EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

October 1 – December 31, 2015

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 from October 1st through October 31st and MST from November 1st through December 31st.

- 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, 2015

by J. Farrell, R. Burlacu, P. M. Roberson, J. M. Hale, G. Bobetich, and A. Mokhtar
with contributions by
K. D. Koper, R. B. Smith, J. C. Pechmann, and K. L. Pankow

University of Utah Seismograph Stations
115 South 1460 East, Room 107 FASB
Salt Lake City, UT 84112-0102
Tele: (801) 581-6274 FAX: (801) 585-5585
email: *jamie.farrell@utah.edu*
URL: *http://www.seis.utah.edu* (aka *quake.utah.edu*)

During the three-month period October 1 through December 31, 2015, the University of Utah Seismograph Stations (UUSS) located 276 earthquakes within the Yellowstone region (Figure 1). The total includes 13 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 2.8 earthquake on November 24th. One earthquake was 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 2015). 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/EQCENTER/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

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 34 earthquakes ($-0.2 \leq M \leq 2.1$) occurred about 7 miles NNW of West Yellowstone, MT from October 12th – October 18th.
B. A swarm of 86 earthquakes ($-0.3 \leq M \leq 2.2$) occurred about 6.5 miles N of West Yellowstone, MT from November 7th – November 10th.
C. A swarm of 15 earthquakes ($-0.3 \leq M \leq 0.9$) occurred about 10 miles NW of Old Faithful, YNP on November 25th.

These swarms are labeled in Figure 1.

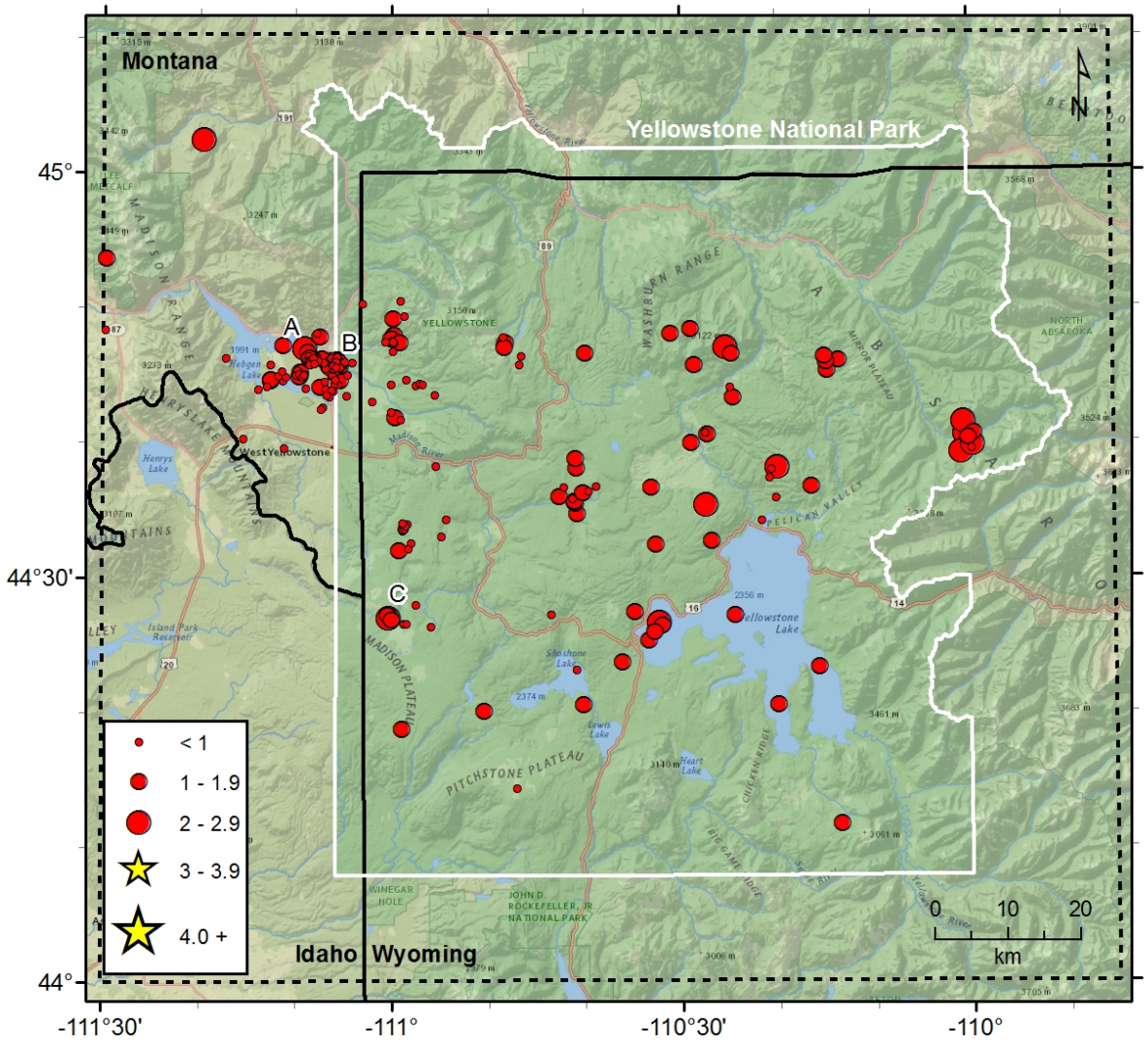

Figure 1. Earthquake epicenters located by the University of Utah Seismograph Stations, October 1, 2015 through December 31, 2015. Earthquakes of magnitude 3.0 and larger are depicted as yellow stars. Earthquake swarms labeled A-C are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2015 to December 31, 2015

