EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

October 1 – December 31, 2016

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 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 Coordinated Universal 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 MDT through 02:00 (2:00 a.m.) on November 5 and MST thereafter.

- 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 that 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, 2016

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During the three-month period October 1 through December 31, 2016, the University of Utah Seismograph Stations (UUSS) located 308 earthquakes within the Yellowstone region (Figure 1). The total includes 29 earthquakes in the magnitude 2 range. The largest events to occur during this period were two magnitude 2.9 earthquakes on November 25th and 26th. No earthquakes were reported felt in the region during the report period (see Table 1, a cumulative tabulation of earthquakes that were felt in the Yellowstone region during 2016). 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://quake.utah.edu/earthquake-center/quarterly-seismicity-reports*.

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

None

Notable Swarm Seismicity

During the report period, there were three 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 earthquakes occur as part of a seismic swarm [Farrell et al., 2009].

A. A swarm of 18 earthquakes ($-0.2 \leq M \leq 2.2$) occurred about 4.0 miles N of Lake, Yellowstone National Park on October 23rd.
B. A swarm of 19 earthquakes ($-0.4 \leq M \leq 1.5$) occurred about 9.0 miles NE of West Yellowstone, MT from October 29th – November 2nd.
C. A swarm of 64 earthquakes ($0.5 \leq M \leq 2.9$) occurred about 5.5 miles SW of West Thumb, Yellowstone National Park on November 23rd – 26th.

These swarms are labeled in Figure 1.

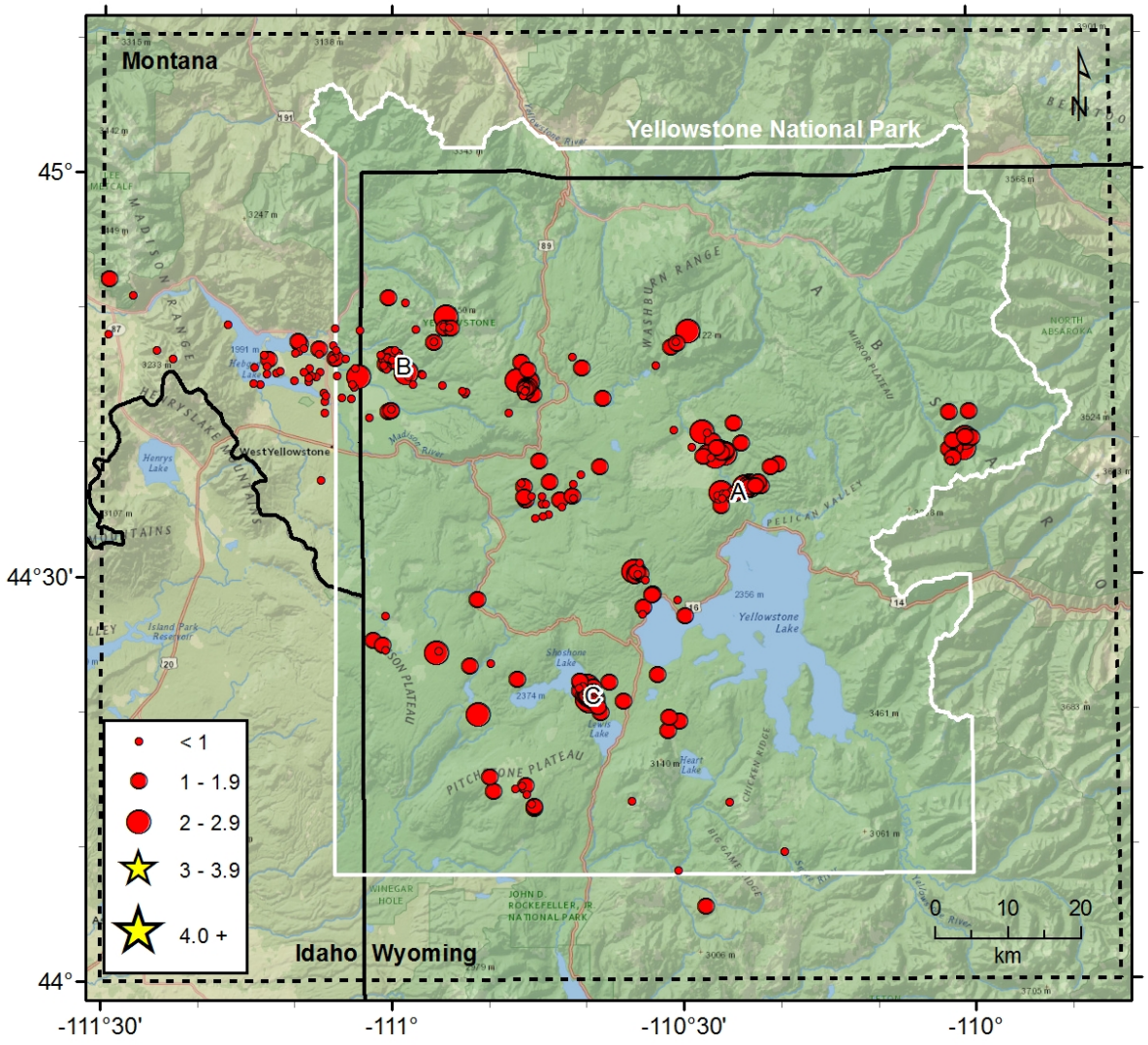

Figure 1. Epicenters of earthquakes located by the University of Utah Seismograph Stations, October 1, 2016 through December 31, 2016. Earthquake swarms labeled A–C are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2016 to December 31, 2016

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
None					

† Times are listed both as Local Time—Mountain Standard Time (MST) or Mountain Daylight Time (MDT)—and as Coordinated Universal 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), compiled by the U.S. Geological Survey (USGS); *ShakeMap* indicates the availability of computer-generated maps of ground-shaking (*http://quake.utah.edu*), 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/data/pde.php).
§ Richter local magnitude (M_L) or coda magnitude (M_C) determined by UUSS. If labeled "NEIC," data are from the National Earthquake Information Center of the USGS.

