EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

July 1 – September 30, 2014

Prepared by the University of Utah Seismograph Stations and funded by
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December 12, 2014

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.

- 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).

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July 1 – September 30, 2014

by J. Farrell, R. Burlacu, P. M. Roberson, J. M. Hale, and K. J. Goddard
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: *burlacu@seis.utah.edu*
URL: *http://www.seis.utah.edu* (aka *quake.utah.edu*)

During the three-month period July 1 through September 30, 2014, the University of Utah Seismograph Stations (UUSS) located 378 earthquakes within the Yellowstone region (Figure 1). The total includes one earthquake in the magnitude 3 range and 19 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 3.2 earthquake on September 24th. Earthquakes of magnitude 3.0 or larger (plotted as stars and specifically labeled on Figure 1) are listed below. No earthquakes were reported felt during the report period (see Table 1, a cumulative tabulation of earthquakes during 2014 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/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

M_L 3.2	September 24	03:41 MDT	9 mi N of Norris Geyser Basin, YNP

Notable Swarm Seismicity

During the report period, there were seven 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 51 earthquakes ($0.3 \leq M \leq 2.5$) occurred about 10 miles NE of Old Faithful, YNP on July 6th – 7th.

B. A swarm of 12 earthquakes ($0.5 \leq M \leq 1.2$) occurred about 8 miles W of Old Faithful, YNP on August 1st - 3rd.

C. A swarm of 13 earthquakes ($0.2 \leq M \leq 1.4$) occurred about 4 miles S of Lake Jct., YNP on August 15th - 16th.

D. A swarm of 11 earthquakes ($0.6 \leq M \leq 2.1$) occurred about 2 miles SSW of West Thumb Geyser Basin, YNP on August 16th.

E. A swarm of 70 earthquakes ($-0.9 \leq M \leq 2.0$) occurred about 7 miles N of West Yellowstone, MT on August 17th – 21st.

F. A swarm of 11 earthquakes ($-0.1 \leq M \leq 1.8$) occurred about 8 miles NNW of West Yellowstone, MT on August 18th – 19th.

G. A swarm of 20 earthquakes ($0.0 \leq M \leq 1.5$) occurred about 5 miles SSW of Lake Jct., YNP on August 19th - 20th.

These seven swarms are labeled in Figure 1.