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
May 18	17:00 MDT 23:00 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44º 35.13′	110º 22.54′	M_L 3.0
October 13	06:23 MDT 12:23 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44º27.02’	111º00.35’	M_L 2.4

† 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/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_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, 2015

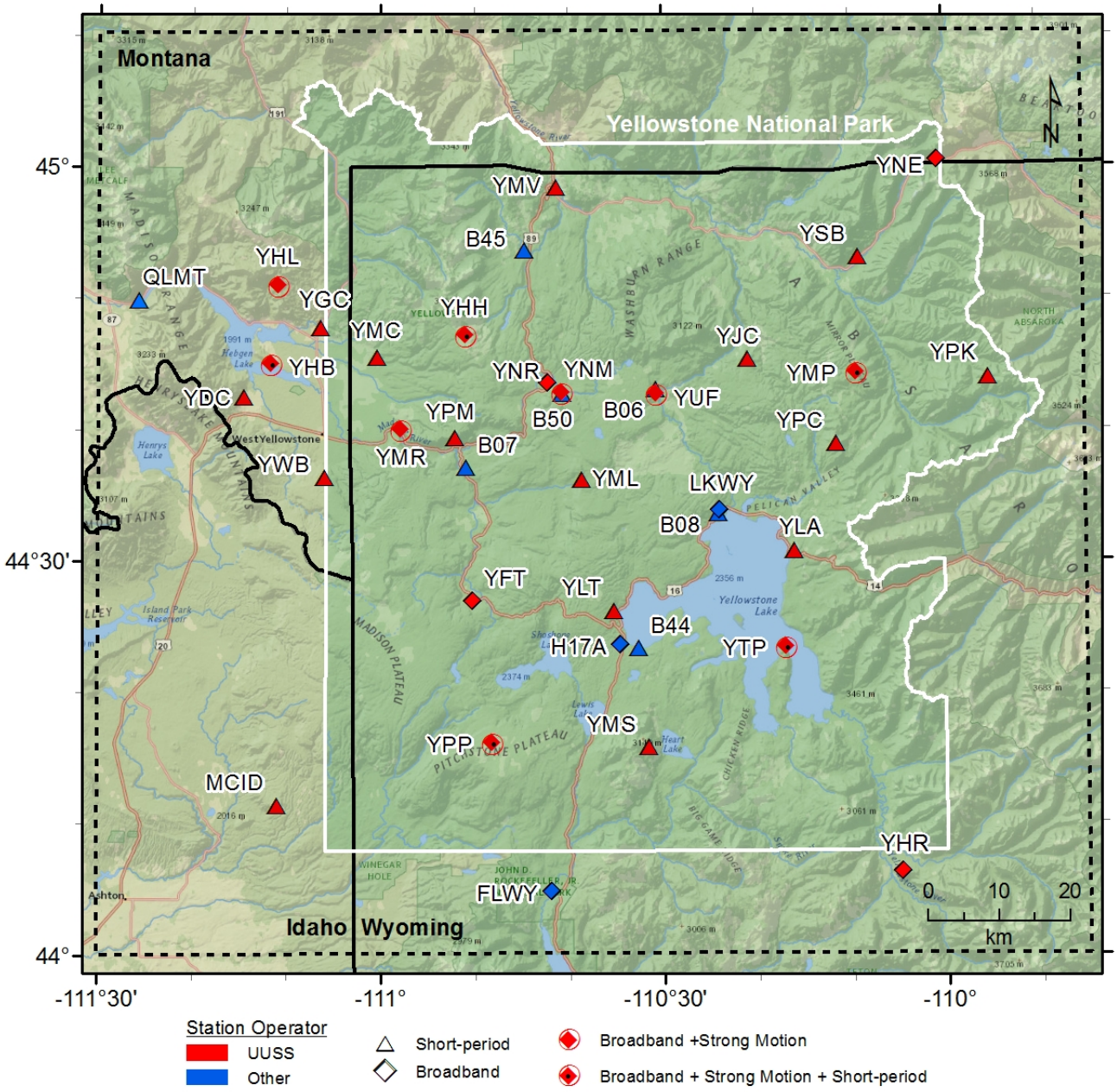

Figure 2

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2015

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151001	09:36:05.25	44º48.40’	110º28.95’	5.6	1.6W	13	107	10	0.14
151004	10:51:48.56	44º34.71’	110º40.83’	5.7	1.7W	15	127	4	0.16
151004	15:48:19.55	44º53.60’	111º29.78’	13.6	1.0	17	107	9	0.13
151004	16:56:22.06	44º36.73’	110º16.53’	5.1	1.8W	13	113	8	0.09
151005	05:27:41.08	44º37.42’	110º20.79’	3.0*	0.8	7	139	13	0.10
151006	04:29:09.93	44º50.49’	110º59.07’	7.9	0.2	8	205	9	0.08
151007	16:26:23.69	44º46.78’	110º59.94’	10.1	0.4	9	162	2	0.12
151007	19:00:31.39	44º44.82’	111º05.97’	9.3	0.3	10	105	8	0.08
151009	13:43:05.50	44º41.88’	110º59.72’	7.3	1.0W	18	55	4	0.15
151010	05:02:48.74	44º45.77’	110º28.64’	5.1	1.6W	11	202	6	0.12
151011	12:32:58.41	45º02.45’	111º19.67’	1.9*	2.0W	11	194	24	0.26
151012	20:29:41.57	44º44.91’	111º09.37’	5.2	0.3	9	75	3	0.15
151013	04:14:53.80	44º27.21’	110º24.43’	3.6*	1.2	9	112	12	0.11
151013	07:42:17.78	44º45.00’	111º09.52’	9.2	1.5W	17	58	3	0.19
151013	11:26:43.44	44º28.02’	110º57.54’	4.8	0.8W	8	204	10	0.16
151013	11:29:49.96	44º27.24’	111º00.47’	15.9	1.9W	21	122	14	0.14
151013	11:46:57.57	44º26.88’	111º00.14’	8.1	1.1W	14	129	13	0.22
151013	12:23:07.12	44º27.02’	111º00.35’	7.9	2.4W	26	115	14	0.20