Yellowstone Seismic Network
December 31, 2016

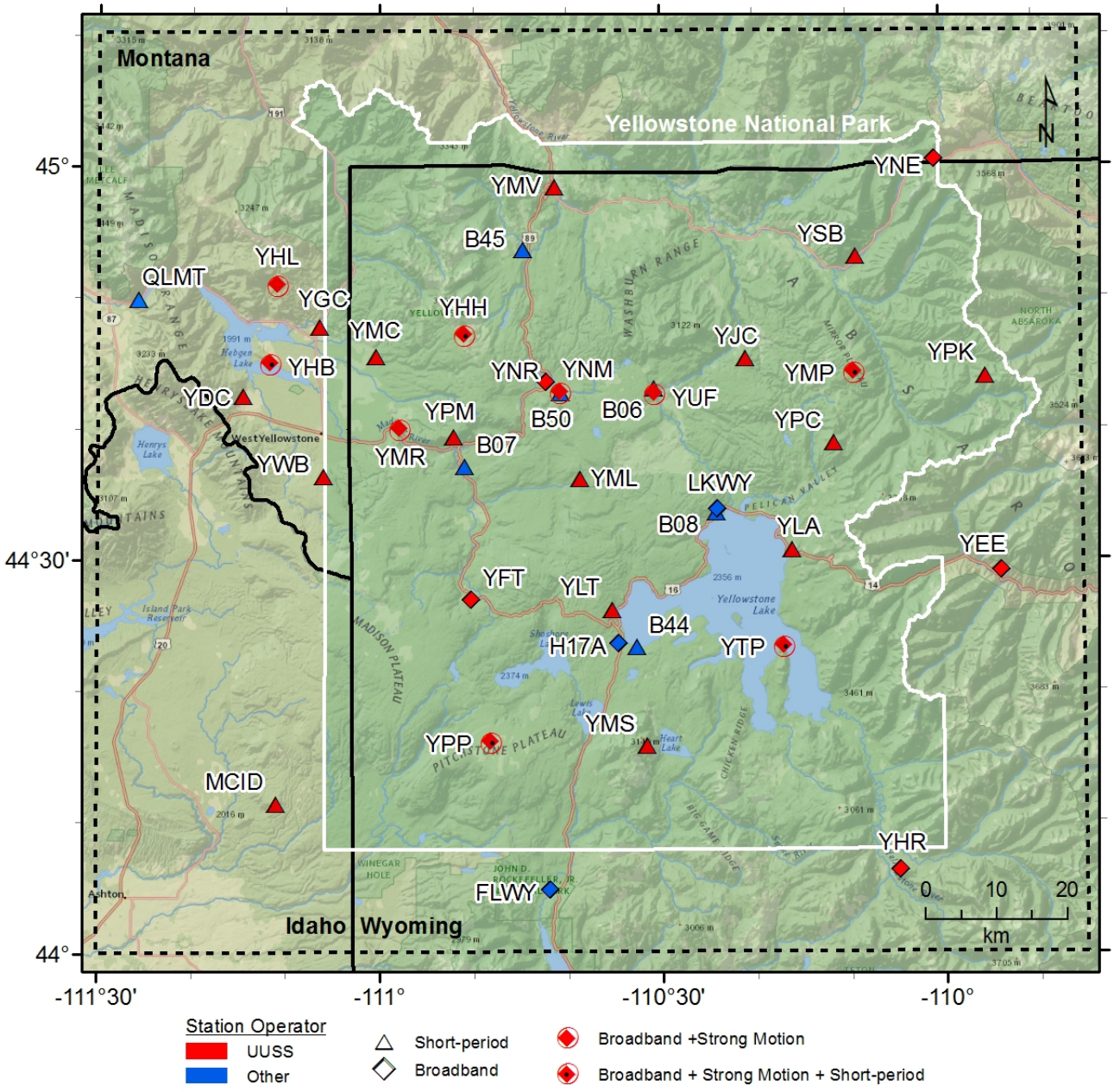

Figure 2

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2016

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161001	08:30:57.11	44°44.59'	110°47.00'	7.5	2.2W	19	82	7	0.19
161001	23:04:50.10	44°47.48'	110°55.62'	6.0	0.7	6	212	6	0.08
161002	04:36:43.08	44°45.30'	111°11.60'	13.4	0.2	9	158	1	0.13
161002	04:56:33.88	44°36.95'	110°41.24'	3.7	-0.2	12	105	4	0.09
161002	04:56:52.83	44°35.98'	110°41.28'	3.3	1.1W	12	137	4	0.15
161002	04:57:14.51	44°35.85'	110°41.22'	3.1	0.6	13	141	4	0.17
161002	10:23:18.34	44°48.71'	111°17.10'	10.4	0.0	7	140	9	0.09
161002	16:57:14.72	44°46.79'	111°24.44'	12.5	0.7	8	135	6	0.06
161003	08:20:29.00	44°38.21'	110°38.44'	4.9	1.8W	20	69	4	0.21
161003	15:55:55.80	44°38.45'	110°02.14'	5.9*	0.9	6	175	14	0.12
161003	16:57:35.32	44°40.16'	109°59.78'	14.7	1.8W	16	147	9	0.21
161003	16:57:35.76	44°39.31'	110°02.17'	8.3	1.8W	14	156	12	0.15
161003	20:15:12.79	44°40.16'	110°00.45'	14.4	2.2W	12	167	10	0.20
161003	20:20:19.90	44°39.93'	110°01.78'	15.6	1.2	6	165	11	0.10
161003	20:21:53.31	44°39.35'	110°00.59'	11.5	2.3W	15	178	11	0.16
161004	01:12:35.12	44°44.79'	111°08.69'	4.6	-0.2	11	121	4	0.11
161004	14:48:43.98	44°31.08'	110°34.34'	7.0	0.8	11	110	9	0.17
161004	17:26:25.60	44°13.26'	110°45.60'	2.3	0.6	9	140	7	0.17
161005	00:24:17.94	44°46.33'	110°41.22'	2.6	0.8	10	251	5	0.22
161005	19:10:11.02	44°41.39'	110°24.54'	6.2	1.6W	13	145	9	0.15
161005	19:13:45.35	44°39.86'	110°23.75'	8.1	1.0	8	162	11	0.18
161006	11:40:27.46	44°45.15'	111°12.03'	6.3	0.5	11	120	0	0.27
161007	22:09:30.59	44°44.30'	111°04.11'	5.4	0.3	9	145	5	0.10
161007	22:44:54.33	44°27.79'	110°34.02'	2.2	1.3	10	142	8	0.09
161008	15:21:48.22	44°44.88'	111°03.50'	6.7	2.1W	22	84	4	0.18
161010	15:43:00.33	44°47.47'	111°09.82'	11.5	1.2W	17	94	5	0.18
161010	16:03:12.81	44°44.52'	111°08.69'	3.6	0.2	8	126	4	0.08
161010	17:08:44.30	44°47.30'	111°09.56'	11.5	1.7W	18	129	4	0.18
161010	21:26:04.90	44°46.98'	111°09.21'	6.7	0.3	8	119	5	0.06
161010	22:18:53.92	44°46.79'	111°09.72'	8.3	0.5	10	129	4	0.08
161010	22:18:54.35	44°45.27'	111°09.15'	5.6	0.4	8	183	3	0.05
161011	04:34:28.74	44°43.73'	110°52.27'	2.2	0.0	9	144	7	0.05
161011	04:34:32.69	44°43.59'	110°52.36'	2.4	0.6	8	145	7	0.08
161011	04:35:18.47	44°43.80'	110°52.73'	2.9	-0.7	6	153	7	0.04
161011	05:57:26.59	44°40.12'	110°00.51'	14.6	1.8W	13	172	10	0.22
161011	21:17:02.94	44°39.38'	110°01.61'	11.4	1.8	6	172	12	0.11
161011	22:02:01.38	44°46.64'	111°10.05'	11.2	-0.1	10	134	4	0.20
161013	13:01:44.52	44°13.44'	110°35.28'	3.3	0.6	12	130	7	0.24
161013	14:31:46.03	44°48.02'	111°29.51'	9.9	0.5	8	174	6	0.10
161014	04:45:47.06	44°44.27'	110°54.76'	2.5	0.8W	9	113	7	0.11
161015	06:51:37.20	44°38.88'	110°26.38'	5.2	2.0W	12	131	9	0.10
161016	21:42:25.65	44°35.73'	110°42.58'	7.8	1.5W	13	114	5	0.12
161017	01:55:49.06	44°48.49'	110°53.91'	8.3	1.3W	12	198	4	0.10
161017	03:14:50.97	44°46.84'	111°05.80'	9.6	0.1	8	111	2	0.09
161018	12:54:36.09	44°24.67'	111°00.71'	6.1*	0.9W	8	150	15	0.13
161018	12:54:55.46	44°25.32'	111°02.01'	6.1*	1.2W	7	158	16	0.09
