

# **EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION**

Preliminary Epicenters

October 1 – December 31, 2013

Prepared by the University of Utah Seismograph Stations and funded by  
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## Foreword and Data Explanation

This report contains an epicenter map (Figure 1) and listings of earthquakes (Tables 1 and 2) detected and located in the Yellowstone region (lat. 44° 00' – 45° 10' N, long. 109° 45' – 111° 30' W). The computer program HYPOINVERSE-2000 (F. W. Klein, 2012, U.S. Geological Survey Open-File Report 02-171 revised) was used to process the earthquake data. This report also includes maps and a table of operating seismograph stations in the University of Utah's Yellowstone seismic network (Figure 2, Table 3).

The earthquake listing in Table 2 is estimated to be systematically complete above magnitude 1.5 within the Intermountain Seismic Belt in Yellowstone. *These data are preliminary—both the locations and magnitudes in this table are subject to revision.*

The following data are listed for each earthquake in Table 2:

- Date (yymmdd) and origin time in Universal Coordinated Time (UTC). To convert to local time, subtract seven hours for Mountain Standard Time (MST) and six hours for Mountain Daylight Time (MDT). During the report period, local time was MST from October 1<sup>st</sup> – November 3<sup>rd</sup> and MDT from November 3<sup>rd</sup> – December 31<sup>st</sup>.
- Earthquake location coordinates in degrees and minutes of north latitude and west longitude, and depth in kilometers below sea level. Note that prior to October 1, 2012 the earthquake depths in these quarterly reports were computed relative to a datum of 2000 m above sea level.
- "\*" indicates poor depth resolution: no recording stations within 10 km or twice the depth.
- MAG, the computed Richter local magnitude ( $M_L$ ) for each earthquake. "W" indicates peak amplitude measurements from Wood-Anderson records were used. Otherwise, the estimate is calculated from signal durations and is more correctly identified as coda magnitude ( $M_C$ ). The notation "--" indicates that a reliable magnitude estimate could not be made.
- NO, the number of P and S readings used in the solution.
- GAP, the largest azimuthal separation in degrees between recording stations used in the solution.
- DMN, the epicentral distance in kilometers to the closest station.
- RMS, the weighted root-mean-square of the travel-time residuals in seconds:

$$RMS = \left( \frac{\sum_i (W_i R_i)^2}{\sum_i (W_i)^2} \right)^{\frac{1}{2}}$$

where:  $R_i$  is the observed minus the computed arrival time for the  $i$ -th P or S reading, and  $W_i$  is the relative weight given to the  $i$ -th P or S arrival time (0.0 for no weight through 1.0 for full weight).



**EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION**  
**October 1 – December 31, 2013**

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During the three-month period October 1 through December 31, 2013, the University of Utah Seismograph Stations (UUSS) located 566 earthquakes within the Yellowstone region (Figure 1). The total includes six earthquakes in the magnitude 3 range and 47 earthquakes in the magnitude 2 range. Earthquakes of magnitude 3.0 or larger (plotted as stars and specifically labeled on Figure 1) are listed below. One earthquake was reported felt during the report period (see Table 1, a cumulative tabulation of earthquakes during 2013 that were felt in the Yellowstone region). Additional information on earthquakes within the Yellowstone region is available from the University of Utah Seismograph Stations.

**Online Information**

A complete copy of this report, including maps and the earthquake catalog, is available on the UUSS web site at <http://www.quake.utah.edu/EOCENTER/QUARTERLY/quarterly.htm>.

*Note:* On October 1, 2012 UUSS began using the ANSS Quake Monitoring System (AQMS) software package for data acquisition and data processing. The primary effect on the data reported herein comes from computing the earthquake locations with a newer version of the computer program HYPOINVERSE-2000 (F. W. Klein, 2012, U.S. Geological Survey Open-File Report 02-171 revised) and a revised and expanded set of velocity models. As implemented at UUSS, this new version of the location program accounts for station elevation differences more accurately and reports focal depths relative to sea level instead of the 2000 m elevation datum used previously.

For earthquakes of magnitude 3 and larger in the Yellowstone region, the U. S. Geological Survey automatically posts a Community Internet Intensity Map (CIIM) on its "Did You Feel It?" web page at <http://earthquake.usgs.gov/earthquakes/dyfi/>. We encourage anyone who feels an earthquake to report their observations on this interactive web site; felt information is available by zip code on the CIIM site or can be obtained from UUSS directly.

## Earthquakes of Magnitude 3.0 or Larger

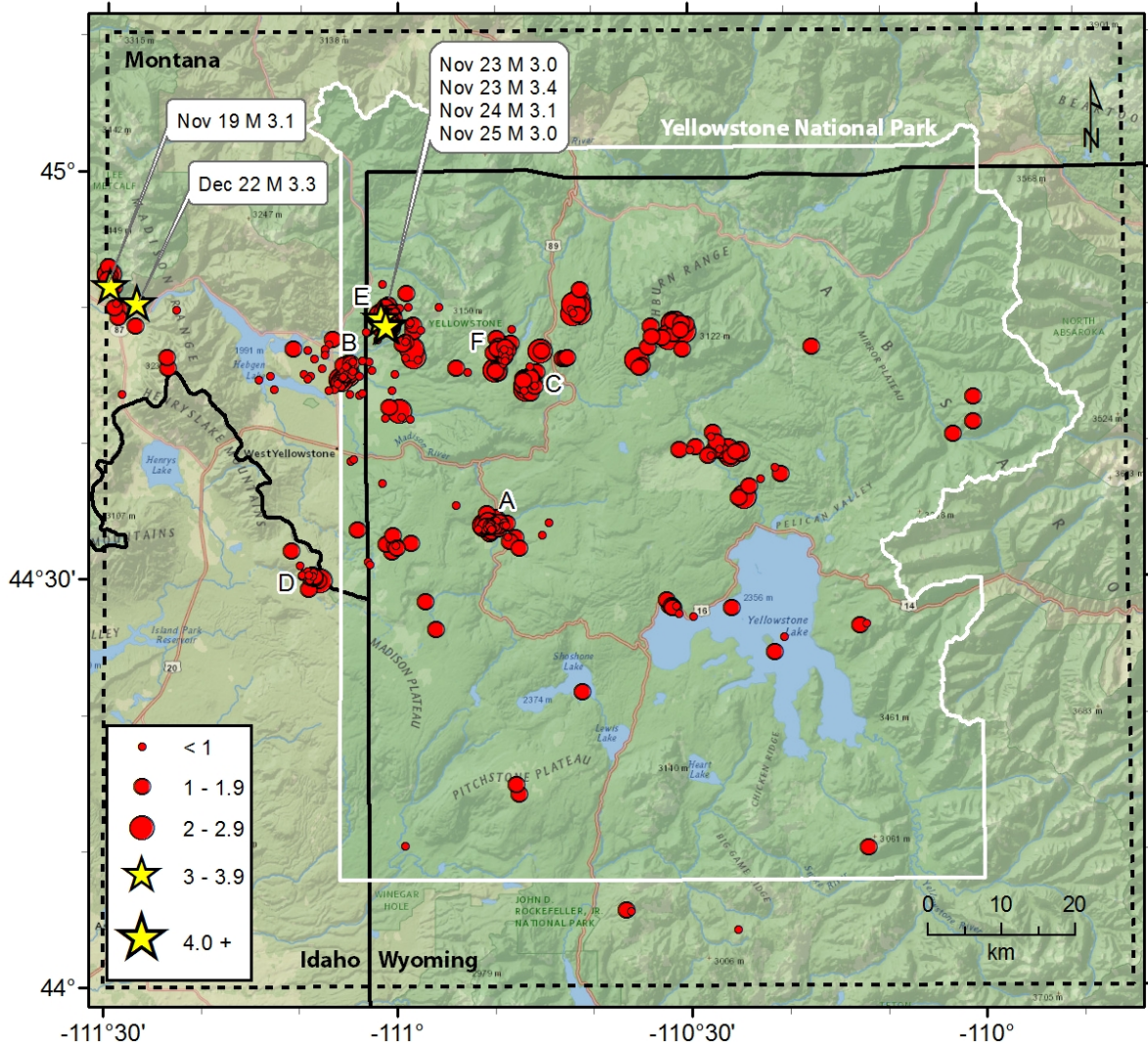
M <sub>L</sub> 3.1	November 19	18:32 MST	23.5 mi NW of West Yellowstone, MT
M <sub>L</sub> 3.4	November 23	13:47 MST	11.5 mi NNE of West Yellowstone, MT
M <sub>L</sub> 3.0	November 23	16:03 MST	11.5 mi NNE of West Yellowstone, MT
M <sub>L</sub> 3.1	November 24	00:18 MST	11.5 mi NNE of West Yellowstone, MT
M <sub>L</sub> 3.0	November 25	14:10 MST	12 mi NNE of West Yellowstone, MT
M <sub>L</sub> 3.3	December 22	17:39 MST	21 mi NW of West Yellowstone, MT

## Notable Swarm Seismicity

During the report period, there were six earthquake swarms in the Yellowstone region. For reporting purposes, we use the Mogi definition [Mogi, 1963] of a swarm and require each swarm to have ten or more earthquakes. Note that typically, around 50% of Yellowstone seismicity occurs as swarm seismicity [Farrell et al., 2009].

- A. A swarm of 54 earthquakes ( $0.0 \leq M \leq 2.8$ ) occurred about 7 miles N of Old Faithful, YNP below the Lower Geysers Basin on October 5th.
- B. A swarm of 18 earthquakes ( $-0.3 \leq M \leq 2.2$ ) occurred about 6 miles N of West Yellowstone, MT on October 10th-12th.
- C. A swarm of 13 earthquakes ( $0.1 \leq M \leq 2.0$ ) occurred about 4 miles WNW of Norris Geysers Basin, YNP on October 11th-14th.
- D. A swarm of 13 earthquakes ( $0.3 \leq M \leq 2.1$ ) occurred about 11 miles S of West Yellowstone, MT on October 20th.
- E. A swarm of 214 earthquakes ( $-0.8 \leq M \leq 3.4$ ) occurred about 12 miles NNE of West Yellowstone, MT on November 23<sup>rd</sup> – December 3<sup>rd</sup>. This swarm contained four of the six magnitude 3 events for the reporting period.
- F. A swarm of 23 earthquakes ( $-0.8 \leq M \leq 2.1$ ) occurred about 7 miles NW of Norris Geysers Basin, YNP on December 19<sup>th</sup>-21<sup>st</sup>.

These six swarms are labeled in Figure 1.



**Figure 1.** Earthquake epicenters, located by the University of Utah Seismograph Stations. Earthquakes of magnitude 3.0 and larger are depicted as yellow stars. Earthquake swarms labeled A-F are discussed in the text.

**Table 1**  
**EARTHQUAKES FELT IN THE YELLOWSTONE REGION**  
**January 1, 2013 to December 31, 2013**

<b>Date</b>	<b>Time†</b>	<b>Felt Information‡</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Magnitude§</b>
March 31	11:41 MDT 17:41 UTC	Yellowstone. Felt (II) at Dillon, MT.	44° 48.34'	110° 59.97'	M <sub>L</sub> 3.2
September 08 September 09	19:34 MDT 01:34 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44° 48.87'	110° 31.45'	M <sub>L</sub> 2.7
September 15	05:10 MDT 11:10 UTC	Yellowstone. Felt (II) at Yellowstone National Park, WY.	44° 33.72'	110° 49.19'	M <sub>L</sub> 3.4
September 15	09:53 MDT 15:53 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44° 33.68'	110° 49.45'	M <sub>L</sub> 3.6

† Times are listed both as Local Time—Mountain Standard Time (MST) or Mountain Daylight Time (MDT)—and as Universal Coordinated Time (UTC).