151013	13:34:02.47	44º26.63’	110º58.83’	4.5*	0.8W	7	125	12	0.12
151013	20:11:54.36	44º41.75’	110º59.16’	6.8	0.9	8	125	3	0.09
151014	00:24:47.36	44º45.03’	111º09.21’	3.6	-0.1	7	106	3	0.10
151014	00:41:36.18	44º45.12’	111º09.13’	5.8	0.4	9	97	3	0.09
151014	02:47:03.15	44º44.01’	111º08.96’	1.8	0.3	9	87	4	0.07
151014	03:10:38.03	44º46.96’	111º09.06’	13.9	2.1W	23	84	4	0.18
151014	03:16:42.79	44º46.24’	111º08.79’	11.9	0.6	10	102	5	0.06
151014	03:32:26.20	44º46.31’	111º08.55’	11.7	1.0W	17	66	4	0.12
151014	03:35:56.54	44º46.11’	111º08.55’	11.4	0.9W	13	114	4	0.16
151014	03:38:33.16	44º46.11’	111º08.43’	9.3	0.6	10	93	4	0.16
151014	03:41:42.19	44º45.94’	111º08.48’	8.7	0.6W	14	58	4	0.14
151014	03:44:06.76	44º46.41’	111º08.69’	11.9	0.5W	13	69	4	0.08
151014	03:45:16.17	44º46.12’	111º08.63’	11.1	0.1	11	97	4	0.15
151014	03:51:31.57	44º45.81’	111º08.50’	7.8	0.1	9	101	5	0.16
151014	03:58:28.57	44º46.05’	111º08.26’	8.9	0.0	11	105	5	0.17
151014	04:01:23.27	44º46.17’	111º08.65’	11.4	0.8W	12	63	4	0.14
151014	04:15:21.78	44º46.06’	111º07.67’	6.8	0.0	9	108	6	0.15
151014	04:17:59.87	44º42.27’	111º00.11’	7.9	0.4	12	73	5	0.13
151014	04:25:32.72	44º46.27’	111º08.44’	11.8	0.8W	15	64	4	0.14
151014	05:05:02.05	44º46.17’	111º08.47’	12.1	1.1W	17	95	4	0.17
151014	05:08:59.45	44º46.21’	111º08.31’	12.0	1.4W	20	62	4	0.18
151014	05:16:23.91	44º45.78’	111º12.59’	26.2	-0.3	7	170	2	0.20
151014	05:20:51.84	44º46.04’	111º08.61’	11.6	0.1	10	95	4	0.15
151014	05:20:59.05	44º45.82’	111º08.60’	11.9	0.0	9	91	4	0.17
151014	05:23:12.69	44º46.28’	111º08.24’	8.7	-0.2	12	107	5	0.15
151014	05:29:23.22	44º45.98’	111º08.24’	9.1	0.3W	14	89	4	0.20
151014	05:45:05.13	44º46.24’	111º08.55’	12.3	1.1W	14	98	4	0.12