161018	12:55:13.87	44°24.98'	111°00.94'	5.9*	1.1	5	152	15	0.16
161018	18:18:10.52	44°38.91'	110°27.66'	3.7	1.1W	8	116	8	0.08

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161018	22:09:02.79	44°37.24'	111°07.34'	6.1	0.6	10	152	2	0.17
161019	21:33:18.94	44°35.47'	110°44.48'	8.6	0.7W	18	85	8	0.25
161019	21:33:30.85	44°36.01'	110°45.56'	2.8	0.8	13	140	7	0.22
161020	13:10:45.99	44°34.41'	110°45.15'	4.6	0.6	9	140	9	0.09
161020	16:19:59.48	44°23.63'	110°49.83'	3.2	0.4	7	125	6	0.10
161020	22:49:31.70	44°39.24'	110°25.98'	5.5	2.5W	28	73	9	0.20
161020	23:05:21.84	44°40.03'	110°26.68'	7.1	1.5W	11	120	7	0.16
161020	23:15:04.52	44°39.31'	110°26.33'	6.0	2.2W	25	71	9	0.18
161021	12:43:29.11	44°38.87'	110°26.92'	2.2	0.2	9	189	9	0.11
161021	14:41:57.80	44°08.24'	110°30.47'	8.4	0.5	12	156	14	0.10
161021	15:32:03.77	44°43.36'	111°05.20'	2.7	-0.8	6	169	8	0.05
161021	15:32:26.75	44°45.55'	111°03.85'	10.5	0.1	12	121	5	0.17
161021	16:02:17.16	44°49.35'	110°54.37'	8.2	2.3W	28	70	6	0.17
161021	18:14:26.23	44°34.53'	110°44.38'	7.9	0.5	11	144	8	0.19
161022	01:00:57.44	44°48.59'	110°54.62'	6.8	0.5	14	193	5	0.17
161022	16:38:42.98	44°48.53'	110°54.31'	7.5	0.6	13	194	5	0.17
161022	17:18:33.16	44°48.52'	110°54.05'	6.7	0.4W	11	197	5	0.18
161022	17:35:42.69	44°48.46'	110°54.58'	6.9	1.3W	18	185	5	0.20
161023	05:32:41.02	44°24.41'	110°55.39'	7.5	2.0W	27	146	9	0.21
161023	06:13:26.09	44°24.59'	110°55.21'	7.5	0.9	18	145	8	0.24
161023	09:55:26.63	44°44.62'	111°10.19'	11.7	0.0	10	119	2	0.21
161023	20:48:37.05	44°36.67'	110°22.86'	4.6	2.0W	21	66	5	0.17
161023	20:49:05.24	44°36.65'	110°23.34'	2.0	2.0W	20	64	5	0.14
161023	20:49:13.71	44°36.23'	110°25.87'	2.1	2.2	9	176	5	0.17
161023	20:56:11.03	44°36.75'	110°23.21'	4.4	1.7W	15	86	5	0.13
161023	20:56:38.18	44°36.54'	110°22.93'	4.6	1.9W	14	113	5	0.08
161023	20:57:07.44	44°36.16'	110°25.63'	2.4	0.2	6	179	5	0.14
161023	20:57:37.58	44°36.14'	110°24.40'	3.5	1.8W	12	143	4	0.22
161023	20:58:52.22	44°36.70'	110°22.35'	3.9	1.0	10	245	6	0.13
161023	21:01:18.53	44°36.96'	110°22.04'	2.1	1.6W	10	190	6	0.23
161023	21:01:36.89	44°35.71'	110°26.12'	2.1	0.7	9	191	4	0.10
161023	21:01:45.86	44°36.03'	110°25.54'	2.0	0.2	9	176	4	0.14
161023	21:02:02.67	44°36.00'	110°26.28'	2.0	0.4	8	165	5	0.13
161023	21:02:38.26	44°36.62'	110°23.01'	3.3	1.6W	13	179	5	0.18
161023	21:03:10.94	44°36.71'	110°21.72'	3.8	1.8W	13	191	6	0.19
161023	21:05:14.20	44°36.44'	110°23.12'	4.3	1.9W	11	129	5	0.08
161023	21:13:16.78	44°35.80'	110°25.77'	2.6	-0.2	6	183	4	0.08
161023	21:13:31.47	44°36.14'	110°25.37'	2.0	0.2	12	182	5	0.10
161023	21:44:28.44	44°36.26'	110°24.36'	4.1	0.3	13	190	4	0.16
161024	04:12:28.97	44°45.63'	111°13.02'	10.1	0.6	15	97	2	0.18
161024	04:41:18.17	44°47.42'	110°55.70'	6.1	1.6W	19	163	6	0.15
161025	11:54:50.90	44°50.74'	111°00.38'	6.9	1.3W	19	204	10	0.18
161026	16:36:57.53	44°37.61'	110°40.36'	4.9	0.8	11	137	3	0.19
161027	02:40:08.25	44°14.35'	110°47.27'	4.4	0.6	11	108	4	0.22
161027	02:40:34.28	44°14.58'	110°46.58'	4.4	0.2	8	112	4	0.23
161027	05:56:59.10	44°48.48'	111°05.97'	9.1	0.0	15	150	8	0.13
161027	17:33:38.97	44°43.69'	111°07.12'	12.4	0.6W	12	108	7	0.12