? Indicates on-line reports that appear questionable given the distance from the source

‡ *CIIM* indicates the availability of a Community Internet Intensity Map

(<http://earthquake.usgs.gov/earthquakes/dyfi/archives.php>), compiled by the U.S. Geological Survey (USGS); *ShakeMap* indicates the availability of computer-generated maps of ground-shaking (<http://www.seis.utah.edu/shake/archive>), produced by the University of Utah Seismograph Stations (UUSS). Roman numerals correspond to the Modified Mercalli intensity scale. Unless otherwise indicated, felt information is from the USGS (1) CIIM reports and/or (2) PDE Monthly (or) Weekly Listing Files (<http://earthquake.usgs.gov/research/data/pde.php>).

§ Richter local magnitude (M<sub>L</sub>) or coda magnitude (M<sub>C</sub>) determined by UUSS. If labeled “NEIC,” data are from the National Earthquake Information Center of the USGS.



# Yellowstone Seismic Network December 31, 2013

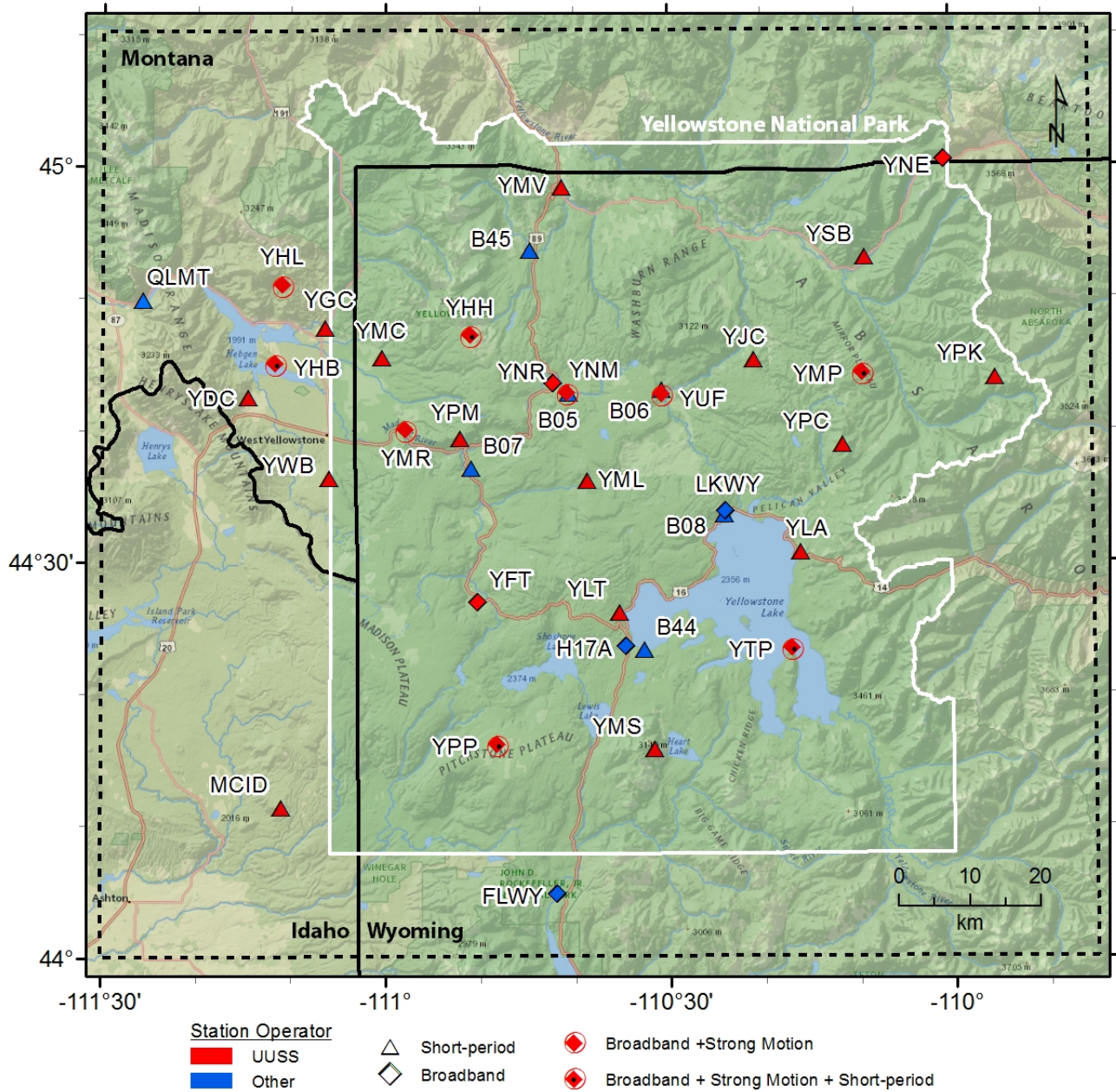


Figure 2



**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131001	20:54:41.78	44°44.56'	111°06.13'	12.9	1.4W	18	66	6	0.10
131001	21:12:05.38	44°44.77'	111°05.71'	12.2	1.2W	16	85	6	0.12
131001	21:48:29.89	44°48.26'	111°03.29'	7.8	0.5W	9	170	4	0.06
131002	03:24:46.82	44°44.30'	110°45.86'	8.6	0.8W	8	160	7	0.13
131002	21:31:48.62	44°45.33'	110°45.70'	8.6	1.5W	15	186	6	0.16
131002	22:04:31.52	44°44.66'	110°47.09'	8.4	0.9W	11	98	7	0.18
131004	07:21:26.44	44°44.85'	111°05.84'	11.7	1.4W	18	66	5	0.11
131004	16:19:50.83	44°44.96'	111°05.60'	9.4	--	12	109	7	0.12
131005	12:43:12.62	44°34.28'	110°49.13'	1.9	--	6	144	6	0.06
131005	12:52:17.01	44°34.36'	110°50.48'	4.9	1.2W	18	68	5	0.24
131005	13:05:13.79	44°34.39'	110°49.83'	-1.8	0.8	6	145	5	0.03
131005	13:10:00.91	44°34.15'	110°50.49'	2.1	0.6	7	104	6	0.05
131005	13:11:30.42	44°34.20'	110°49.50'	2.0	1.0	6	149	6	0.05
131005	13:29:48.91	44°34.33'	110°50.09'	7.5	2.4W	36	35	5	0.25
131005	13:32:23.80	44°33.89'	110°49.98'	2.1	0.6W	8	108	6	0.17
131005	13:33:18.83	44°33.21'	110°48.67'	2.2	--	5	160	8	0.10
131005	13:33:33.03	44°34.10'	110°50.60'	6.2	1.8W	33	42	6	0.26
131005	13:34:28.30	44°34.07'	110°50.09'	2.1	1.1W	8	101	6	0.08
131005	13:34:55.33	44°34.06'	110°51.06'	6.1	2.3W	34	59	6	0.22
131005	13:38:48.20	44°34.02'	110°50.25'	4.8	0.9W	13	68	6	0.15
131005	13:49:02.77	44°33.85'	110°50.27'	2.0	0.6W	9	104	6	0.12
131005	13:49:20.52	44°33.93'	110°50.98'	5.0	1.1W	13	70	6	0.24
131005	14:06:13.50	44°34.17'	110°49.83'	2.1	1.1	6	146	6	0.05
131005	14:09:23.53	44°34.09'	110°50.82'	7.4	2.8W	41	35	6	0.22
131005	14:25:01.30	44°33.88'	110°50.74'	6.0	0.9W	15	107	6	0.20
131005	14:38:05.09	44°34.13'	110°50.54'	4.3	1.4	11	105	6	0.17
131005	14:42:52.22	44°33.89'	110°50.71'	4.3	1.9W	28	70	6	0.20
131005	14:46:04.96	44°34.02'	110°50.54'	2.0	--	7	143	6	0.06
131005	14:46:15.27	44°33.79'	110°49.98'	1.0	1.5	8	110	6	0.03
131005	14:46:59.31	44°34.02'	110°49.64'	2.1	1.0	8	111	6	0.09
131005	14:48:08.64	44°34.19'	110°50.33'	4.3	0.8W	10	103	6	0.20
131005	14:48:26.81	44°34.07'	110°49.12'	2.2	--	5	154	6	0.07
131005	14:50:27.81	44°33.94'	110°50.63'	5.0	1.1W	15	69	6	0.24
131005	14:51:21.97	44°34.88'	110°50.84'	4.4	1.6W	20	66	4	0.17
131005	14:52:29.16	44°33.90'	110°50.76'	4.8	1.1W	15	70	6	0.22
131005	14:54:09.04	44°33.85'	110°50.16'	2.2	0.8	7	106	6	0.19
131005	14:54:27.85	44°34.22'	110°49.92'	1.7	0.9W	9	99	6	0.19
131005	14:54:54.78	44°33.77'	110°49.69'	2.1	1.1	7	111	6	0.11
131005	14:56:51.56	44°33.73'	110°50.47'	2.1	0.6W	8	106	6	0.15
131005	14:58:09.60	44°33.78'	110°49.80'	2.0	0.8	7	111	6	0.14
131005	14:58:28.72	44°34.25'	110°50.04'	2.0	1.4	7	106	5	0.12
131005	14:59:44.31	44°33.98'	110°51.00'	4.9	1.0W	14	70	6	0.23
131005	14:59:56.03	44°33.79'	110°50.41'	3.8	--	6	184	6	0.18
131005	15:00:16.80	44°33.79'	110°51.09'	1.5	1.5	11	110	6	0.17
131005	15:03:12.42	44°33.60'	110°50.41'	0.7	1.1	7	106	7	0.08