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2015

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151014	05:49:14.86	44º46.71’	111º08.82’	13.3	1.1W	16	77	4	0.18
151014	09:05:35.10	44º45.85’	111º08.10’	8.7	-0.2	8	106	5	0.14
151014	10:23:59.61	44º26.60’	110º58.57’	4.2*	0.6	9	146	11	0.13
151014	12:09:01.85	44º45.35’	111º09.91’	10.0	0.6	12	95	3	0.19
151015	02:49:37.59	44º48.06’	110º31.08’	1.9	1.9W	13	164	9	0.15
151015	03:34:18.56	44º46.26’	111º08.20’	10.6	0.4	11	93	4	0.16
151015	03:39:44.35	44º38.85’	110º41.01’	3.5	1.4W	10	85	6	0.15
151015	04:31:55.20	44º45.02’	111º09.94’	9.4	0.4	12	82	2	0.17
151016	16:50:45.81	44º45.12’	111º09.63’	9.2	0.3	8	83	3	0.17
151016	23:12:47.44	44º35.65’	110º41.15’	7.4	1.7W	25	59	4	0.17
151016	23:12:47.46	44º35.51’	110º40.98’	7.4	1.7W	20	60	4	0.16
151016	23:13:04.00	44º35.83’	110º41.34’	5.2	0.8	9	118	4	0.17
151016	23:18:07.86	44º27.29’	110º43.48’	2.5	0.9	7	128	9	0.08
151016	23:24:45.20	44º38.16’	110º19.98’	3.0	2.0W	10	163	9	0.14
151017	03:46:18.33	44º35.98’	110º42.65’	1.6	1.4	6	129	5	0.18
151017	07:39:12.11	44º45.33’	111º11.41’	14.0	0.1	8	140	1	0.18
151017	10:09:49.28	44º45.25’	111º09.54’	10.8	1.1W	17	59	3	0.14
151017	19:50:28.33	44º39.64’	111º11.20’	10.0	0.8	11	177	10	0.12
151018	02:16:54.40	44º45.43’	111º06.16’	11.4	0.1	16	111	7	0.10
151019	02:51:32.34	44º39.23’	110º00.89’	11.1	2.4W	21	146	11	0.15
151022	10:53:57.72	44º46.44’	110º46.54’	9.5	0.8W	13	204	6	0.10
151022	11:52:18.04	44º36.69’	110º42.23’	5.3	0.7	9	110	5	0.19
151023	17:36:06.63	44º43.56’	111º06.84’	11.9	-0.1	12	141	7	0.11
151023	18:59:07.94	44º43.46’	111º04.76’	10.5	0.7W	17	100	7	0.20
151024	01:42:58.61	44º43.88’	111º06.29’	10.2	0.4	20	92	8	0.13
151025	23:33:19.60	44º45.43’	111º06.14’	8.7	0.4	14	111	7	0.11
151026	05:34:04.15	44º42.50’	111º07.36’	2.2	-0.1	6	201	8	0.03
151028	10:05:49.91	44º40.73’	110º27.46’	5.0	0.6	14	115	6	0.13
151028	18:35:17.69	44º26.03’	110º32.84’	2.0	1.1	7	121	3	0.09
151028	19:20:55.13	44º26.68’	110º32.29’	1.9	2.3	7	131	4	0.12
151028	19:22:38.86	44º25.36’	110º33.44’	-1.2	1.8	5	181	3	0.10
151028	19:33:38.04	44º26.46’	110º32.02’	1.6	1.5W	11	84	4	0.13
151029	03:43:11.46	44º43.82’	111º06.07’	5.4	0.7	9	72	7	0.24
151029	05:00:57.73	44º44.53’	111º06.97’	9.2	0.5W	10	99	6	0.12
151029	10:48:39.87	44º36.42’	110º39.64’	5.9	0.4	10	122	1	0.14
151030	01:05:54.84	44º47.46’	111º00.72’	9.3	0.3	15	154	4	0.09
151030	02:33:50.57	44º32.45’	110º32.71’	4.4*	1.4W	21	69	11	0.16
151031	07:53:32.45	44º20.16’	110º50.48’	4.3	1.1	13	119	8	0.08
151101	17:03:29.93	44º45.33’	111º05.88’	10.3	0.8	15	111	7	0.09
151102	00:44:14.04	44º43.39’	111º06.48’	3.0	0.1	6	176	8	0.06
151103	11:45:14.71	44º23.40’	110º15.75’	10.8	1.3	14	163	2	0.21
151103	13:58:13.24	44º34.26’	110º21.63’	4.4	0.5	13	167	3	0.07
151107	02:04:16.53	44º45.80’	111º05.29’	10.6	0.4	9	118	7	0.14
151107	02:12:13.60	44º45.75’	111º05.73’	11.3	1.2W	15	94	4	0.13
151107	02:16:52.07	44º45.81’	111º06.00’	10.6	1.0W	12	89	4	0.10