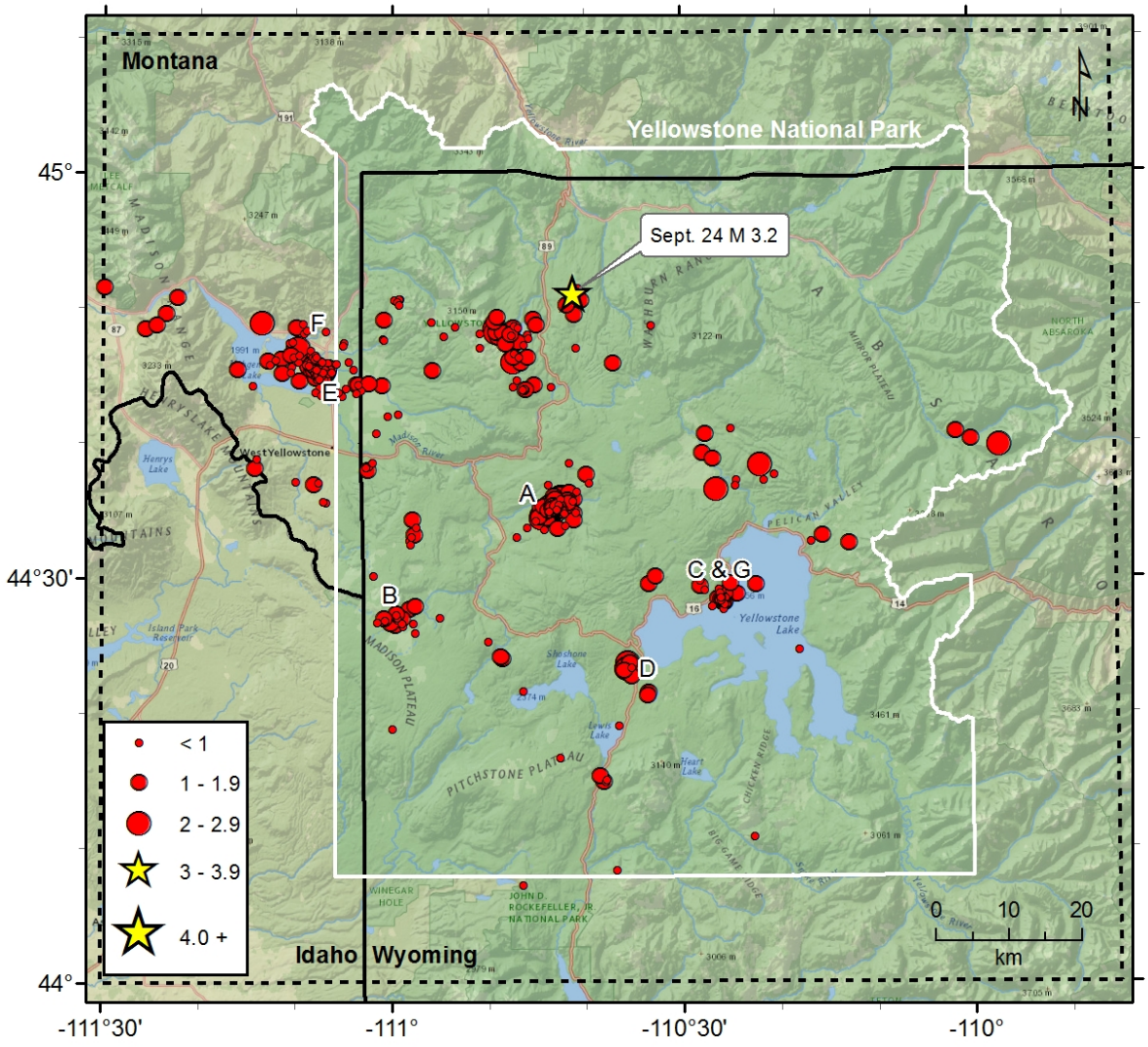

Figure 1. Earthquake epicenters located by the University of Utah Seismograph Stations. Earthquakes of magnitude 3.0 and larger are depicted as yellow stars. Earthquake swarms labeled A-G are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2014 to September 30, 2014

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
January 11 January 12	18:46 MST 01:46 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44º 48.37′	110º 31.37′	M_L 3.4
March 30	06:34 MDT 12:34 UTC	Yellowstone. Felt (III) at West Yellowstone, MT.	44º 46.33′	110º 41.08′	M_W 4.8
March 30	09:12 MDT 15:12 UTC	Yellowstone. Felt (IV) at West Yellowstone, MT.	44º 46.83′	110º 43.31′	M_L 3.7
June 03	03:33 MDT 09:33 UTC	Yellowstone. Felt (III) at Yellowstone National Park, WY.	44º 47.78′	110º 45.94′	M_L 3.4
June 04	06:16 MDT 12:16 UTC	Yellowstone. Felt (IV) at Yellowstone National Park, WY.	44º 47.25′	110º 45.94′	M_L 3.5