**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131005	15:03:43.45	44°34.05'	110°48.87'	2.2	--	5	155	6	0.08
131005	15:04:01.89	44°34.09'	110°50.48'	4.6	1.4W	25	68	6	0.21
131005	15:08:08.96	44°34.11'	110°50.59'	4.5	0.7W	12	105	6	0.18
131005	15:12:55.62	44°34.44'	110°50.79'	4.9	1.1W	20	68	5	0.25
131005	15:18:21.20	44°33.94'	110°50.11'	4.8	1.3	13	102	6	0.15
131005	15:26:02.03	44°34.10'	110°50.86'	6.5	2.5W	35	35	6	0.21
131005	15:45:59.48	44°32.84'	110°48.49'	11.0	1.3	8	96	11	0.13
131005	15:48:39.05	44°34.00'	110°50.12'	2.2	1.4	9	145	6	0.11
131005	16:24:13.20	44°33.81'	110°51.72'	3.6	0.4W	12	115	6	0.32
131005	17:13:14.83	44°34.10'	110°51.26'	4.4	1.3	11	110	6	0.25
131005	17:16:45.30	44°33.93'	110°50.06'	3.0	1.5W	26	69	6	0.18
131005	17:16:51.76	44°33.46'	110°50.59'	5.1	1.9W	6	178	7	0.07
131005	17:23:04.95	44°34.17'	110°48.74'	2.3	1.1	6	213	6	0.03
131005	17:35:08.85	44°33.87'	110°49.91'	1.7	1.4W	17	68	6	0.24
131005	18:20:01.57	44°33.82'	110°50.69'	4.5	1.3W	17	70	6	0.25
131005	18:28:29.05	44°34.24'	110°49.54'	2.2	1.0	6	149	6	0.04
131005	20:38:55.98	44°34.00'	110°50.34'	4.9	0.9W	15	104	6	0.23
131007	04:13:40.77	44°44.60'	110°46.31'	7.0	1.1W	11	160	6	0.14
131007	14:13:36.55	44°38.21'	110°21.22'	4.6	0.9	9	207	9	0.08
131009	05:04:21.97	44°39.10'	110°28.07'	4.6	1.2	8	111	8	0.10
131009	10:49:26.06	44°39.61'	110°26.89'	4.0	--	6	198	8	0.05
131010	16:43:29.22	44°46.95'	110°30.68'	2.5	1.7W	10	191	7	0.10
131010	16:51:51.22	44°45.06'	111°08.97'	5.9	0.1	10	92	4	0.13
131010	16:51:51.42	44°45.56'	111°07.81'	2.5	-0.3	7	103	5	0.11
131010	16:52:13.19	44°45.14'	111°09.67'	8.5	0.4	15	59	3	0.17
131011	03:02:46.47	44°44.88'	110°46.33'	8.8	1.0W	12	170	8	0.10
131011	03:05:18.57	44°44.79'	110°47.10'	9.4	1.1W	13	156	7	0.21
131011	06:37:34.52	44°44.30'	110°47.21'	4.4	1.6W	21	84	7	0.18
131011	07:21:15.88	44°44.00'	110°46.94'	2.4	0.1	9	144	8	0.09
131011	07:22:53.09	44°44.18'	110°46.56'	5.6	2.0W	22	81	6	0.19
131011	08:55:53.78	44°44.50'	110°46.42'	6.5	1.4W	17	91	6	0.16
131011	10:15:36.68	44°05.79'	110°36.72'	9.8	1.5	19	141	7	0.16
131012	00:12:57.61	44°45.71'	110°46.34'	7.5	0.5	7	188	7	0.09
131012	03:32:35.26	44°45.07'	111°05.40'	9.2	0.0	11	115	7	0.15
131012	04:18:15.93	44°45.12'	111°04.95'	10.8	1.4W	18	80	5	0.12
131012	05:01:39.61	44°44.90'	111°05.59'	9.6	0.9W	13	107	7	0.13
131012	05:01:59.23	44°44.88'	111°05.68'	8.5	-0.3	13	107	7	0.15
131012	05:44:41.23	44°45.12'	111°04.74'	10.0	0.0	13	113	6	0.11
131012	05:45:25.69	44°44.79'	111°05.46'	9.4	0.7W	14	88	6	0.16
131012	06:35:07.74	44°45.10'	111°05.15'	11.2	2.2W	21	69	5	0.12
131012	06:52:56.87	44°45.27'	111°04.91'	10.7	0.1	13	114	6	0.10
131012	07:10:56.83	44°44.86'	111°05.32'	9.6	0.2	12	109	7	0.13
131012	10:01:53.91	44°45.36'	111°04.65'	7.9	-0.1	10	116	6	0.10
131012	10:18:10.04	44°45.25'	111°04.90'	10.8	0.8W	14	114	6	0.13
131012	10:18:52.33	44°45.44'	111°05.22'	9.3	0.5W	13	115	6	0.14

**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131012	12:30:02.77	44°44.64'	111°06.04'	9.3	0.2	11	103	8	0.14
131012	12:38:27.05	44°45.17'	111°05.03'	10.7	0.6	14	97	5	0.12
131012	15:09:34.95	44°48.82'	110°30.81'	8.1	1.5W	12	157	11	0.15
131012	18:14:50.30	44°44.67'	110°46.21'	8.1	1.2W	10	151	6	0.12
131012	19:13:03.93	44°44.12'	110°46.49'	6.9	1.9W	19	83	6	0.14
131012	20:04:35.89	44°45.23'	111°04.88'	10.5	0.4	11	114	6	0.10
131013	08:38:16.77	44°44.28'	110°46.04'	7.8	0.9W	12	153	5	0.10
131014	03:04:52.54	44°44.57'	110°46.00'	7.7	1.3W	12	151	5	0.14
131014	03:27:37.26	44°43.73'	110°46.34'	5.0	1.6W	17	89	5	0.13
131014	07:12:18.04	44°30.14'	111°08.67'	15.4	1.9W	24	87	12	0.16
131014	07:14:35.48	44°30.34'	111°08.72'	16.9	0.8	11	157	12	0.10
131014	07:15:42.08	44°29.92'	111°08.72'	14.8	1.7W	21	87	12	0.16
131014	07:18:40.47	44°30.26'	111°08.59'	16.2	1.3W	17	142	12	0.15
131014	07:22:22.57	44°30.08'	111°09.08'	17.0	0.6	11	159	12	0.12
131014	07:24:19.69	44°30.38'	111°08.74'	15.8	1.6W	19	144	12	0.16
131014	07:30:27.97	44°30.67'	111°09.20'	16.3	0.7	11	159	11	0.09
131014	10:18:28.81	44°50.11'	110°55.76'	8.0	0.0	8	149	8	0.09
131014	14:22:16.27	44°44.25'	110°45.93'	8.4	1.0W	8	152	5	0.07
131015	11:06:34.42	44°45.59'	110°53.94'	8.5	1.0W	15	99	5	0.16
131015	16:58:19.42	44°40.58'	110°02.83'	13.5	1.0	9	153	11	0.19
131015	20:06:26.43	44°25.82'	110°20.40'	4.6	0.8	8	103	6	0.09
131016	06:25:23.54	44°45.76'	110°34.86'	3.8	1.8W	18	111	7	0.20
131016	06:28:02.01	44°47.88'	110°33.87'	1.9	1.5W	12	129	10	0.16
131016	06:28:29.18	44°48.63'	110°33.92'	2.0*	1.7W	6	287	11	0.12
131016	09:37:42.38	44°47.10'	110°34.26'	2.8	1.6W	6	235	9	0.11
131017	05:48:31.09	44°46.21'	110°35.35'	3.3	2.0W	20	88	8	0.16
131017	06:31:40.57	44°45.62'	110°35.17'	4.0	1.6W	14	146	8	0.13
131020	00:24:22.06	44°30.41'	111°09.10'	16.3	0.3	10	158	12	0.09
131020	00:33:51.48	44°29.37'	111°09.09'	16.2	1.5W	18	145	14	0.15
131020	07:38:23.39	44°49.54'	110°41.44'	4.1	1.4W	14	130	9	0.13
131020	11:22:04.64	44°30.15'	111°08.59'	16.9	1.5W	15	166	12	0.15
131020	11:27:34.03	44°43.79'	111°03.64'	7.9	0.3	10	127	10	0.08
131020	19:27:59.12	44°29.95'	111°08.17'	15.6	1.6W	24	115	12	0.17
131020	19:28:25.29	44°30.00'	111°07.99'	15.6	2.1W	19	141	12	0.16
131020	19:31:43.68	44°30.17'	111°08.90'	16.2	1.5W	17	144	12	0.16
131020	19:32:16.31	44°30.53'	111°09.02'	15.6	0.8	11	158	11	0.08
131020	19:33:59.14	44°29.97'	111°09.01'	16.9	0.7W	14	159	12	0.10
131020	19:37:55.37	44°31.11'	111°09.99'	14.6	0.7	12	172	11	0.17
131020	19:42:33.79	44°30.40'	111°09.86'	16.5	0.6	10	163	12	0.08
131020	19:46:32.14	44°30.31'	111°08.76'	15.3	0.4	10	157	12	0.08
131020	21:27:09.24	44°30.29'	111°09.29'	15.8	0.9	12	160	12	0.06
131020	21:36:27.94	44°30.40'	111°08.93'	15.9	0.9	12	158	12	0.07
131021	11:16:35.13	44°46.33'	110°42.53'	4.0	1.3W	11	122	5	0.04
131021	11:38:25.61	44°46.31'	110°42.98'	4.5	1.5W	15	119	5	0.16
131021	11:43:55.08	44°46.31'	110°42.74'	4.6	1.5W	17	106	5	0.14

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131021	12:29:10.28	44°46.31'	110°42.80'	4.2	1.7W	15	120	5	0.10
131022	22:31:26.01	44°30.32'	111°09.81'	19.4	0.9	16	163	12	0.18
131023	19:35:08.57	44°30.62'	111°08.66'	16.3	0.7	13	157	11	0.07
131023	19:36:09.59	44°30.53'	111°09.64'	15.6	0.9	11	162	12	0.13
131023	22:53:08.34	44°45.45'	111°02.68'	7.5	0.8W	15	132	3	0.15
131024	05:28:45.85	44°46.08'	111°02.95'	6.7	0.9W	12	129	4	0.15
131025	15:54:56.66	44°37.38'	110°22.73'	4.6	0.8	7	188	7	0.08
131026	10:43:41.76	44°53.00'	111°29.84'	14.7	1.3W	17	88	8	0.10
131026	11:03:17.32	44°52.45'	111°29.79'	15.6	2.0W	32	85	7	0.23
131026	19:18:52.95	44°52.30'	111°29.73'	14.8	1.8W	19	67	7	0.18
131027	10:56:18.66	44°39.09'	110°27.81'	2.9	0.7	8	179	8	0.06
131027	10:56:45.71	44°39.46'	110°27.45'	4.9	1.3W	13	188	7	0.09
131028	18:36:01.07	44°50.06'	110°58.88'	6.2	0.8W	13	139	11	0.12
131030	00:58:05.33	44°38.88'	111°04.49'	9.8	0.4	15	94	5	0.08
131030	03:03:52.17	44°31.19'	111°02.87'	14.8	0.4W	10	128	10	0.15
131030	03:04:18.67	44°31.40'	111°03.00'	13.1	0.8	18	120	10	0.13
131030	05:58:35.62	44°39.21'	110°25.68'	4.9	2.8W	36	63	9	0.17
131030	06:02:32.38	44°39.52'	110°24.72'	5.6	1.2W	7	224	10	0.05
131030	06:04:40.91	44°39.37'	110°25.22'	2.2	1.2W	9	216	10	0.06
131030	08:30:16.35	44°43.65'	111°03.94'	9.1	0.8W	13	75	6	0.10
131030	09:14:04.14	44°39.22'	110°24.67'	4.5	1.4W	5	224	10	0.01
131030	17:22:38.28	44°49.82'	111°22.87'	9.4	0.2	9	170	4	0.06
131030	19:37:01.09	44°47.11'	110°17.32'	5.4	1.4W	11	135	6	0.23
131031	00:55:43.79	44°47.75'	110°49.83'	4.8	1.3W	21	106	2	0.12
131031	10:05:33.47	44°28.08'	110°32.11'	2.3	1.4W	8	97	5	0.15
131031	12:31:05.12	44°28.07'	110°31.41'	3.0	--	6	165	6	0.11
131031	12:31:55.87	44°28.10'	110°31.88'	3.0	1.3W	7	159	6	0.10
131031	12:35:04.36	44°27.97'	110°31.78'	4.1	1.1W	8	144	6	0.09
131031	12:53:33.79	44°27.31'	110°29.64'	5.6	0.5	5	193	8	0.04
131031	12:53:46.33	44°27.52'	110°31.15'	5.0	0.9	6	174	6	0.06
131031	12:54:02.75	44°27.98'	110°31.71'	4.3	1.3W	11	76	6	0.16
131031	12:54:02.76	44°28.49'	110°32.38'	3.5	1.3W	13	69	6	0.07
131031	17:04:05.56	44°21.81'	110°41.11'	2.0*	1.1	5	180	11	0.24
131102	22:30:07.54	44°41.96'	111°01.33'	7.0	0.9W	16	81	6	0.12
131103	01:50:14.44	44°32.76'	110°58.66'	14.2	1.1W	14	102	12	0.08
131103	02:41:42.35	44°45.30'	110°52.79'	3.6	-0.1	6	192	10	0.08
131103	05:23:49.00	44°45.27'	110°49.64'	5.5	1.7W	20	75	4	0.13
131103	10:11:56.89	44°10.25'	110°11.89'	6.4*	1.5	12	223	26	0.15
131103	13:32:49.87	44°49.99'	111°29.22'	11.4	1.4	16	127	5	0.09
131104	02:23:22.60	44°45.42'	110°49.93'	5.4	2.3W	24	74	4	0.18
131104	07:15:55.93	44°36.08'	110°24.41'	2.7	2.1	8	204	4	0.10
131104	08:49:09.10	44°15.00'	110°47.90'	2.8	1.4	8	104	2	0.11
131104	10:21:31.05	44°43.64'	111°28.41'	13.4	0.9	14	114	12	0.16
131104	15:14:29.94	44°46.34'	111°23.78'	11.6	1.3	11	93	7	0.18
131104	22:17:14.70	44°45.55'	111°23.67'	9.1	1.6W	19	98	8	0.16