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151107	02:18:40.64	44º46.05’	111º05.63’	6.2	0.7	6	141	7	0.21
151107	02:20:06.95	44º46.06’	111º05.86’	12.6	0.1	8	95	3	0.06
151107	02:20:29.59	44º45.80’	111º05.51’	10.5	0.8	11	98	4	0.16
151107	02:21:53.42	44º45.82’	111º05.36’	9.9	0.4	10	118	7	0.17
151107	02:24:54.80	44º45.93’	111º06.13’	12.1	1.5W	15	87	3	0.12
151107	02:30:11.08	44º45.87’	111º05.10’	10.9	0.6	15	106	4	0.15
151107	02:31:10.25	44º46.01’	111º05.61’	11.3	1.2W	17	99	3	0.15
151107	02:49:05.37	44º45.86’	111º05.41’	10.8	0.6	15	101	4	0.16
151107	02:56:35.28	44º45.88’	111º05.77’	10.1	0.3	12	95	4	0.15
151107	03:02:09.02	44º45.83’	111º06.20’	11.7	2.0W	21	57	4	0.12
151107	03:13:08.35	44º45.70’	111º05.40’	9.8	0.2	10	117	7	0.15
151107	03:19:57.99	44º45.78’	111º05.86’	11.3	1.2W	16	91	4	0.14
151107	03:24:12.07	44º45.83’	111º05.94’	10.8	1.5W	19	63	4	0.14
151107	03:25:20.83	44º45.95’	111º05.43’	10.7	0.2	9	119	7	0.15
151107	03:28:48.52	44º46.00’	111º05.56’	11.8	0.9	14	100	3	0.14
151107	03:35:50.98	44º45.72’	111º06.02’	11.1	1.6W	17	88	4	0.15
151107	03:39:51.45	44º45.62’	111º05.39’	10.1	0.1	9	116	7	0.17
151107	03:41:13.47	44º46.15’	111º05.88’	12.0	0.7	16	95	3	0.15
151107	03:58:28.69	44º50.30’	111º03.11’	5.6	0.0	5	191	6	0.01
151107	03:58:45.05	44º45.79’	111º05.49’	8.0	0.5	13	99	4	0.18
151107	04:03:02.42	44º46.18’	111º05.75’	12.2	1.2W	13	98	3	0.09
151107	04:04:48.32	44º46.30’	111º06.35’	11.0	0.4	13	118	8	0.08
151107	04:26:21.14	44º45.81’	111º05.84’	11.3	1.2W	19	92	4	0.16
151107	18:00:10.69	44º45.74’	111º05.89’	10.9	0.9	18	90	4	0.12
151107	18:02:12.90	44º45.89’	111º06.35’	10.9	1.4W	18	82	3	0.17
151107	18:02:31.14	44º45.48’	111º06.03’	10.2	0.7	15	86	4	0.17
151107	18:08:54.18	44º45.87’	111º05.86’	11.9	1.9W	22	55	4	0.15
151107	18:11:03.46	44º46.19’	111º05.48’	11.5	0.6	10	105	3	0.09
151107	18:59:37.72	44º45.81’	111º05.96’	11.5	2.2W	26	56	4	0.18
151107	19:00:49.42	44º45.98’	111º05.53’	10.5	0.1	10	119	7	0.15
151107	19:02:47.11	44º45.97’	111º05.53’	11.8	1.4W	17	100	4	0.16
151107	19:07:39.14	44º46.45’	111º06.24’	12.5	0.9	17	89	2	0.14
151107	19:24:04.22	44º46.00’	111º05.73’	10.5	0.3	10	118	7	0.13
151108	07:03:03.33	44º46.23’	111º05.59’	10.6	0.3	15	104	3	0.12
151108	08:23:26.49	44º45.59’	111º05.91’	11.2	0.3	11	88	4	0.15
151108	08:26:43.50	44º45.83’	111º06.17’	10.9	1.0	16	86	4	0.13
151108	08:32:34.95	44º46.12’	111º06.19’	11.5	0.6	12	87	3	0.13
151108	08:50:30.83	44º45.81’	111º05.48’	10.6	0.4	14	99	4	0.15
151108	08:52:34.86	44º46.00’	111º05.81’	10.9	0.0	8	118	7	0.07
151108	08:57:47.69	44º46.06’	111º05.74’	11.0	0.8	15	98	3	0.14
151108	09:02:42.70	44º45.99’	111º05.54’	11.6	0.1	11	100	3	0.12
151108	09:55:29.69	44º45.74’	111º05.66’	11.2	1.2	17	95	4	0.16
151108	09:59:30.04	44º46.07’	111º05.65’	11.1	0.6	15	100	3	0.15
151108	10:00:23.81	44º46.21’	111º07.33’	13.6	1.9W	19	50	3	0.21
151108	10:06:13.77	44º44.35’	111º05.59’	5.7	0.6	8	96	6	0.13