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2016

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161028	23:03:06.28	44°50.86'	111°26.94'	14.0	0.5	7	188	2	0.09
161029	03:17:05.50	44°45.51'	111°08.60'	6.5	0.7W	12	91	4	0.16
161029	03:17:05.64	44°44.93'	111°08.35'	4.8	0.1	13	113	5	0.14
161029	04:17:11.06	44°46.89'	110°59.67'	7.9	0.2	14	148	3	0.17
161029	07:15:55.04	44°42.49'	111°00.08'	8.1	0.2	16	73	5	0.17
161029	17:49:37.24	44°45.82'	111°00.70'	6.9	1.5W	24	68	1	0.20
161029	17:53:37.10	44°45.42'	111°00.63'	5.1	0.5	15	145	0	0.17
161029	20:27:21.60	44°42.03'	110°02.12'	2.0	1.8	6	175	10	0.05
161030	15:49:11.90	44°46.22'	111°06.23'	9.3	-0.2	8	119	3	0.08
161030	18:42:35.52	44°42.12'	110°00.11'	15.5	1.7	13	152	7	0.22
161030	20:09:08.56	44°45.60'	110°58.79'	5.3	-0.4	7	164	2	0.08
161030	20:16:45.71	44°46.22'	111°00.59'	9.2	0.9W	13	136	1	0.11
161031	15:55:09.92	44°22.21'	110°37.54'	5.0	1.5	13	107	5	0.17
161101	10:33:25.79	44°45.60'	111°00.52'	5.4	0.8	19	128	0	0.13
161101	15:25:50.00	44°45.55'	110°58.53'	8.7	0.3	9	160	2	0.15
161101	15:25:57.30	44°45.71'	110°58.53'	8.5	0.5	9	166	2	0.13
161101	23:32:50.47	44°48.43'	110°57.51'	4.7	0.7	15	177	7	0.16
161102	17:26:45.85	44°46.36'	111°00.62'	9.8	0.9W	12	139	2	0.10
161102	18:46:53.69	44°46.30'	111°00.63'	9.4	1.2W	13	138	1	0.09
161102	19:05:58.92	44°46.25'	111°00.55'	9.0	0.7W	13	138	1	0.17
161102	19:06:05.23	44°46.50'	111°01.14'	8.4	0.1	9	183	2	0.17
161102	19:06:50.70	44°45.72'	111°00.92'	8.6	0.0	12	171	1	0.18
161102	19:12:53.48	44°46.35'	111°00.47'	8.9	0.8W	14	138	1	0.16
161102	19:23:29.00	44°46.51'	111°00.10'	8.8	1.1W	17	141	2	0.15
161102	19:33:35.36	44°46.16'	111°00.72'	8.5	0.6W	10	136	1	0.18
161102	19:56:12.65	44°46.32'	111°00.53'	8.8	0.2	13	138	1	0.17
161102	20:48:31.82	44°46.05'	110°59.97'	8.6	1.3W	19	135	1	0.17
161102	21:04:44.61	44°46.16'	110°59.95'	8.0	-0.3	9	137	1	0.13
161103	19:50:18.27	44°40.20'	110°00.49'	13.3	1.2	12	172	10	0.24
161103	20:22:41.10	44°48.34'	111°03.31'	7.0	0.6W	14	159	4	0.16
161105	14:25:01.87	44°42.38'	111°00.13'	7.7	1.1W	18	56	5	0.18
161105	14:37:52.74	44°42.33'	111°00.18'	7.7	1.2W	19	56	5	0.16
161106	19:57:35.81	44°37.03'	110°46.61'	2.1	0.7	11	172	6	0.22
161106	19:59:33.38	44°36.75'	110°46.34'	2.9	1.0W	12	134	6	0.14
161106	20:06:09.23	44°35.97'	110°46.31'	2.6	1.0W	11	148	6	0.10
161106	20:30:54.35	44°35.77'	110°46.16'	4.6	1.4	11	209	7	0.14
161108	21:11:38.46	44°44.90'	111°07.92'	10.7	0.3	11	97	5	0.18
161108	23:09:51.35	44°50.38'	110°58.66'	5.4	0.3	13	204	9	0.17
161108	23:13:02.95	44°43.30'	111°04.23'	7.5	0.7	16	81	7	0.18
161109	18:02:26.05	44°41.90'	111°02.35'	6.7	0.9	16	83	7	0.21
161110	05:38:41.98	44°27.18'	111°00.73'	9.4	0.8W	11	132	18	0.13
161110	17:06:36.32	44°46.92'	111°07.57'	8.8	1.0W	15	74	2	0.16
161111	00:10:11.11	44°44.36'	111°14.44'	11.2	-0.1	13	202	3	0.18
161111	05:41:13.49	44°42.21'	110°47.89'	2.4	0.9W	8	123	8	0.11
161111	23:47:04.40	44°05.55'	110°27.74'	9.1*	1.1	13	170	19	0.10
161112	03:38:36.00	44°38.69'	110°01.77'	8.3	1.7	10	175	13	0.09
161113	16:10:25.54	44°28.35'	110°51.18'	5.9*	1.0	9	110	16	0.11
161114	01:55:53.15	44°14.14'	110°49.52'	0.9	1.8	7	121	4	0.22