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131104	22:57:22.52	44°39.01'	110°25.72'	4.7	1.5W	8	138	10	0.07
131105	00:20:55.76	44°49.25'	111°28.88'	12.4	1.7W	21	118	4	0.10
131105	07:14:40.88	44°42.41'	110°59.81'	10.8	2.0W	23	45	5	0.19
131105	10:49:34.94	44°49.88'	111°28.75'	13.6	1.8W	21	91	4	0.14
131105	11:48:04.17	44°41.90'	110°58.72'	5.6	-0.4	9	182	3	0.14
131105	20:41:31.40	44°41.98'	110°59.64'	7.3	0.9	13	57	4	0.08
131106	01:50:33.08	44°45.37'	110°49.95'	6.2	1.2W	14	85	4	0.13
131106	21:30:28.03	44°36.01'	110°24.93'	2.4	1.7W	6	159	4	0.12
131106	21:48:06.88	44°51.32'	110°41.22'	8.4	1.9W	24	53	6	0.19
131107	15:03:50.74	44°44.07'	111°06.50'	13.7	0.1	9	95	7	0.06
131107	17:28:13.07	44°04.29'	110°25.28'	11.3	0.8	6	229	22	0.08
131108	03:29:06.28	44°32.60'	111°00.16'	13.2	0.8	10	111	10	0.16
131108	03:29:58.65	44°32.68'	111°01.20'	4.9	1.4W	10	118	9	0.21
131108	03:34:21.72	44°32.37'	111°00.05'	10.4	1.0W	14	112	11	0.14
131108	03:41:34.92	44°32.60'	111°00.33'	10.6	1.3W	12	113	10	0.11
131108	05:13:52.50	44°42.73'	111°00.90'	10.0	1.4W	19	60	5	0.14
131108	07:42:44.57	44°32.08'	111°00.59'	9.3	1.4W	19	93	11	0.12
131108	07:45:26.21	44°33.26'	111°00.47'	12.3	1.1W	8	140	9	0.11
131108	22:25:10.63	44°51.51'	111°29.25'	8.4	1.3W	19	137	5	0.08
131109	03:03:29.27	44°10.49'	110°59.26'	12.5	0.6	7	104	16	0.09
131109	21:20:48.09	44°45.43'	110°49.94'	7.1	1.6W	19	74	4	0.16
131110	10:21:41.64	44°46.90'	111°07.47'	10.6	0.1	12	90	2	0.12
131111	02:54:10.96	44°44.04'	111°12.72'	11.5	0.4	12	151	2	0.19
131111	07:49:47.71	44°47.68'	111°06.73'	5.9	1.1W	13	111	0	0.14
131112	08:16:27.33	44°50.27'	110°41.78'	6.6	2.0W	28	81	7	0.21
131112	08:16:51.58	44°49.66'	110°41.96'	5.3	0.2	8	154	8	0.05
131112	17:12:36.66	44°46.98'	111°07.50'	10.0	0.1	16	91	2	0.13
131112	17:12:46.85	44°46.59'	111°07.50'	9.7	-0.4	7	98	3	0.10
131112	18:27:31.40	44°33.33'	110°45.13'	6.1	0.7	7	123	10	0.09
131115	05:35:58.25	44°47.32'	111°07.06'	4.8	0.5	14	82	1	0.10
131115	07:49:58.26	44°47.72'	111°02.09'	7.1	0.7W	11	155	5	0.13
131115	11:05:01.35	44°43.99'	111°07.12'	13.2	0.0	9	92	6	0.14
131115	22:56:25.63	44°44.77'	111°05.86'	11.9	2.0W	27	64	6	0.09
131115	23:49:47.48	44°44.54'	111°06.06'	11.7	1.1W	15	79	6	0.10
131116	00:01:05.92	44°44.47'	111°06.19'	11.9	-0.2	12	102	7	0.08
131116	00:09:29.06	44°44.25'	111°05.81'	10.8	-0.2	11	99	8	0.11
131116	06:19:23.16	44°44.56'	110°46.39'	7.2	1.8W	14	149	6	0.09
131116	09:16:15.25	44°44.74'	111°05.89'	10.9	1.2W	17	82	6	0.09
131116	19:05:14.13	44°35.55'	110°54.01'	11.0	0.7W	8	275	5	0.20
131117	22:34:42.78	44°14.28'	110°47.61'	4.9	1.5	9	107	4	0.23
131119	16:12:07.70	44°45.70'	111°05.40'	10.6	1.5W	16	99	4	0.09
131119	22:18:38.02	44°45.97'	111°04.88'	10.7	1.3W	20	112	4	0.11
131119	23:32:41.08	44°45.90'	111°05.10'	10.2	0.9W	14	107	4	0.10
131120	00:27:00.20	44°50.12'	110°41.37'	6.2	2.2W	22	82	8	0.16
131120	00:27:49.49	44°45.73'	111°05.34'	10.2	1.5W	12	101	4	0.09

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131120	00:27:58.27	44°49.60'	110°41.89'	4.8	2.2W	12	127	8	0.07
131120	00:31:18.40	44°45.19'	111°00.28'	9.9	0.6	14	108	1	0.15
131120	02:02:01.60	44°49.93'	110°42.10'	3.7	0.7	13	127	8	0.16
131120	02:32:32.23	44°51.65'	111°29.62'	8.8	3.0W	29	123	6	0.13
131120	04:39:43.15	44°50.29'	111°29.01'	7.0	0.8	9	130	4	0.09
131120	07:11:20.39	44°44.85'	111°09.23'	11.3	-0.1	13	90	3	0.15
131121	03:30:30.00	44°37.76'	110°20.59'	7.5	1.2	11	81	8	0.07
131121	06:15:10.32	44°52.10'	111°29.93'	9.6	1.0	12	153	7	0.20
131121	08:04:22.15	44°45.94'	111°05.03'	10.6	0.6	14	110	4	0.10
131121	15:31:43.18	44°45.81'	111°05.63'	14.2	1.4W	19	96	4	0.23
131122	23:05:35.74	44°28.44'	110°57.18'	7.8	1.4W	13	111	10	0.19
131123	02:46:52.19	44°49.68'	110°41.24'	4.4	2.5W	25	81	9	0.15
131123	03:25:37.17	44°45.73'	111°05.34'	9.3	0.2	11	129	7	0.09
131123	16:57:49.57	44°48.88'	111°00.71'	9.7	1.3W	17	140	6	0.08
131123	16:59:29.66	44°49.02'	111°00.78'	8.9	-0.6	11	177	6	0.08
131123	17:53:55.59	44°48.65'	111°00.93'	10.1	1.7W	23	113	6	0.15
131123	19:00:55.54	44°49.01'	111°00.86'	8.6	1.5W	21	114	6	0.12
131123	19:41:33.10	44°48.64'	111°00.92'	9.0	1.2W	19	125	6	0.11
131123	19:41:57.71	44°48.87'	111°00.90'	9.9	2.0W	31	114	6	0.15
131123	19:44:52.51	44°49.10'	111°00.74'	10.8	1.6W	24	102	7	0.14
131123	19:49:56.80	44°49.11'	111°00.61'	9.2	1.3W	21	143	7	0.10
131123	20:01:04.02	44°49.02'	111°00.86'	9.7	2.5W	22	129	6	0.13
131123	20:04:34.32	44°49.11'	111°00.78'	9.1	0.7W	13	178	7	0.09
131123	20:10:03.49	44°48.89'	111°00.87'	9.9	1.4W	18	140	6	0.14
131123	20:23:48.64	44°48.86'	111°01.35'	10.1	2.9W	27	127	6	0.14
131123	20:26:15.41	44°48.93'	111°01.02'	9.5	2.5W	24	128	6	0.13
131123	20:27:27.11	44°49.46'	111°00.36'	8.7	-0.1	9	185	7	0.06
131123	20:30:56.66	44°48.81'	111°01.18'	9.3	1.6W	20	127	6	0.11
131123	20:34:07.70	44°49.18'	111°00.77'	8.8	1.2W	14	180	7	0.10
131123	20:38:12.51	44°49.06'	111°01.22'	11.6	2.7W	26	129	7	0.18
131123	20:43:02.89	44°48.55'	111°00.76'	8.7	--	15	135	6	0.10
131123	20:47:35.93	44°48.86'	111°01.21'	10.6	3.4W	34	127	6	0.16
131123	20:54:43.80	44°49.59'	111°00.60'	9.7	1.8W	26	104	7	0.13
131123	21:01:44.84	44°49.20'	111°00.48'	2.7	-0.4	8	181	7	0.14
131123	21:02:06.10	44°49.16'	111°00.60'	8.1	1.1W	18	143	7	0.10
131123	21:02:36.36	44°49.09'	111°00.80'	9.3	0.8W	14	178	7	0.09
131123	21:02:43.88	44°49.00'	111°00.92'	9.1	1.3W	12	176	6	0.06
131123	21:03:03.69	44°49.01'	111°00.56'	8.4	-0.2	8	227	6	0.06
131123	21:04:13.97	44°49.06'	111°00.95'	9.1	-0.1	13	177	7	0.07
131123	21:04:27.23	44°49.82'	111°00.19'	8.9	-0.5	11	191	8	0.14
131123	21:04:35.60	44°48.99'	111°00.97'	4.1	-0.8	8	220	6	0.07
131123	21:07:11.06	44°48.99'	111°00.78'	8.6	1.4W	19	141	6	0.11
131123	21:13:27.02	44°49.68'	111°00.59'	8.6	1.2W	15	188	8	0.11
131123	21:18:54.38	44°48.73'	111°01.31'	8.5	1.2W	14	138	6	0.13
131123	21:19:22.45	44°48.98'	111°00.84'	8.9	1.2W	17	140	6	0.11