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2015

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151108	10:10:23.89	44º44.64’	111º05.44’	9.6	1.0	16	87	6	0.17
151108	10:11:40.24	44º45.81’	111º05.58’	9.3	0.7	14	97	4	0.18
151108	10:21:19.48	44º45.74’	111º05.95’	10.8	0.4	14	89	4	0.12
151108	10:24:27.78	44º45.76’	111º05.54’	10.3	0.8	15	97	4	0.15
151108	10:26:42.67	44º45.78’	111º05.00’	10.2	0.7	13	107	4	0.14
151108	10:43:35.30	44º46.02’	111º06.03’	11.9	1.9W	15	54	3	0.10
151108	11:25:18.35	44º46.04’	111º05.07’	11.5	0.3	9	110	4	0.12
151108	11:26:47.84	44º46.08’	111º05.68’	11.1	1.0	16	99	3	0.15
151108	11:33:36.44	44º44.70’	111º05.95’	6.2	0.1	8	82	6	0.12
151108	11:34:03.42	44º46.09’	111º05.83’	10.7	0.3	9	96	3	0.10
151108	11:34:03.94	44º44.73’	111º05.94’	6.3	0.2	8	84	6	0.10
151108	11:34:26.12	44º45.57’	111º05.85’	6.2	-0.2	7	111	4	0.13
151108	11:50:29.97	44º46.24’	111º05.28’	11.0	0.3	9	123	7	0.13
151108	12:42:48.45	44º45.31’	111º05.82’	9.7	0.3	7	200	7	0.07
151108	13:09:30.35	44º46.13’	111º05.83’	10.6	0.7	13	96	3	0.14
151108	13:23:51.95	44º46.25’	111º05.92’	12.1	0.5	17	96	3	0.11
151108	13:28:20.92	44º45.91’	111º05.95’	11.1	0.5	20	91	3	0.12
151108	13:30:25.86	44º46.01’	111º05.27’	10.8	0.2	17	106	4	0.12
151108	13:48:55.61	44º45.95’	111º05.94’	11.4	1.3	29	64	3	0.13
151108	13:52:49.79	44º45.53’	111º06.16’	8.2	0.1	9	120	7	0.10
151108	13:53:32.87	44º46.11’	111º05.96’	11.2	0.7	20	93	3	0.12
151108	13:53:44.85	44º45.67’	111º05.64’	10.5	0.6	13	95	4	0.15
151108	13:54:07.31	44º45.96’	111º06.11’	10.5	0.5	18	88	3	0.14
151108	14:00:14.24	44º45.99’	111º05.85’	10.8	0.8	20	94	3	0.13
151108	14:00:39.56	44º46.04’	111º04.90’	11.1	-0.3	7	181	6	0.13
151108	14:14:47.13	44º45.81’	111º05.77’	10.5	0.4	15	93	4	0.11
151108	14:18:21.04	44º45.63’	111º05.45’	10.8	1.0	15	98	4	0.11
151108	16:07:04.22	44º46.15’	111º05.89’	10.4	0.2	8	202	7	0.09
151108	16:33:34.30	44º45.98’	111º05.84’	11.0	0.8	18	94	3	0.16
151108	18:01:05.01	44º45.72’	111º05.58’	11.1	0.2	8	116	7	0.09
151108	19:20:45.55	44º45.70’	111º06.08’	10.0	-0.1	6	124	8	0.10
151108	23:59:36.76	44º45.52’	111º05.46’	11.3	0.2	13	96	4	0.16
151109	00:21:51.10	44º45.77’	111º06.08’	11.4	1.4W	20	87	4	0.13
151109	00:56:39.23	44º46.00’	111º05.98’	11.7	1.6W	24	55	3	0.14
151109	01:05:24.87	44º46.12’	111º06.02’	12.1	0.6	18	92	3	0.11
151109	01:06:48.73	44º45.21’	111º06.04’	6.2	0.5	8	89	5	0.13
151109	01:09:35.59	44º46.35’	111º05.73’	10.0	0.1	9	190	7	0.12
151110	06:22:38.57	44º46.08’	111º05.56’	10.3	0.8	13	102	3	0.10
151110	11:06:57.89	44º45.61’	111º05.89’	10.5	0.2	14	89	4	0.10
151110	14:57:54.98	44º46.60’	110º39.97’	2.6	1.6W	19	202	7	0.12
151111	07:32:25.96	44º38.04’	110º20.62’	-0.6	0.9	10	137	9	0.19
151112	05:16:13.43	44º44.30’	111º00.06’	9.5	0.1	10	102	2	0.08
151112	17:12:29.34	44º47.57’	111º00.00’	8.6	0.5	15	157	4	0.09
151112	17:13:43.51	44º48.01’	110º59.78’	8.9	1.7W	22	111	5	0.12
151112	17:16:39.17	44º43.09’	111º02.03’	6.2	0.0	6	250	5	0.13