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2016

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161114	01:57:31.68	44°15.18’	110°49.89’	3.2	1.5	7	146	3	0.21
161114	06:47:31.43	44°46.64’	110°59.34’	3.3	0.4	5	183	2	0.05
161115	00:33:10.31	44°47.45’	110°30.53’	5.0	0.9W	12	197	9	0.15
161115	09:52:55.10	44°39.16’	110°27.28’	2.1	1.4W	17	119	8	0.18
161115	09:56:16.96	44°39.56’	110°26.29’	2.3	1.2W	13	204	8	0.15
161115	10:24:37.98	44°45.68’	110°32.58’	2.1	0.6	9	258	5	0.09
161115	10:25:01.84	44°47.01’	110°30.96’	5.4	1.7W	14	223	7	0.13
161115	23:48:19.73	44°19.89’	110°51.11’	11.2	2.5W	24	84	8	0.21
161116	02:03:32.87	44°39.64’	110°28.84’	2.2	0.7	6	171	6	0.17
161116	10:22:39.45	44°46.59’	111°07.60’	7.6	0.6W	14	89	3	0.20
161117	06:08:32.96	44°21.23’	110°39.84’	4.3	1.5W	18	79	8	0.25
161117	06:11:58.16	44°44.95’	111°05.74’	9.9	0.6	9	89	5	0.10
161117	06:46:49.94	44°20.98’	110°39.77’	6.0	2.2W	23	62	9	0.11
161117	06:56:28.15	44°21.04’	110°39.45’	6.8	1.7	17	76	8	0.16
161117	14:52:41.29	44°46.20’	111°05.88’	7.4	1.0	14	95	3	0.16
161118	00:16:40.21	44°40.88’	110°30.69’	2.1	0.6	11	232	3	0.12
161118	01:41:29.80	44°45.27’	111°07.52’	9.6	0.8	11	87	5	0.19
161120	07:28:47.65	44°46.35’	111°05.93’	7.7	0.2	12	112	3	0.11
161120	22:30:32.89	44°47.29’	110°30.43’	4.1	1.2W	14	250	8	0.08
161121	08:13:59.71	44°48.22’	110°29.22’	2.5	2.6W	19	140	10	0.17
161122	02:33:10.96	44°46.25’	111°04.86’	9.7	0.7W	13	107	6	0.14
161123	07:22:56.69	44°46.13’	111°12.86’	12.1	1.2	15	137	2	0.20
161123	23:42:48.47	44°21.19’	110°40.05’	3.8*	1.2	16	80	11	0.23
161124	13:32:33.51	44°21.16’	110°39.52’	6.8	1.1W	11	79	10	0.17
161124	20:01:03.95	44°20.87’	110°39.33’	5.9	1.5	8	143	10	0.11
161124	20:01:49.55	44°22.27’	110°40.61’	2.1	1.1	9	160	8	0.27
161124	20:05:07.87	44°21.22’	110°39.90’	3.9	1.1	7	164	8	0.08
161124	20:09:46.47	44°21.23’	110°39.94’	4.5*	1.1	6	99	11	0.03
161125	00:18:07.77	44°21.26’	110°39.74’	4.1	1.1	15	87	8	0.09
161125	00:18:17.42	44°21.21’	110°39.42’	4.3	1.6	12	152	8	0.13
161125	00:29:33.08	44°20.74’	110°39.21’	7.2	1.8W	17	117	8	0.12
161125	00:29:33.30	44°21.00’	110°39.46’	3.5	1.5W	14	78	8	0.14
161125	01:22:49.88	44°21.17’	110°39.76’	2.1	1.2	8	166	8	0.15
161125	01:24:41.47	44°22.77’	110°32.51’	19.1	1.1	8	115	1	0.14
161125	01:25:00.04	44°20.92’	110°39.28’	2.4	0.8	7	173	8	0.12
161125	01:57:24.56	44°47.19’	111°06.11’	12.0	0.7W	13	108	1	0.10
161125	02:00:42.06	44°21.26’	110°39.61’	4.0	2.1W	20	79	8	0.13
161125	02:01:49.00	44°21.35’	110°39.91’	2.1	0.7	12	104	8	0.16
161125	02:49:28.36	44°21.30’	110°39.57’	4.2	2.5W	24	62	8	0.12
161125	02:59:45.72	44°21.25’	110°39.62’	4.0	2.4W	16	79	8	0.13
161125	03:42:34.84	44°21.24’	110°39.84’	3.7	1.0W	8	164	8	0.07
161125	03:58:10.69	44°21.39’	110°39.94’	2.0	1.3	9	161	8	0.08
161125	04:01:08.80	44°21.42’	110°39.12’	5.5	0.6	16	106	7	0.13
161125	05:10:52.15	44°21.35’	110°39.74’	3.9	2.5W	19	79	8	0.11
161125	05:13:03.79	44°21.20’	110°39.60’	2.0	1.4	7	166	8	0.10
161125	05:13:11.85	44°21.31’	110°39.50’	4.6	1.0	8	169	8	0.13
161125	05:19:04.66	44°21.59’	110°40.56’	1.9*	1.6	7	96	11	0.39

