck "For several seconds there was a distinct vibration, sufficiently distinct to be felt inside houses, and to cause a sort of trembling of floors and walls. Dishes were rattled on the shelves and furniture shaken, and doors and walls quivered as they might in a heavy wind." (Bismarck Daily Tribune, May 18, 1909, p. 4). In Fargo, "Although the shock was very slight and was probably mistaken for some other cause by a great many people, yet the fact that citizens in all parts of the town are unanimous in stating that they felt a shock or slight trembling of the earth at about 9 o'clock Saturday evening, proves that it was the trembling of the earth" (The Fargo Forum and Daily Republican, Fargo, N.D., Monday Evening, May 17, 1909, page 8).

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