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2015

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151112	17:16:47.91	44º47.42’	110º59.79’	8.4	--	12	156	4	0.07
151112	17:18:38.39	44º47.50’	110º59.86’	8.0	--	7	260	4	0.08
151114	05:23:55.37	44º44.84’	111º11.55’	11.9	0.7	15	75	0	0.20
151114	05:34:10.25	44º44.59’	111º11.30’	11.4	0.7	16	83	1	0.18
151114	06:23:50.44	44º44.86’	111º11.09’	9.1	0.2	13	80	1	0.14
151115	00:50:48.22	44º45.70’	111º05.79’	11.4	0.9	18	92	4	0.15
151115	01:22:26.87	44º44.93’	111º06.31’	6.1	0.3	7	169	7	0.09
151115	07:43:06.70	44º46.16’	111º05.85’	10.8	0.7	18	96	3	0.13
151116	04:35:15.33	44º40.27’	110º00.16’	13.7	1.7	12	168	9	0.21
151116	04:53:00.74	44º36.28’	110º40.22’	6.4	1.1	7	131	2	0.14
151117	02:16:43.07	44º23.77’	110º36.21’	1.9	1.3W	14	86	2	0.15
151117	10:21:50.61	44º45.83’	111º06.20’	9.7	0.8	18	86	4	0.12
151117	10:31:34.23	44º45.53’	111º06.92’	8.6	0.4	14	72	4	0.14
151117	12:57:58.27	44º40.58’	110º00.47’	14.8	2.7	7	168	9	0.20
151117	12:57:58.37	44º40.64’	109º59.55’	13.6	1.8	11	175	8	0.31
151118	02:28:22.11	44º36.79’	110º38.83’	7.2	0.5	11	171	1	0.08
151119	12:50:13.68	44º39.96’	110º28.93’	3.2	1.1W	8	171	6	0.05
151119	20:30:03.76	44º44.36’	110º56.80’	2.1	0.0	12	118	5	0.07
151119	20:30:33.48	44º44.42’	110º57.13’	2.2	0.1	7	119	5	0.05
151119	20:30:41.88	44º43.53’	110º55.54’	2.7	-0.7	7	112	7	0.17
151119	20:30:49.07	44º44.69’	110º58.51’	8.1	0.2	14	119	3	0.12
151119	20:56:09.68	44º44.29’	110º57.50’	5.2	0.3	10	114	4	0.06
151120	05:09:45.09	44º33.06’	110º54.86’	9.5	0.3	10	193	9	0.14
151120	07:28:07.87	44º34.35’	110º54.36’	9.1	0.2	9	180	7	0.04
151121	21:34:49.81	44º36.71’	110º33.09’	6.0	1.6W	24	98	7	0.15
151122	12:15:58.39	44º45.01’	111º06.18’	9.2	0.1	8	86	5	0.11
151124	08:14:55.48	44º43.99’	111º13.95’	5.8	0.6	18	112	3	0.19
151124	23:06:24.57	44º47.07’	110º25.35’	2.0	2.8W	17	106	7	0.19
151125	04:53:50.80	44º33.85’	110º58.65’	10.7	0.1	11	158	11	0.09
151125	05:20:22.45	44º33.57’	110º58.84’	10.7	0.4	12	97	11	0.08
151125	05:20:50.40	44º34.05’	110º58.93’	11.5	-0.3	10	154	11	0.13
151125	05:35:55.47	44º38.29’	110º55.47’	6.4	-0.1	10	147	5	0.09
151125	05:40:12.38	44º33.48’	110º58.95’	11.2	0.5	12	98	11	0.12
151125	06:05:23.43	44º34.02’	110º58.43’	12.6	0.4	16	92	11	0.13
151125	06:20:34.62	44º33.64’	110º58.72’	11.2	0.1	12	96	11	0.08
151125	06:21:14.85	44º33.95’	110º58.70’	13.0	0.4	16	93	11	0.15
151125	06:21:14.97	44º33.59’	110º58.83’	11.0	0.8	13	97	11	0.07
151125	06:36:43.10	44º33.60’	110º58.90’	10.9	0.3	12	97	11	0.06
151125	08:08:04.75	44º34.03’	110º58.88’	12.7	0.9W	16	93	10	0.14
151125	10:08:39.10	44º33.81’	110º58.69’	11.9	0.1	14	94	11	0.13
151125	10:24:42.16	44º33.76’	110º58.71’	11.6	0.7	17	95	11	0.13
151125	10:24:42.21	44º33.64’	110º59.04’	11.4	0.8	13	97	11	0.08
151125	12:04:46.30	44º32.61’	110º58.07’	6.4*	0.6	12	100	13	0.16
151125	12:05:31.99	44º32.17’	110º58.29’	4.3*	0.3	9	104	13	0.14
151125	15:32:54.31	44º44.12’	110º24.85’	-0.5	0.2	7	186	6	0.11