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2016

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161125	05:24:35.43	44°21.10'	110°39.73'	2.0*	1.4	6	101	11	0.05
161125	05:30:24.11	44°20.95'	110°39.53'	3.1	1.4	11	78	10	0.18
161125	05:47:51.30	44°20.96'	110°39.24'	3.3	2.9W	21	61	8	0.10
161125	05:50:33.09	44°21.32'	110°39.61'	3.5	0.9	18	79	8	0.11
161125	05:50:52.04	44°21.20'	110°39.78'	2.4	--	7	161	8	0.09
161125	05:52:30.51	44°20.85'	110°39.58'	2.0	2.2W	13	110	9	0.31
161125	05:53:16.67	44°21.92'	110°40.30'	3.1	0.9	9	110	8	0.10
161125	05:53:49.85	44°21.28'	110°39.60'	4.4	1.6	11	165	8	0.10
161125	05:59:23.67	44°20.00'	110°38.47'	8.2	1.4	8	82	9	0.11
161125	05:59:50.14	44°21.90'	110°39.24'	4.7	1.1	10	206	7	0.11
161125	05:59:58.76	44°21.18'	110°39.57'	3.1	1.6	7	166	8	0.11
161125	06:00:22.10	44°21.61'	110°40.06'	4.2	1.9W	14	88	8	0.10
161125	06:00:40.50	44°21.42'	110°39.91'	2.0	1.6	11	147	8	0.16
161125	06:14:47.07	44°21.29'	110°39.66'	4.4	1.5W	11	145	8	0.11
161125	06:15:18.19	44°21.21'	110°39.48'	3.6	1.2	9	166	8	0.14
161125	06:15:32.14	44°21.11'	110°39.61'	3.8	1.8W	7	168	8	0.09
161125	06:16:36.71	44°21.78'	110°40.65'	1.9*	0.7	6	185	11	0.30
161125	06:19:35.54	44°21.03'	110°38.80'	5.5*	0.9	5	210	11	0.06
161125	06:24:06.75	44°21.06'	110°39.17'	5.5	1.0	5	206	11	0.05
161125	06:31:07.79	44°21.81'	110°39.71'	2.9	1.2	6	194	10	0.08
161125	06:31:30.70	44°20.81'	110°36.11'	1.9	1.4	7	103	6	0.18
161125	06:36:43.23	44°21.03'	110°39.27'	6.8	1.0	9	114	10	0.09
161125	06:53:54.02	44°21.38'	110°39.51'	4.2	0.9W	17	105	8	0.13
161125	06:54:28.54	44°21.48'	110°39.66'	4.5	1.2W	16	104	8	0.09
161125	06:54:41.10	44°21.22'	110°39.46'	4.1	1.3W	10	151	8	0.07
161125	06:55:02.03	44°21.35'	110°39.64'	2.1	0.9W	9	149	8	0.10
161125	06:59:48.23	44°21.91'	110°39.78'	4.3	2.0W	18	79	8	0.09
161125	07:02:08.47	44°21.58'	110°39.77'	4.5	1.4W	15	103	8	0.09
161125	07:07:28.91	44°21.79'	110°40.11'	1.9	1.4	12	102	8	0.25
161125	07:07:57.09	44°21.56'	110°39.65'	3.7	0.9	12	147	8	0.10
161125	07:08:08.94	44°20.94'	110°39.27'	2.2	--	7	173	8	0.09
161125	07:09:04.19	44°21.50'	110°39.80'	2.0	--	8	148	8	0.12
161125	07:09:24.58	44°21.51'	110°39.18'	2.4	1.1	8	158	7	0.14
161125	07:11:06.42	44°21.57'	110°40.12'	2.0	1.2	8	157	8	0.08
161125	07:19:19.76	44°21.40'	110°39.78'	3.3	1.1	9	162	8	0.09
161125	07:31:00.01	44°21.12'	110°39.59'	1.8	--	7	168	8	0.03
161125	07:31:09.94	44°22.19'	110°40.45'	5.5	1.3	8	147	8	0.12
161125	08:32:15.15	44°21.59'	110°39.83'	5.5	1.6W	16	80	8	0.11
161125	09:32:26.41	44°21.26'	110°40.25'	2.1	1.2	9	162	9	0.28
161125	23:05:32.40	44°21.11'	110°39.16'	5.4	0.5	5	170	10	0.13
161126	02:36:10.41	44°20.36'	110°38.77'	5.5*	1.1	5	217	12	0.04
161126	14:38:50.87	44°45.59'	111°14.29'	10.2	0.5	11	116	3	0.19
161126	14:39:07.70	44°46.47'	111°13.29'	9.6	0.3	10	99	3	0.13
161126	14:53:50.11	44°39.12'	110°25.87'	3.7	2.9W	32	106	9	0.15
161126	14:55:41.44	44°39.11'	110°25.41'	4.6	2.3W	15	184	10	0.12
161126	14:58:09.39	44°39.31'	110°25.32'	6.3	1.8W	18	204	10	0.12
161126	16:56:39.68	44°39.21'	110°25.42'	4.7	1.9W	12	203	10	0.09
161126	21:49:38.69	44°45.46'	110°40.25'	23.1	1.2W	9	210	5	0.19