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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131123	21:22:41.20	44°48.90'	111°00.83'	7.9	1.3W	16	140	6	0.16
131123	21:28:10.44	44°49.23'	111°00.54'	8.6	0.7W	14	181	7	0.10
131123	21:31:31.76	44°48.87'	111°01.10'	9.3	-0.3	11	174	6	0.07
131123	21:31:48.06	44°48.75'	111°00.76'	8.9	1.6W	19	126	6	0.15
131123	21:33:00.30	44°48.81'	111°00.92'	8.5	1.4W	19	127	6	0.15
131123	21:35:46.51	44°49.08'	111°01.13'	9.4	1.0W	15	177	7	0.10
131123	21:36:01.33	44°48.60'	111°01.04'	8.0	0.9W	14	136	6	0.10
131123	21:37:16.35	44°49.08'	111°00.38'	8.0	0.9W	16	179	7	0.15
131123	21:37:37.57	44°48.98'	111°00.89'	8.1	1.3W	18	140	6	0.16
131123	21:39:29.00	44°48.70'	111°00.67'	8.2	1.3W	17	168	6	0.14
131123	21:45:34.29	44°50.01'	110°59.84'	8.3	-0.1	13	195	8	0.10
131123	21:53:11.43	44°49.10'	111°00.79'	8.8	0.9W	13	178	7	0.08
131123	21:58:34.57	44°48.90'	111°00.86'	8.7	1.0W	14	175	6	0.07
131123	22:09:06.96	44°48.39'	111°01.71'	9.8	1.3W	18	133	6	0.13
131123	22:14:01.71	44°48.49'	111°00.62'	8.8	1.4W	19	123	5	0.12
131123	22:16:02.61	44°48.83'	111°01.05'	8.6	1.0W	14	174	6	0.08
131123	22:18:35.39	44°48.74'	111°00.94'	9.3	1.4W	17	138	6	0.11
131123	22:25:44.43	44°49.64'	111°00.88'	10.6	2.1W	26	122	8	0.13
131123	22:26:05.92	44°48.97'	111°00.98'	8.9	1.9W	20	128	6	0.10
131123	22:28:11.57	44°48.69'	111°00.55'	9.4	1.3W	16	138	6	0.11
131123	22:32:13.90	44°49.16'	111°00.86'	8.4	0.8W	14	179	7	0.09
131123	22:32:36.22	44°49.08'	111°00.80'	9.2	1.7W	18	142	7	0.10
131123	22:33:22.51	44°48.85'	111°00.90'	8.6	2.3W	23	127	6	0.12
131123	22:39:57.58	44°48.95'	111°00.98'	8.6	-0.3	11	176	6	0.07
131123	22:42:17.98	44°49.00'	111°00.84'	8.7	0.8W	14	177	6	0.12
131123	22:45:26.10	44°48.99'	111°00.87'	9.6	2.3W	26	128	6	0.14
131123	22:47:47.74	44°48.91'	111°00.89'	8.0	-0.1	14	175	6	0.08
131123	22:58:19.73	44°48.87'	111°00.57'	8.4	-0.2	12	175	6	0.09
131123	23:03:06.95	44°48.77'	111°01.19'	10.1	3.0W	35	126	6	0.16
131123	23:06:51.87	44°49.10'	111°01.07'	8.9	1.5W	18	142	7	0.10
131123	23:07:38.46	44°48.66'	111°00.96'	9.0	1.2W	15	137	6	0.10
131123	23:12:40.43	44°48.94'	111°01.03'	9.1	0.9W	16	140	6	0.11
131123	23:20:15.85	44°48.80'	111°00.98'	9.0	-0.2	14	173	6	0.07
131123	23:40:09.92	44°48.65'	111°00.81'	8.3	1.4W	19	125	6	0.14
131123	23:40:45.76	44°49.06'	111°00.63'	8.3	0.8W	14	141	6	0.10
131123	23:41:21.35	44°48.81'	111°00.90'	8.3	-0.3	14	174	6	0.11
131123	23:44:23.58	44°47.78'	110°59.07'	6.3	-0.1	8	250	4	0.04
131124	00:05:59.21	44°49.28'	111°00.39'	8.8	0.6W	12	182	7	0.07
131124	00:08:41.77	44°49.23'	111°00.60'	8.0	0.4	15	181	7	0.12
131124	00:34:38.65	44°49.26'	111°00.43'	8.4	1.0W	11	182	7	0.07
131124	00:39:31.73	44°43.96'	111°00.55'	8.4	-0.4	8	90	3	0.06
131124	00:40:42.35	44°49.12'	111°00.86'	8.6	0.8W	13	142	7	0.05
131124	00:51:26.61	44°48.85'	111°01.14'	8.6	1.0W	17	127	6	0.09
131124	00:51:52.43	44°49.08'	111°01.08'	11.6	1.9W	26	102	7	0.18
131124	00:54:59.42	44°49.03'	111°00.91'	7.9	0.0	16	142	6	0.17

**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131124	00:57:01.36	44°49.61'	111°00.72'	9.4	1.7W	25	104	8	0.13
131124	01:10:42.54	44°49.38'	111°01.08'	10.8	1.4W	17	120	7	0.20
131124	01:23:23.99	44°49.11'	111°01.00'	8.2	-0.8	9	178	7	0.11
131124	01:23:46.50	44°48.94'	111°01.08'	8.4	-0.4	12	175	6	0.09
131124	01:31:27.09	44°49.02'	111°01.09'	11.4	2.1W	29	102	6	0.17
131124	01:33:27.76	44°49.65'	111°00.63'	10.1	1.6W	22	104	8	0.13
131124	01:50:25.39	44°49.67'	111°00.99'	10.8	1.6W	21	122	8	0.15
131124	01:51:38.58	44°48.78'	111°01.04'	8.4	2.2W	25	127	6	0.12
131124	01:59:03.53	44°49.21'	111°00.66'	7.8	1.3W	18	143	7	0.09
131124	02:09:39.96	44°49.36'	111°00.83'	8.0	1.2W	16	182	7	0.08
131124	02:10:45.19	44°49.36'	111°00.85'	9.2	-0.6	7	182	7	0.04
131124	02:10:52.81	44°51.79'	111°01.55'	2.5*	--	5	252	12	0.10
131124	02:11:01.90	44°49.59'	111°00.83'	7.0	-0.6	9	186	7	0.06
131124	02:15:43.23	44°49.47'	111°01.79'	9.6	-0.3	10	181	7	0.13
131124	02:55:56.66	44°49.13'	111°00.67'	8.5	-0.1	11	179	7	0.06
131124	03:20:46.10	44°49.39'	111°01.25'	9.8	1.5W	19	120	7	0.13
131124	03:21:58.19	44°49.82'	111°00.90'	10.6	1.6W	23	104	8	0.12
131124	03:35:56.59	44°49.17'	111°00.69'	8.3	0.1	12	180	7	0.06
131124	03:45:37.87	44°49.31'	111°00.83'	10.8	1.5W	20	116	7	0.13
131124	04:33:04.42	44°49.33'	111°00.55'	7.4	0.0	14	182	7	0.09
131124	04:33:16.96	44°49.48'	111°00.93'	8.5	-0.1	9	184	7	0.06
131124	04:34:31.90	44°49.09'	111°00.73'	9.3	-0.6	8	178	7	0.04
131124	04:42:48.16	44°48.81'	111°01.08'	8.7	0.9W	13	139	6	0.07
131124	04:58:38.77	44°49.12'	111°00.83'	8.6	1.1W	13	178	7	0.07
131124	06:05:50.93	44°48.87'	111°00.67'	8.9	0.9W	17	175	6	0.09
131124	06:06:14.31	44°49.36'	111°00.68'	8.2	-0.3	8	182	7	0.07
131124	06:06:47.43	44°49.24'	111°01.00'	10.5	1.9W	23	104	7	0.16
131124	06:29:39.83	44°46.18'	111°03.64'	7.4	0.1	14	128	4	0.10
131124	06:31:49.94	44°49.06'	111°00.72'	8.6	0.8W	14	178	7	0.06
131124	07:06:05.45	44°49.13'	111°00.71'	8.0	1.2W	16	143	7	0.10
131124	07:18:36.15	44°48.78'	111°01.01'	9.8	3.1W	32	127	6	0.14
131124	07:20:06.29	44°48.79'	111°01.14'	9.2	1.4W	17	127	6	0.13
131124	07:25:39.35	44°48.86'	111°01.36'	7.9	1.0W	14	139	6	0.12
131124	07:30:31.14	44°49.01'	111°00.74'	7.3	-0.1	11	177	6	0.12
131124	07:43:37.61	44°48.87'	111°01.19'	8.2	1.4W	15	139	6	0.11
131124	07:48:47.97	44°49.08'	111°01.35'	10.6	1.6W	20	103	7	0.14
131124	07:52:47.80	44°45.16'	111°05.18'	12.4	0.2	11	95	5	0.14
131124	08:02:26.14	44°49.28'	111°00.84'	9.4	1.3W	17	129	7	0.13
131124	08:59:38.53	44°49.34'	111°00.50'	7.9	0.1	13	182	7	0.06
131124	09:51:43.14	44°49.35'	111°00.62'	9.4	0.1	11	182	7	0.12
131124	10:01:49.42	44°49.10'	111°01.20'	11.5	1.7W	22	118	7	0.18
131124	10:03:10.07	44°49.23'	111°00.83'	8.3	0.7	15	131	7	0.12
131124	10:03:36.83	44°49.06'	111°01.17'	8.1	1.0W	14	142	7	0.09
131124	10:03:58.29	44°49.09'	111°00.73'	9.1	1.3W	18	129	7	0.12
131124	10:12:20.68	44°48.99'	111°00.78'	8.7	-0.9	9	177	6	0.08