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2015

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151125	15:33:16.35	44º46.55’	110º24.74’	3.7	1.7W	11	221	5	0.10
151126	15:21:21.76	44º49.20’	110º59.92’	8.3	1.1W	14	213	7	0.13
151126	21:08:06.45	44º43.33’	110º24.62’	-0.9	1.2W	7	143	6	0.05
151127	16:33:48.88	44º11.77’	110º13.61’	6.3*	1.6W	12	122	15	0.06
151127	22:55:19.05	44º23.22’	110º40.90’	2.0	0.9	7	130	8	0.15
151130	03:04:51.87	44º46.29’	111º17.28’	12.3	0.6	11	145	8	0.13
151202	20:16:15.01	44º35.37’	110º27.41’	4.9	2.0W	15	135	5	0.09
151204	16:28:55.56	44º35.90’	110º20.16’	6.2	0.2	12	110	6	0.11
151204	16:54:33.37	44º48.32’	111º29.87’	12.9	0.7	10	103	6	0.03
151205	06:22:40.37	44º45.82’	110º46.78’	1.3	0.5	9	186	6	0.12
151205	11:36:19.26	44º44.37’	111º06.06’	12.7	0.5	21	76	6	0.13
151205	12:53:22.96	44º49.36’	110º58.71’	6.1	0.8	17	216	7	0.11
151206	22:13:21.38	44º20.62’	110º40.22’	2.0	1.0	10	79	9	0.36
151206	23:36:04.59	44º18.79’	110º59.00’	6.6*	1.2	12	92	15	0.10
151207	11:03:37.25	44º46.04’	110º13.59’	-0.2	1.8W	7	121	10	0.12
151207	11:06:27.63	44º45.94’	110º14.92’	4.7	1.5W	11	127	8	0.18
151207	11:10:27.12	44º46.34’	110º15.09’	6.4	1.4	6	135	8	0.08
151207	11:15:50.21	44º45.31’	110º14.84’	8.6	1.7	9	116	7	0.09
151207	16:47:15.98	44º32.06’	110º59.27’	4.9*	1.0	10	109	12	0.10
151208	16:25:36.18	44º44.15’	111º07.50’	17.1	1.1	15	68	7	0.22
151208	17:45:23.62	44º43.98’	111º06.93’	14.5	0.6	17	77	7	0.13
151212	18:12:32.55	44º45.01’	111º04.65’	7.6	0.6	6	148	6	0.08
151214	04:31:29.89	44º38.12’	110º40.92’	3.0	1.6W	13	126	5	0.10
151214	10:35:20.39	44º27.46’	110º34.84’	4.2	1.3	9	150	2	0.05
151214	18:59:55.37	44º48.12’	111º07.85’	10.4	0.3	7	230	2	0.07
151216	04:24:16.23	44º44.65’	111º12.58’	14.0	1.1W	13	115	1	0.14
151216	04:24:27.22	44º44.58’	111º12.63’	14.0	1.6W	13	112	1	0.17
151216	04:32:14.20	44º44.16’	111º13.03’	12.4	0.6	9	102	2	0.11
151216	06:39:57.82	44º41.46’	110º00.63’	14.4	2.2	14	129	8	0.20
151217	05:43:44.42	44º47.05’	110º48.39’	4.0	1.5W	17	105	4	0.15
151217	09:39:44.96	44º47.86’	110º48.40’	4.3	0.4	11	215	4	0.08
151217	10:26:55.95	44º47.40’	110º48.29’	2.3	1.5W	14	117	4	0.13
151218	11:14:45.51	44º47.83’	111º07.52’	10.4	1.3W	15	224	1	0.15
151220	08:17:14.22	44º39.47’	109º59.78’	13.7	0.8	6	199	10	0.16
151220	08:37:48.71	44º39.78’	109º59.75’	14.8	2.3	10	181	10	0.18
151220	22:20:30.12	44º47.39’	110º59.19’	8.0	1.1	12	172	4	0.18
151221	05:45:08.62	44º44.88’	111º09.65’	13.9	1.2	13	121	3	0.14
151222	00:14:27.41	44º47.48’	111º00.05’	4.8	0.5	10	177	4	0.06
151222	07:27:38.63	44º47.72’	111º00.10’	4.5	1.4W	16	140	4	0.13
151222	19:16:56.43	44º40.31’	111º15.42’	7.5	0.9	9	150	4	0.07
151223	07:35:40.34	44º45.96’	111º04.15’	10.5	0.6	12	122	4	0.08
151223	14:17:51.06	44º40.71’	110º27.47’	3.7	0.1	12	114	6	0.16
151224	09:33:03.69	44º42.61’	111º07.21’	10.1	0.2	7	85	8	0.05
151224	11:11:56.70	44º47.22’	111º11.36’	12.9	1.6	14	100	4	0.15
151227	09:25:18.32	44º26.41’	110º55.93’	10.2	0.1	6	139	8	0.06

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
151227	13:24:42.08	44º14.41’	110º47.12’	13.7	0.7	7	109	19	0.28
151227	18:39:48.22	44º20.62’	110º20.00’	6.6	1.0	15	107	7	0.13
151228	05:49:12.50	44º44.93’	111º11.83’	10.4	0.2	10	83	0	0.13
151228	09:31:53.45	44º40.60’	110º27.31’	2.3	1.4W	9	204	6	0.18
151228	14:37:12.56	44º45.96’	111º07.08’	5.1	0.4	7	120	3	0.10
151229	13:11:12.93	44º32.74’	110º26.90’	9.2	1.8	6	216	4	0.11

number of earthquakes = 276
* 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, 2015

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
YFT	Old Faithful (YNP), WY	YFT	HH[ZEN]	3	WY	44° 27.05′	110° 50.24′	2292	Compact	Taurus	Digital	USGS
			EHZ	1					L4C	None	None	
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: 142 data channels from 45 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, 2015

None