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161126	22:01:58.59	44°43.55'	110°45.29'	8.5	1.3W	10	179	6	0.06
161127	06:31:15.32	44°43.95'	110°46.09'	5.2	1.6W	17	140	5	0.15
161127	07:31:17.85	44°44.30'	111°13.69'	9.4	0.9	12	107	3	0.10
161127	07:37:50.79	44°52.04'	111°29.48'	6.3	1.5W	15	140	6	0.08
161128	12:42:59.86	44°18.58'	110°31.52'	2.7	1.5	8	120	5	0.25
161129	03:52:23.33	44°19.34'	110°30.35'	1.9	1.9	9	120	7	0.15
161129	06:02:22.36	44°38.60'	110°44.74'	5.6	1.0W	7	219	9	0.08
161129	15:48:02.62	44°43.92'	110°46.12'	4.3	0.6	12	149	7	0.14
161129	21:45:06.90	44°45.19'	110°58.48'	7.8	2.0W	17	104	3	0.16
161130	00:55:35.23	44°19.60'	110°31.38'	2.1	1.2	9	115	7	0.14
161130	18:30:50.92	44°44.18'	110°46.05'	9.0	0.8W	8	150	5	0.08
161130	18:31:07.49	44°43.83'	110°46.23'	5.9	-0.3	7	138	5	0.07
161201	15:09:45.12	44°38.30'	110°19.94'	5.5	1.7W	8	122	10	0.06
161202	07:38:39.41	44°44.06'	110°45.98'	6.6	1.0W	8	153	7	0.07
161203	07:15:30.16	44°46.41'	110°59.28'	9.7	0.3	7	218	2	0.09
161203	07:15:40.70	44°45.03'	110°56.81'	2.8	0.2	5	139	5	0.04
161203	07:16:03.77	44°44.89'	110°58.32'	4.9	0.1	5	210	3	0.02
161203	09:50:08.81	44°45.12'	110°56.90'	2.0	0.4	7	179	5	0.04
161203	10:46:14.65	44°43.44'	110°46.44'	2.4	0.3	10	127	6	0.09
161206	13:10:23.73	44°42.20'	111°06.96'	4.8	0.1	8	104	8	0.12
161206	13:32:48.06	44°43.47'	111°06.94'	9.9	0.5W	14	129	7	0.15
161208	00:09:15.54	44°37.05'	110°43.67'	7.0	1.3	7	139	7	0.04
161208	18:47:03.78	44°30.10'	110°34.85'	4.3	1.9	9	152	7	0.09
161208	18:52:49.71	44°30.36'	110°34.69'	2.2	1.3	16	100	8	0.11
161208	18:53:22.03	44°30.22'	110°34.58'	4.7	0.8	10	153	7	0.11
161208	18:55:44.67	44°28.27'	110°30.42'	2.5	0.6	7	160	7	0.11
161208	18:56:15.60	44°29.81'	110°33.79'	5.9	0.6	10	172	7	0.15
161208	19:10:15.21	44°30.40'	110°34.96'	2.2	2.0	17	99	8	0.11
161208	19:34:41.23	44°30.20'	110°34.52'	2.0	0.8	10	100	7	0.16
161208	19:45:12.03	44°30.29'	110°34.88'	1.8	1.9W	11	100	8	0.07
161208	20:29:21.27	44°30.19'	110°34.23'	2.0	1.4	11	143	7	0.12
161209	01:08:44.57	44°13.32'	110°25.21'	4.2	0.9	10	201	10	0.23
161211	07:16:54.56	44°22.43'	110°47.03'	2.2*	1.1	11	99	12	0.05
161211	12:13:30.48	44°40.69'	110°27.25'	5.0	0.9	10	117	6	0.07
161211	15:47:23.15	44°35.23'	110°25.81'	4.6	1.5W	9	158	3	0.09
161212	09:09:35.04	44°44.31'	110°57.82'	6.9	0.6	8	151	4	0.12
161212	15:53:57.38	44°23.48'	110°51.92'	3.1*	1.3	9	116	14	0.11
161212	23:05:59.11	44°44.43'	110°45.87'	7.4	2.2W	21	149	5	0.14
161213	05:49:55.47	44°44.50'	110°46.14'	6.3	2.2W	18	148	5	0.14
161213	06:09:47.81	44°44.16'	110°45.75'	6.5	1.0W	13	152	5	0.15
161213	06:09:47.95	44°44.00'	110°46.16'	4.8	1.0W	13	140	5	0.13
161213	06:26:55.99	44°43.93'	110°46.44'	2.1	0.3	10	140	6	0.12
161213	06:56:57.30	44°27.12'	110°29.69'	2.4	1.4	9	179	8	0.15
161213	06:57:46.47	44°28.75'	110°32.97'	3.9	1.6W	14	95	6	0.11
161213	06:58:19.21	44°28.70'	110°33.08'	4.7	1.2	10	120	5	0.10
161213	20:59:26.23	44°43.77'	110°46.07'	4.9	1.0W	10	137	5	0.17
161215	04:25:28.80	44°34.68'	110°43.79'	5.8	0.6W	14	151	8	0.13

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
161215	11:23:55.83	44º35.44’	110º44.05’	5.6	0.2W	9	147	7	0.15
161215	11:24:10.35	44º36.03’	110º44.42’	2.2	0.2W	8	144	8	0.10
161216	12:36:36.36	44º45.09’	111º13.03’	10.1	0.2	7	245	2	0.10
161216	14:13:22.19	44º46.18’	111º22.76’	15.2	0.4	6	139	8	0.10
161217	17:39:08.79	44º43.08’	111º07.00’	13.1	0.8	13	79	7	0.13
161220	21:07:19.21	44º20.94’	110º39.45’	4.1	1.6W	12	154	8	0.11
161221	09:32:18.59	44º43.21’	110º38.11’	4.9	1.2W	14	145	4	0.11
161222	03:28:46.08	44º27.28’	110º34.07’	5.4	0.5	6	236	3	0.08
161222	16:56:17.34	44º44.16’	110º46.12’	4.5	1.7W	14	145	5	0.13
161223	01:52:01.58	44º45.35’	110º45.86’	3.3	1.1W	9	185	6	0.10
161223	04:34:09.09	44º43.72’	110º46.11’	4.7	1.4W	13	136	5	0.16
161225	07:13:56.27	44º39.15’	110º25.80’	4.5	1.8W	12	199	9	0.08
161225	11:49:18.56	44º42.29’	111º00.36’	8.4	1.2W	13	78	5	0.14
161226	07:59:34.23	44º14.55’	110º46.22’	2.4	1.6	10	115	4	0.08
161226	08:15:30.02	44º12.86’	110º45.29’	1.9	1.6	14	107	7	0.15
161226	08:27:47.31	44º13.93’	110º46.16’	4.6	0.8	13	116	5	0.27
161226	23:48:52.28	44º38.10’	110º20.73’	3.3	1.5	15	126	9	0.13
161227	13:25:42.90	44º40.74’	110º27.81’	5.1	2.0W	17	109	5	0.16
161229	06:52:39.10	44º45.91’	110º46.55’	4.5	1.5W	14	170	6	0.10
161230	01:09:12.79	44º44.12’	111º03.95’	8.8	0.3	9	85	5	0.11
161230	04:40:59.57	44º09.65’	110º19.57’	11.3*	0.7	11	194	26	0.18
161231	00:49:59.42	44º13.03’	110º45.32’	2.1	1.6	9	138	7	0.17
161231	09:59:28.37	44º35.22’	110º42.41’	6.3	0.6	12	156	5	0.13

number of earthquakes = 308
* indicates poor depth control
W indicates Wood-Anderson data used for magnitude calculation