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131124	10:12:32.48	44°32.17'	111°10.90'	18.4	1.2W	18	70	10	0.25
131124	10:26:41.69	44°49.07'	111°00.67'	8.7	1.0W	14	178	7	0.08
131124	11:04:20.14	44°49.28'	111°00.55'	7.7	1.3W	19	144	7	0.15
131124	12:06:37.46	44°49.23'	111°00.50'	7.1	0.3	14	181	7	0.16
131124	12:11:51.83	44°49.24'	111°00.99'	10.2	1.6W	20	104	7	0.13
131124	15:20:40.64	44°48.91'	111°00.78'	8.0	1.0W	14	140	6	0.11
131124	17:02:25.63	44°49.06'	111°00.36'	6.6	-0.1	12	179	6	0.11
131124	17:13:40.06	44°48.72'	111°00.93'	8.5	0.3	15	137	6	0.13
131124	20:48:02.93	44°44.30'	110°47.13'	7.1	1.7W	22	79	7	0.17
131125	04:26:11.91	44°49.30'	111°01.09'	9.1	1.6W	21	116	7	0.13
131125	04:59:34.94	44°49.48'	111°00.88'	8.0	-0.2	11	184	7	0.13
131125	10:15:59.93	44°49.03'	111°01.01'	8.0	0.4	16	142	6	0.12
131125	10:16:09.92	44°49.28'	111°00.72'	7.7	0.2	10	181	7	0.09
131125	12:01:52.44	44°49.08'	111°00.30'	7.8	0.6	16	142	7	0.14
131125	12:08:06.05	44°49.31'	111°00.46'	7.5	0.9W	12	182	7	0.14
131125	12:08:29.66	44°48.88'	111°00.69'	7.8	1.4W	17	128	6	0.16
131125	12:11:06.48	44°48.43'	111°01.26'	8.3	0.4	14	167	5	0.14
131125	18:01:49.03	44°49.01'	111°01.05'	9.1	-0.1	10	176	6	0.05
131125	18:30:51.19	44°49.14'	111°01.34'	8.5	-0.3	9	178	7	0.05
131125	18:31:12.50	44°49.12'	111°01.17'	8.3	1.3W	18	130	7	0.10
131125	20:07:01.25	44°49.35'	111°00.97'	8.4	-0.7	8	182	7	0.05
131125	20:07:27.12	44°48.95'	111°01.29'	7.9	1.5W	19	129	6	0.13
131125	20:13:46.81	44°49.43'	111°01.04'	7.7	-0.2	15	183	7	0.09
131125	20:28:26.20	44°49.19'	111°01.18'	6.9	-0.2	10	179	7	0.09
131125	20:28:47.70	44°49.22'	111°01.37'	9.0	-0.6	8	178	7	0.06
131125	20:37:14.57	44°49.21'	111°01.07'	7.8	-0.3	10	179	7	0.06
131125	20:37:22.92	44°49.40'	111°01.58'	10.9	2.2W	31	103	7	0.17
131125	20:37:53.59	44°49.45'	111°00.90'	7.9	0.5	14	183	7	0.07
131125	20:39:32.15	44°49.37'	111°01.30'	8.3	1.5W	22	133	7	0.12
131125	20:55:57.00	44°48.95'	111°00.68'	2.3	--	8	176	6	0.17
131125	20:56:01.12	44°49.04'	111°00.74'	7.6	-0.4	8	178	6	0.09
131125	20:56:15.85	44°49.23'	111°00.87'	8.3	0.5	16	180	7	0.08
131125	20:56:52.73	44°50.26'	111°01.02'	11.5	1.7W	21	71	8	0.18
131125	20:57:49.36	44°49.14'	111°00.97'	8.3	1.2W	21	130	7	0.10
131125	21:06:32.70	44°49.24'	111°01.01'	7.5	1.8W	18	180	7	0.13
131125	21:10:55.30	44°49.33'	111°01.64'	10.6	3.0W	34	103	7	0.18
131125	21:17:40.42	44°48.83'	111°00.65'	7.4	1.2W	17	140	6	0.13
131125	21:18:52.50	44°49.40'	111°00.62'	7.7	1.4W	19	146	7	0.11
131125	21:38:15.48	44°48.72'	111°00.64'	7.2	0.3	14	138	6	0.17
131125	21:38:34.47	44°47.58'	110°59.25'	5.2	-0.4	9	250	4	0.12
131125	21:39:09.42	44°49.00'	111°01.24'	7.4	1.3W	18	141	6	0.16
131125	21:44:56.06	44°49.05'	111°00.99'	6.1	0.3	11	177	7	0.11
131125	21:46:01.50	44°49.25'	111°01.33'	7.1	-0.3	13	179	7	0.14
131125	21:59:38.94	44°49.66'	111°01.22'	9.3	2.0W	25	104	8	0.14
131125	22:03:48.81	44°49.26'	111°00.87'	8.8	1.6W	19	118	7	0.17

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131125	22:06:35.73	44°49.35'	111°00.73'	6.8	0.1	14	182	7	0.15
131125	22:10:32.47	44°49.20'	111°00.77'	7.5	0.4	15	180	7	0.15
131125	22:21:02.06	44°49.36'	111°00.88'	7.8	0.2	13	182	7	0.14
131125	22:38:02.14	44°49.06'	111°01.32'	7.2	1.5W	19	129	7	0.14
131125	22:39:22.74	44°49.29'	111°01.76'	10.8	2.4W	31	103	7	0.18
131126	00:08:17.30	44°48.80'	111°00.25'	7.5	--	5	175	6	0.02
131126	00:08:28.43	44°49.13'	111°01.20'	8.2	0.5	14	178	7	0.05
131126	00:28:43.07	44°49.39'	111°01.25'	8.0	1.4W	19	146	7	0.11
131126	00:38:03.61	44°49.23'	111°01.10'	8.1	0.5	17	144	7	0.07
131126	01:13:34.49	44°50.11'	111°01.26'	11.2	1.5W	20	71	8	0.18
131126	02:21:41.33	44°49.14'	111°01.13'	9.1	-0.2	10	178	7	0.08
131126	02:25:05.48	44°49.09'	111°00.89'	8.0	-0.6	11	178	7	0.09
131126	02:25:35.67	44°49.76'	111°00.32'	7.1	-0.7	10	190	8	0.13
131126	02:26:19.67	44°49.26'	111°00.61'	7.6	--	8	182	7	0.12
131126	02:48:33.40	44°49.30'	111°01.09'	8.2	0.2	12	180	7	0.06
131126	03:26:54.59	44°49.55'	111°00.68'	7.7	0.4	14	148	7	0.08
131126	03:37:05.94	44°49.11'	111°00.99'	9.1	-0.2	11	178	7	0.09
131126	03:47:45.64	44°49.44'	111°00.75'	8.4	1.4W	19	133	7	0.12
131126	06:09:24.93	44°48.49'	110°48.23'	4.5	0.1	12	134	4	0.11
131126	06:38:20.00	44°26.57'	110°12.62'	8.0	1.5	13	190	8	0.14
131126	07:54:56.10	44°48.84'	111°01.13'	7.7	2.0W	23	127	6	0.13
131126	07:57:42.03	44°49.06'	111°00.98'	8.1	1.2W	20	142	7	0.12
131126	09:25:23.71	44°49.23'	111°01.04'	8.5	1.2W	18	144	7	0.14
131126	11:37:21.18	44°49.16'	111°01.09'	6.8	0.0	15	178	7	0.11
131126	14:42:17.47	44°49.23'	111°01.29'	8.3	1.2W	16	179	7	0.07
131126	16:59:03.19	44°49.48'	111°00.92'	7.4	0.2	14	147	7	0.08
131126	17:19:47.09	44°48.77'	111°01.34'	8.5	2.0W	22	126	6	0.13
131126	17:37:21.58	44°49.02'	111°01.49'	8.3	2.2W	26	129	7	0.14
131126	19:14:24.88	44°49.07'	111°01.17'	7.4	1.0W	18	142	7	0.17
131126	20:24:04.13	44°49.22'	111°01.00'	6.6	1.2W	17	144	7	0.13
131126	23:46:52.54	44°26.75'	110°11.86'	9.9	0.8	12	191	9	0.13
131127	00:30:02.13	44°49.04'	111°01.31'	6.2	1.1W	17	141	7	0.13
131127	00:38:14.59	44°48.85'	111°01.35'	8.5	1.5W	18	127	6	0.16
131127	01:14:53.63	44°49.58'	111°01.24'	8.1	1.2W	18	104	8	0.20
131127	01:15:25.11	44°49.26'	111°01.09'	7.6	1.1W	17	180	7	0.16
131127	01:16:25.32	44°48.59'	111°00.85'	7.9	1.2W	17	137	6	0.15
131127	02:15:36.22	44°49.21'	111°01.19'	7.0	0.8W	13	179	7	0.14
131127	02:44:10.96	44°49.43'	111°01.66'	10.4	2.2W	28	103	7	0.18
131127	02:53:48.37	44°48.78'	111°00.57'	8.2	-0.3	12	174	6	0.15
131127	06:44:12.07	44°48.84'	111°01.19'	6.4	-0.2	11	173	6	0.15
131127	07:09:05.12	44°48.80'	111°01.73'	7.5	-0.4	10	172	6	0.11
131127	08:53:37.61	44°44.87'	110°47.02'	7.2	1.3W	14	88	7	0.17
131127	09:33:33.13	44°49.37'	111°01.07'	7.1	1.0W	13	182	7	0.12
131127	11:42:44.84	44°48.95'	111°01.57'	7.9	-0.1	10	174	6	0.09
131127	11:47:11.76	44°49.24'	111°01.10'	7.6	-0.3	11	180	7	0.13

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131127	15:24:22.45	44°49.42'	111°01.10'	9.5	2.1W	24	133	7	0.19
131127	15:40:01.98	44°49.15'	111°01.41'	8.6	1.8W	23	130	7	0.15
131127	15:52:03.56	44°46.88'	110°48.53'	4.5	0.2	10	201	3	0.05
131128	00:47:59.56	44°51.11'	110°59.07'	8.8	1.4W	23	71	10	0.13
131128	06:20:05.98	44°48.83'	111°00.82'	10.4	1.0W	14	174	6	0.09
131128	08:36:38.76	44°49.25'	111°01.27'	7.7	1.0W	15	179	7	0.13
131128	12:05:49.60	44°48.87'	111°01.45'	7.8	1.7W	23	128	6	0.13
131128	12:22:46.47	44°49.30'	111°01.21'	7.1	-0.3	11	180	7	0.09
131128	15:15:35.30	44°49.00'	111°01.27'	7.4	-0.2	10	176	6	0.11
131128	21:12:42.66	44°45.05'	111°03.94'	7.4	0.5	7	248	5	0.07
131128	21:33:41.05	44°45.41'	111°05.58'	8.3	0.4	14	113	7	0.17
131129	02:24:51.99	44°45.93'	111°05.18'	10.5	1.5W	16	107	4	0.11
131129	02:25:59.91	44°46.10'	111°04.67'	10.4	0.2	12	118	4	0.11
131129	04:38:12.92	44°45.68'	111°04.87'	9.3	0.6	12	107	4	0.14
131129	05:40:41.24	44°43.66'	111°04.93'	12.2	0.5	13	89	7	0.13
131129	09:36:28.36	44°46.44'	110°58.32'	11.1	2.3W	29	98	3	0.18
131129	15:25:35.67	44°44.70'	111°06.18'	11.4	0.3	10	104	7	0.10
131129	19:38:03.33	44°48.83'	111°01.48'	7.3	0.4	14	172	6	0.16
131130	14:06:14.77	44°44.95'	111°05.08'	11.0	0.8	12	110	6	0.16
131130	14:11:00.61	44°44.90'	111°05.33'	12.0	0.7	15	90	6	0.11
131130	18:53:03.78	44°49.14'	111°01.49'	7.6	1.1W	16	143	7	0.14
131202	02:00:26.19	44°34.29'	110°44.50'	4.2	0.9W	10	92	9	0.12
131202	07:18:32.80	44°48.79'	111°01.43'	7.9	1.6W	22	126	6	0.13
131202	08:36:08.95	44°40.80'	110°27.62'	3.0	1.5W	7	113	5	0.10
131202	10:30:40.81	44°33.69'	111°04.09'	10.5	1.0W	21	140	6	0.15
131203	01:11:16.23	44°49.23'	111°01.30'	6.5	-0.2	9	179	7	0.18
131205	01:37:23.63	44°46.26'	110°57.93'	8.1	0.8W	14	147	3	0.14
131205	17:13:50.98	44°48.38'	111°00.65'	8.2	0.5	10	210	5	0.15
131205	19:49:31.31	44°48.88'	111°01.03'	10.8	1.7W	17	129	6	0.17
131205	23:51:32.57	44°48.41'	110°57.61'	7.9	-0.1	5	248	6	0.02
131206	06:14:59.27	44°41.46'	110°00.73'	13.8	1.4	13	157	8	0.17
131206	06:22:30.09	44°48.86'	111°00.56'	8.5	0.3	12	206	6	0.08
131206	08:01:21.98	44°33.17'	110°47.89'	6.1	1.5	18	84	8	0.16
131207	15:15:07.73	44°36.82'	110°23.91'	2.0	1.6W	14	84	5	0.21
131207	22:24:20.51	44°48.34'	110°30.89'	11.3	1.3W	25	58	10	0.19
131208	02:56:46.14	44°47.00'	110°58.54'	12.4	2.1W	29	68	4	0.25
131208	09:12:14.75	44°48.40'	110°31.52'	6.2	1.9W	18	95	10	0.16
131208	13:41:47.55	44°48.09'	110°31.57'	8.3	1.8W	17	93	9	0.15
131209	01:43:21.85	44°43.30'	110°00.71'	11.7	1.3	7	161	7	0.23
131210	21:38:51.42	44°48.78'	110°30.23'	9.1	1.8W	13	96	11	0.18
131211	15:33:03.13	44°48.26'	110°58.39'	4.4	1.2W	18	134	6	0.12
131211	16:02:38.16	44°48.99'	110°58.72'	5.2	0.3	9	219	7	0.10
131211	16:20:48.79	44°48.78'	110°58.38'	4.4	1.0W	12	205	7	0.10
131211	18:44:45.59	44°48.86'	110°58.80'	4.7	0.8W	13	139	6	0.13
131212	07:34:07.56	44°48.96'	110°31.64'	6.7	1.7W	17	59	11	0.12