Table 3
UNIVERSITY OF UTAH YELLOWSTONE SEISMIC NETWORK
Operating Seismograph Stations
December 31, 2016

UURSN Code	Location	SEED Station	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
B206*	Canyon206bwy2008, Yellowstone, WY	B206	EH[ZEN]	3	PB	44° 46.66′	110° 30.70′	2400	IESE-S2	Q330	Digital	PBO
B207*	Madisn207bwy2007, Yellowstone, WY	B207	EH[ZEN]	3	PB	44° 37.14′	110° 50.91′	2182	IESE-S2	Q330	Digital	PBO
B208*	Lakejn208bwy2008, Yellowstone, WY	B208	EH[ZEN]	3	PB	44° 33.61′	110° 24.09′	2406	IESE-S2	Q330	Digital	PBO
B944*	Grantt944bwy2008, Yellowstone, WY	B944	EH[ZEN]	3	PB	44° 23.38′	110° 32.63′	2365	IESE-S2	Q330	Digital	PBO
B945*	Panthr944swy2008, Yellowstone, WY	B945	EH[ZEN]	3	PB	44° 53.64′	110° 44.65′	2249	IESE-S2	Q330	Digital	PBO
B950*	Norris950bwy2013, Yellowstone, WY	B950	EH[ZEN]	3	PB	44° 42.77′	110° 40.71′	2328	IESE-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	STS-2	Q330	Digital	NSF
IMW	Indian Meadows, WY	IMW	BH[ZEN]	3	IW	43° 53.58′	110° 56.58′	2670	3ESP	RT-130	Digital	ANSS
LKW*	Lake, WY	LKWY	BH[ZEN]	3	US	44° 33.91′	110° 24.00′	2424	STS-2	Q330	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
MOOW*	Moose Ponds, WY	MOOW	BH[ZEN]	3	IW	43° 44.92′	110° 44.69′	2128	3ESP	RT-130	Digital	ANSS
QLMZ*	Earthquake Lake, MT	QLMT	EHZ	1	MB	44° 49.84′	111° 25.80′	2064	L4C	-	Analog	MBMT
REDW*	Red-Top Meadows, WY	REDW	BH[ZEN]	3	IW	43° 21.74′	110° 51.18′	2322	3ESP	RT-130	Digital	ANSS
SNOW*	Snow King Mountain, WY	SNOW	BH[ZEN]	3	IW	43° 27.75′	110° 45.31′	2390	3ESP	RT-130	Digital	ANSS
TPAW*	Teton Pass, WY	TPAW	BH[ZEN]	3	IW	43° 29.41′	110° 57.04′	2512	3ESP	RT-130	Digital	ANSS
TPMZ*	Teepe Creek, MT	TPMT	EHZ	1	MB	44° 43.79′	111° 39.94′	2518	L4C	-	Analog	MBMT
YDC	Denny Creek, MT	YDC	EHZ	1	WY	44° 42.51′	111° 14.60′	2025	L4C	PSN	Analog	USGS
YEE	East Entrance (YNP), WY	YEE	HH[ZEN]	3	WY	44° 29.12′	109° 53.81′	2270	Compact	Taurus	Digital	USGS
YFT	Old Faithful (YNP), WY	YFT	HH[ZEN]	3	WY	44° 27.05′	110° 50.24′	2292	Compact	Taurus	Digital	USGS
			EN[ZEN]	3					Titan			
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	PSN	Analog	USGS
			HH[ZEN]	3					40T	ANSS-130	Digital	
			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	Q330	Digital	
			EN[ZEN]	3					Titan			

UURSN Code	Location	SEED Station	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
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			
YHR	Hawk's Rest, WY	YHR	HH[ZEN]	3	WY	44° 06.36′	110° 04.90′	2976	Trillium 120	Q330	Digital	USGS
YJCZ	Joseph′s Coat (YNP), WY	YJC	EH[ZEN]	3	WY	44° 45.33′	110° 20.95′	2684	S13	PSN	Analog	USGS
YLAZ	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	Q330	Digital	
			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	ANSS-130	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	Q330	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	Q330	Digital	
			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	Q330	Digital	
			EN[ZEN]	3					Titan			
YUF	Upper Falls (YNP), WY	YUF	HH[ZEN]	3	WY	44° 42.76′	110° 30.71′	2394	Compact	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: 147 data channels from 46 stations were being recorded at the end of this report period

EXPLANATION OF TABLE

UURSN Code: Station code formerly used in routine processing. Owing to software limitations, the station code may not be the same 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>> 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>> 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.

Sensor	**Description**
L4, L4C	Mark Products L4 or L4C short-period seismometer
S13, 18300	Geotech S13 or 18300 short-period seismometer
Ranger	Kinemetrics 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	Kinemetrics FBA-23 accelerometer
EpiSensor	Kinemetrics 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

Digitizer	**Description**
K2	Kinemetrics Altus Series K2 (19-bit resolution field digitizer)
Etna	Kinemetrics 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	Kinemetrics Basalt (24-bit resolution field digitizer)
Taurus	Nanometrics Taurus (24-bit resolution field digitizer)

Telemetry	**Description**
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
NSF	National Science Foundation

NETWORK CHANGES DURING OCTOBER 1–DECEMBER 31, 2016

None