**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131212	13:19:55.50	44°48.98'	110°58.69'	5.5	0.8W	20	140	7	0.08
131212	20:01:23.18	44°37.13'	111°01.59'	9.5	0.7	15	78	6	0.13
131212	22:50:01.32	44°44.99'	111°13.16'	11.1	0.5	20	99	2	0.11
131213	08:30:29.99	44°27.93'	110°25.70'	2.0*	1.4W	15	83	11	0.24
131213	20:51:58.61	44°47.77'	110°32.07'	7.5	2.2W	17	138	9	0.14
131213	23:34:16.06	44°50.49'	110°41.35'	7.0	2.3W	24	88	13	0.21
131214	18:42:06.49	44°49.13'	110°31.21'	7.0	1.9W	16	95	11	0.07
131215	02:36:39.79	44°48.26'	110°30.43'	11.0	2.0W	16	92	10	0.23
131215	04:00:10.61	44°48.12'	110°32.25'	2.0	1.8W	15	141	10	0.13
131215	05:58:37.54	44°47.80'	110°32.75'	4.4	1.6W	13	135	9	0.08
131215	10:08:20.23	44°48.83'	110°31.59'	4.4*	2.0W	13	149	11	0.10
131216	00:59:58.18	44°46.89'	110°48.64'	6.4	1.0W	15	101	3	0.11
131216	04:13:32.48	44°47.43'	110°48.38'	7.9	1.3W	19	100	4	0.14
131216	04:14:58.04	44°46.97'	110°48.79'	6.5	1.2W	19	98	3	0.15
131216	05:00:34.63	44°46.34'	110°59.25'	10.0	0.2	15	114	2	0.12
131216	06:37:20.74	44°39.43'	110°26.00'	6.6	2.2W	21	61	9	0.17
131216	11:07:26.45	44°39.56'	110°29.97'	1.2	0.7	8	94	6	0.13
131216	11:33:08.34	44°44.74'	111°14.28'	6.9	0.1	8	120	3	0.11
131217	03:31:24.21	44°47.10'	110°48.99'	7.8	1.0W	16	100	3	0.14
131217	04:14:55.70	44°48.60'	111°27.10'	11.9	1.8W	26	73	3	0.10
131217	06:49:16.52	44°44.38'	110°46.83'	7.2	1.3W	17	88	6	0.15
131217	06:49:30.64	44°44.07'	110°46.78'	6.6	2.0W	22	81	6	0.16
131217	06:50:35.97	44°44.70'	110°46.51'	8.1	1.9	13	150	6	0.07
131217	17:54:46.31	44°38.75'	111°04.84'	6.6	0.7W	17	100	5	0.12
131218	09:55:54.83	44°39.44'	110°26.82'	6.4	1.9W	24	57	8	0.16
131218	22:11:58.70	44°32.36'	110°47.52'	2.4	1.2W	9	105	10	0.28
131219	08:52:28.62	44°40.10'	110°27.20'	5.4	1.0W	10	199	7	0.19
131219	11:26:37.76	44°46.99'	110°49.78'	7.7	1.0W	17	97	2	0.16
131219	11:57:08.07	44°46.92'	110°49.56'	9.0	1.1W	17	96	2	0.14
131219	11:57:26.46	44°05.70'	110°36.20'	14.1	0.2	9	160	8	0.07
131219	13:08:32.50	44°47.38'	110°49.46'	8.1	1.4W	18	104	2	0.13
131219	15:50:10.62	44°46.68'	110°49.81'	5.9	1.9W	25	81	2	0.17
131219	15:57:51.38	44°46.79'	110°49.44'	6.7	1.1W	17	95	2	0.14
131219	16:03:13.10	44°46.72'	110°48.95'	8.5	1.6W	6	190	3	0.25
131219	16:56:34.88	44°47.23'	110°49.60'	8.0	1.2W	18	102	2	0.15
131219	21:19:13.05	44°47.05'	110°49.21'	9.6	2.0W	30	88	2	0.25
131219	21:49:26.50	44°46.90'	110°49.83'	7.4	1.3W	16	93	2	0.16
131219	22:39:13.39	44°46.96'	110°49.16'	6.3	1.1W	14	100	3	0.15
131220	06:47:31.62	44°46.84'	110°49.28'	6.7	0.9W	15	97	2	0.14
131220	06:47:51.62	44°46.66'	110°49.25'	5.0	0.4	13	96	3	0.11
131220	07:39:59.45	44°46.18'	110°48.93'	4.7	0.1	8	172	3	0.08
131220	08:06:39.86	44°46.19'	110°49.22'	4.2	0.7	8	94	3	0.03
131220	09:43:53.39	44°46.59'	110°49.35'	6.7	2.1W	26	84	3	0.17
131220	10:18:13.02	44°46.96'	110°49.09'	6.0	-0.8	10	199	3	0.08
131220	10:18:20.50	44°46.26'	111°08.56'	8.2	-0.3	11	101	4	0.17



**Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2013**

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
131220	13:02:01.31	44°46.92'	110°49.36'	7.2	1.0W	13	98	2	0.20
131220	14:05:18.94	44°46.52'	110°48.52'	7.8	0.3	10	101	4	0.11
131220	16:06:31.67	44°46.40'	110°48.99'	4.9	0.1	7	178	3	0.05
131220	17:13:03.91	44°46.33'	110°48.57'	7.7	0.6	9	101	4	0.12
131220	18:22:18.90	44°46.74'	110°50.17'	6.5	1.3W	16	75	2	0.17
131220	18:37:31.64	44°45.94'	110°49.16'	5.1	0.8W	9	159	4	0.12
131221	01:13:28.38	44°49.25'	111°01.36'	8.8	1.8W	19	132	7	0.13
131221	01:51:13.91	44°49.22'	111°01.15'	7.9	0.1	13	179	7	0.13
131221	13:40:53.94	44°46.94'	110°49.68'	8.2	1.1W	13	97	2	0.16
131221	17:59:13.08	44°26.37'	110°56.10'	6.3	1.3	8	180	8	0.23
131221	22:29:27.99	44°49.25'	111°01.29'	8.4	0.0	12	179	7	0.08
131222	14:00:44.94	44°47.02'	111°10.72'	9.8	1.6W	18	74	4	0.14
131222	14:01:43.88	44°46.91'	111°09.27'	5.9	0.6W	11	104	5	0.16
131223	01:39:34.34	44°50.37'	111°26.88'	11.3	3.3W	35	101	2	0.15
131224	13:01:49.10	44°39.77'	110°29.38'	7.4	1.4W	8	161	6	0.06
131224	19:40:48.87	44°45.80'	111°04.92'	10.1	0.8W	13	109	4	0.11
131224	22:24:45.25	44°24.65'	110°21.36'	5.2	1.4	14	108	6	0.12
131226	10:51:16.97	44°50.31'	111°26.75'	10.6	1.1	13	151	2	0.06
131226	21:13:34.93	44°40.53'	110°27.82'	2.3	0.6	9	110	6	0.09
131227	01:51:30.72	44°45.02'	110°46.43'	7.5	1.1W	13	172	7	0.14
131227	12:42:58.21	44°47.46'	110°59.22'	6.2	1.0W	12	157	4	0.14
131228	06:31:51.05	44°44.60'	110°46.83'	8.5	1.4W	19	88	6	0.12
131228	09:25:11.13	44°47.36'	110°59.49'	6.1	1.0W	14	155	4	0.09
131228	17:46:05.98	44°39.53'	110°31.04'	3.0*	1.8	11	227	12	0.15
131230	00:42:32.38	44°46.82'	110°45.28'	4.3	2.0W	33	96	7	0.17
131230	00:54:38.29	44°46.82'	110°45.22'	4.1	1.5W	26	96	7	0.17

number of earthquakes = 566

\* indicates poor depth control

W indicates Wood-Anderson data used for magnitude calculation

**Table 3**  
**UNIVERSITY OF UTAH YELLOWSTONE SEISMIC NETWORK**  
**Operating Seismograph Stations**  
**September 30, 2013**

UURSN	Location	SEED	SEED	No. of	Network	Latitude	Longitude	Elevation	Sensor	Digitizer	Telemetry	Sponsor
Code		Station	Channel	Channels	Code			(meters)				
B205	Norris205bwy2008, Yellowstone, WY	B205	EH[ZEN]	3	PB	44° 42.81'	110° 40.70'	2296	IEESE-S2	Q330	Digital	PBO
B206	Canyon206bwy2008, Yellowstone, WY	B206	EH[ZEN]	3	PB	44° 46.66'	110° 30.70'	2400	IEESE-S2	Q330	Digital	PBO
B207	Madisn207bwy2007, Yellowstone, WY	B207	EH[ZEN]	3	PB	44° 37.14'	110° 50.91'	2182	IEESE-S2	Q330	Digital	PBO
B208	Lakejn208bwy2008, Yellowstone, WY	B208	EH[ZEN]	3	PB	44° 33.61'	110° 24.09'	2406	IEESE-S2	Q330	Digital	PBO
B944	Grantt944bwy2008, Yellowstone, WY	B944	EH[ZEN]	3	PB	44° 23.38'	110° 32.63'	2365	IEESE-S2	Q330	Digital	PBO
B945	Panthr944swy2008, Yellowstone, WY	B945	EH[ZEN]	3	PB	44° 53.64'	110° 44.65'	2249	IEESE-S2	Q330	Digital	PBO
FLWY	Flagg Ranch, WY	FLWY	BH[ZEN]	3	IW	44° 04.96'	110° 41.96'	2078	3ESP	RT-130	Digital	ANSS
H17A	Grant Junction, Yellowstone, WY	H17A	BH[ZEN]	3	TA	44° 24.00'	110° 34.80'	2400	*	*	Digital	USGS
IMW	Indian Meadows, WY	IMW	BH[ZEN]	3	IW	43° 53.58'	110° 56.58'	2670	3ESP	RT-130	Digital	ANSS
LKWY	Lake, WY	LKWY	BH[ZEN]	3	US	44° 33.91'	110° 24.00'	2424	*	*	Digital	USGS
LOHW	National Elk Refuge, WY	LOHW	BH[ZEN]	3	IW	43° 36.76'	110° 36.30'	2245	3ESP	RT-130	Digital	ANSS
MCID	Moose Creek, ID	MCID	EHZ	1	WY	44° 11.45'	111° 11.03'	2137	L4C	PSN	Analog	USGS
QLMT	Earthquake Lake, MT	QLMT	EHZ	1	MB	44° 49.84'	111° 25.80'	2064	*	*	Analog	MBMT
REDW	Red-Top Meadows, WY	REDW	BH[ZEN]	3	IW	43° 21.74'	110° 51.18'	2322	3ESP	RT-130	Digital	ANSS
RRI2	Red Ridge, ID	RRI2	BH[ZEN]	3	IW	43° 20.84'	111° 19.20'	2547	3ESP	RT-130	Digital	ANSS
TPMT	Teepe Creek, MT	TPMT	EHZ	1	MB	44° 43.79'	111° 39.94'	2518	*	*	Analog	MBMT
YDC	Denny Creek, MT	YDC	EHZ	1	WY	44° 42.51'	111° 14.60'	2025	L4C	PSN	Analog	USGS
YFT	Old Faithful (YNP), WY	YFT	HH[ZEN]	3	WY	44° 27.05'	110° 50.24'	2292	Trillium 120	72A-07	Digital	USGS
			EN[ZEN]	3					Titan			
			EHZ	1					L4C			
YGC	Grayling Creek, MT	YGC	EHZ	1	WY	44° 47.77'	111° 06.45'	2075	L4C	PSN	Analog	USGS
YHB	Horse Butte, MT	YHB	EHZ	1	WY	44° 45.07'	111° 11.71'	2157	L4C	ANSS-130	Analog	USGS
			HH[ZEN]	3					40T			
			EN[ZEN]	3					Titan			
YHH	Holmes Hill (YNP), WY	YHH	EHZ	1	WY	44° 47.30'	110° 51.03'	2717	S13	PSN	Analog	USGS
			HH[ZEN]	3					Trillium 120			
			EN[ZEN]	3					Titan			
YHL	Hebgen Lake, MT	YHL	HH[ZEN]	3	WY	44° 51.05'	111° 10.98'	2691	Trillium 120	Q330	Digital	USGS
			EN[ZEN]	3					Titan			

UURSN	Location	SEED	SEED	No. of	Network	Latitude	Longitude	Elevation	Sensor	Digitizer	Telemetry	Sponsor
Code		Station	Channel	Channels	Code			(meters)				
YJC	Joseph's Coat (YNP), WY	YJC	EH[ZEN]	3	WY	44° 45.33'	110° 20.95'	2684	S13	PSN	Analog	USGS
YLA	Lake Butte (YNP), WY	YLA	EHZ	1	WY	44° 30.76'	110° 16.12'	2580	L4C	PSN	Analog	USGS
YLT	Little Thumb Creek (YNP), WY	YLT	EHZ	1	WY	44° 26.25'	110° 35.28'	2439	L4C	PSN	Analog	USGS
YMC	Maple Creek (YNP), WY	YMC	EH[ZEN]	3	WY	44° 45.53'	111° 00.41'	2073	S13	PSN	Analog	USGS
YML	Mary Lake (YNP), WY	YML	EH[ZEN]	3	WY	44° 36.20'	110° 38.63'	2653	L4C	PSN	Analog	USGS
YMP	Mirror Plateau (YNP), WY	YMP	EHZ	1	WY	44° 44.38'	110° 09.40'	2774	S13	PSN	Analog	USGS
			HH[ZEN]	3					Trillium 120			
			EN[ZEN]	3					Titan			
YMR	Madison River (YNP), WY	YMR	HH[ZEN]	3	WY	44° 40.12'	110° 57.90'	2149	Trillium 120	Q330	Digital	USGS
			EN[ZEN]	3					Titan			
YMS	Mount Sheridan (YNP), WY	YMS	EHZ	1	WY	44° 15.84'	110° 31.67'	3106	L4C	PSN	Analog	USGS
YMV	Mammoth Vault (YNP), WY	YMV	EHZ	1	WY	44° 58.42'	110° 41.33'	1829	L4C	PSN	Analog	USGS
YNE	Northeast Entrance (YNP), WY	YNE	HH[ZEN]	3	WY	45° 00.46'	110° 00.48'	2343	Compact	Taurus	Digital	USGS
YNM	Norris Museum (YNP), WY	YNM	HH[ZEN]	3	WY	44° 43.59'	110° 42.22'	2311	Trillium 240	Q330	Digital	USGS
YNR	Norris Junction (YNP), WY	YNR	HH[ZEN]	3	WY	44° 42.93'	110° 40.75'	2336	Trillium 120	RT-130	Digital	USGS
			EN[ZEN]	3					Titan			
YPC	Pelican Cone (YNP), WY	YPC	EHZ	1	WY	44° 38.88'	110° 11.55'	2932	L4C	PSN	Analog	USGS
YPK	Parker Peak (YNP), WY	YPK	EH[ZEN]	3	WY	44° 43.91'	109° 55.32'	2897	L4C	PSN	Analog	USGS
YPM	Purple Mountain (YNP), WY	YPM	EHZ	1	WY	44° 39.43'	110° 52.12'	2582	L4C	PSN	Analog	USGS
YPP	Pitchstone Plateau (YNP), WY	YPP	EHZ	1	WY	44° 16.26'	110° 48.27'	2707	S13	PSN	Analog	USGS
			HH[ZEN]	3					Trillium 120			
			EN[ZEN]	3					Titan			
YSB	Soda Butte (YNP), WY	YSB	EHZ	1	WY	44° 53.04'	110° 09.06'	2072	L4C	PSN	Analog	USGS
YTP	The Promontory (YNP), WY	YTP	EHZ	1	WY	44° 23.51'	110° 17.10'	2384	L4	PSN	Analog	USGS
			HH[ZEN]	3					Trillium 120			
			EN[ZEN]	3					Titan			
YUF	Upper Falls (YNP), WY	YUF	HH[ZEN]	3	WY	44° 42.76'	110° 30.71'	2394	3ESP	ANSS-130	Digital	USGS
			EN[ZEN]	3					Titan			
YWB	West Boundary (YNP), WY	YWB	EHZ	1	WY	44° 36.35'	111° 06.05'	2310	L4C	PSN	Analog	USGS

\* Station operated by another agency and recorded as part of the Yellowstone Seismic Network  
Network Statistics: 136 data channels from 42 stations were being recorded at the end of this report period

## EXPLANATION OF TABLE

**UURSN Code:** Station code formerly used in routine processing. Due to processing software limitations, the station code may not be the station code used by the original operator. For multi-component stations, the vertical, east-west, and north-south high gain (low gain) components are identified by an appended Z(V), E(L), and N(M), respectively, in UUSS phase files.

**Location:** General description of station location. YNP = Yellowstone National Park.

**SEED Station:** The SEED (Standard for the Exchange of Earthquake Data) station code used by the original operator.

**SEED Channel:** The SEED format uses three letters to name seismic channels. See <<[http://www.iris.edu/manuals/SEEDManual\\_V2.4.pdf](http://www.iris.edu/manuals/SEEDManual_V2.4.pdf)>> for information about the SEED channel naming convention. Relevant sections are reproduced below. In the SEED convention, each letter describes one aspect of the instrumentation and its digitization. The first letter specifies the general sampling rate and the response band of the instrument. Band codes used in this table include:

Band Code	Band Type	Sample Rate	Corner Period
E	Extremely short period	≥ 80 Hertz	< 10 seconds
H	High broadband	≥ 80 Hertz	≥ 10 seconds
B	Broadband	≥ 10 to < 80 Hertz	≥ 10 seconds
S	Short period	≥ 10 to < 80 Hertz	< 10 seconds

The second letter specifies the family to which the sensor belongs. Sensor families used in this table are:

Instrument Code	Description
H	High gain seismometer
L	Low gain seismometer
N	Accelerometer

The third letter specifies the physical configuration of the members of a multiple axis instrument package. Channel orientations used in this table are:

Z E N      Traditional (Vertical, East-West, North-South)

**Number of Channels:** Total number of waveform channels recorded.

**Network Code:** The FDSN (Federation of Digital Seismographic Networks) registered network code. See <<[http://www.iris.edu/dms/nodes/dmc/services/network\\_codes](http://www.iris.edu/dms/nodes/dmc/services/network_codes)>> for information about registered seismograph network codes. Network codes referenced in this table:

Network Code	Network name; Network operator or responsible organization
IE	Idaho National Laboratory Seismic Network
IU	IRIS/USGS Network; USGS Albuquerque Seismological Laboratory
IW	Intermountain West Network, U.S. Geological Survey

MB	Montana Regional Seismic Network; Montana Bureau of Mines and Geology
PB	Plate Boundary Observatory
UU	University of Utah Regional Network; University of Utah
US	US National Network; USGS National Earthquake Information Center
WY	Yellowstone Wyoming Seismic Network; University of Utah

**Latitude, Longitude:** Sensor location in degrees and decimal minutes; North latitude, West longitude.

**Elevation:** Sensor altitude in meters above sea level.

<b>Sensor</b>	<b>Description</b>
L4, L4C	Mark Products L4 or L4C short-period seismometer
S13, 18300	Geotech S13 or 18300 short-period seismometer
Ranger	Kinometrics Ranger short-period seismometer
40T	Guralp CMG-40T broadband seismometer
3T	Guralp CMG-3T broadband seismometer
3ESP	Guralp CMG-3ESP broadband seismometer
STS-2	Streckheisen STS-2 broadband seismometer
FBA23	Kinometrics FBA-23 accelerometer
EpiSensor	Kinometrics EpiSensor accelerometer
Applied Mems	Applied Mems accelerometer
PA-23	Geotech PA-23 accelerometer
Compact	Nanometrics Compact broadband seismometer
Trillium 120	Nanometrics Trillium 120 broadband seismometer
Trillium 240	Nanometrics Trillium 240 broadband seismometer
Titan	Nanometrics Titan accelerometer
Observer	Refraction Technology (REF TEK) Model 151 Observer broadband seismometer
IESE-S2	Institute of Earth Science and Engineering S-2 model borehole seismometer

<b>Digitizer</b>	<b>Description</b>
K2	Kinometrics Altus Series K2 (19-bit resolution field digitizer)
Etna	Kinometrics Altus Series Etna (18-bit resolution field digitizer)
72A-07	Refraction Technology (REF TEK) model 72A-07 (24-bit field digitizer)
72A-08	Refraction Technology (REF TEK) model 72A-08 (24-bit field digitizer)
ANSS-130	Refraction Technology (REF TEK) model 130-ANSS/02 (24-bit resolution field digitizer)
RT-130	Refraction Technology (REF TEK) model RT-130 (24-bit resolution field digitizer)
Q330	Quanterra, Inc Q330 digitizer (24-bit resolution field digitizer)
SMART-24	Geotech SMART-24 digitizer (24-bit resolution field digitizer)
PSN	PSN-ADC-SERIAL version III (16-bit resolution field digitizer)
Basalt	Kinometrics Basalt (24-bit resolution field digitizer)
Taurus	Nanometrics Taurus (24-bit resolution field digitizer)

<b>Telemetry</b>	<b>Description</b>
Analog	Data transmission is analog along part of the transmission pathway

Digital            Data are converted to digital form at the station site  
None                On-site recording system

**Sponsor (or Operator for stations marked by \* in preceding columns)**

USGS            U.S. Geological Survey  
Utah             State of Utah  
ANSS            Advanced National Seismic System  
INL              Idaho National Laboratory  
MBMT            Montana Bureau of Mines and Geology  
PBO              Plate Boundary Observatory  
ES                EarthScope

**NETWORK CHANGES DURING OCTOBER 1-DECEMBER 31, 2013**

None