† 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
September 30, 2014

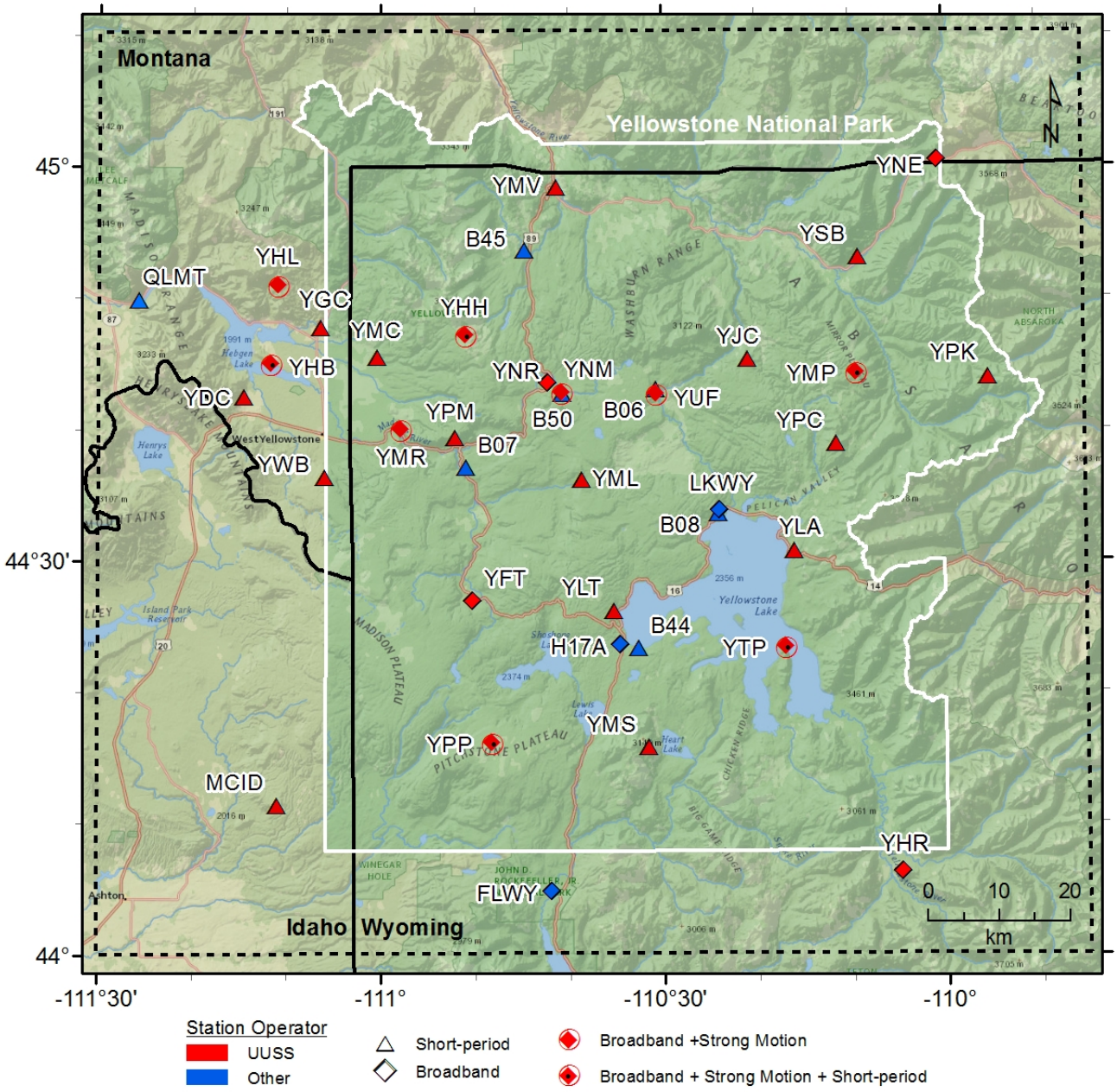

Figure 2

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140701	07:31:51.12	44º46.97'	111º09.75'	13.9	2.1W	22	120	4	0.19
140701	20:22:49.67	44º27.72'	110º58.20'	7.7	1.3W	17	113	11	0.23
140701	20:28:10.38	44º27.92'	110º57.61'	8.0	1.3W	14	114	10	0.19
140702	15:35:36.60	44º45.82'	111º09.02'	10.4	0.7	7	124	4	0.13
140702	16:47:30.11	44º46.00'	111º04.50'	6.5	0.7W	9	124	6	0.09
140702	18:41:24.98	44º46.03'	111º09.73'	13.1	0.9W	13	104	3	0.14
140703	04:40:50.14	44º35.62'	111º06.87'	9.1	0.4W	9	136	2	0.11
140703	10:08:01.20	44º46.10'	111º12.93'	13.3	1.1W	11	145	2	0.18
140703	10:08:01.36	44º45.75'	111º08.70'	4.7	--	5	106	4	0.10
140703	10:08:25.77	44º46.33'	111º10.28'	8.3	0.2	7	134	3	0.06
140703	10:09:24.09	44º45.69'	111º10.46'	7.7	0.2	6	121	2	0.10
140703	10:09:36.57	44º46.21'	111º11.57'	10.8	1.7W	13	155	2	0.14
140704	00:57:26.44	44º48.69'	110º33.15'	1.6*	0.2	6	258	11	0.01
140706	02:34:30.50	44º26.49'	110º58.87'	5.8*	0.9W	5	146	12	0.09
140706	02:35:35.15	44º26.65'	110º58.99'	5.1*	0.8W	7	148	12	0.07
140706	15:41:11.63	44º34.86'	110º44.16'	8.7	1.7W	15	148	8	0.15
140706	15:41:33.83	44º34.82'	110º43.80'	5.7	0.3	11	146	7	0.07
140706	15:41:53.16	44º34.47'	110º43.94'	6.2	1.6W	15	87	8	0.12
140706	15:42:58.80	44º35.74'	110º43.39'	9.1	1.1W	16	105	6	0.23
140706	15:44:10.42	44º35.29'	110º43.67'	8.0	1.9W	23	79	7	0.17
140706	15:45:31.39	44º34.49'	110º44.52'	8.2	2.0W	11	90	9	0.08
140706	15:46:12.41	44º35.04'	110º43.13'	-0.1	2.5W	11	78	6	0.11
140706	15:46:42.58	44º33.65'	110º44.31'	4.7	0.5	12	91	9	0.16
140706	15:47:46.63	44º34.67'	110º44.32'	7.9	1.8W	17	89	8	0.13
140706	15:48:06.16	44º33.07'	110º47.15'	8.5	0.9	9	169	9	0.21
140706	15:49:28.23	44º35.20'	110º44.14'	9.1	1.6W	19	84	8	0.13
140706	15:50:20.23	44º34.78'	110º44.86'	8.9	1.5W	10	114	9	0.13
140706	15:52:32.39	44º34.87'	110º43.09'	9.0	1.9	7	149	7	0.13
140706	15:53:20.08	44º36.05'	110º43.24'	9.1	1.2W	16	73	6	0.14
140706	15:54:12.47	44º35.51'	110º43.26'	9.4	2.5W	21	63	6	0.16
140706	15:55:37.01	44º35.01'	110º43.90'	7.5	1.7W	15	92	7	0.12
140706	15:56:21.89	44º35.99'	110º42.56'	10.2	2.0W	11	198	5	0.10
140706	15:58:30.90	44º34.90'	110º44.27'	8.1	1.4W	17	91	8	0.18
140706	15:58:56.73	44º34.95'	110º43.89'	8.8	--	9	116	7	0.11
140706	15:59:07.48	44º33.69'	110º42.88'	11.8	1.0	6	170	7	0.14
140706	16:02:10.39	44º35.15'	110º43.34'	7.8	1.0W	9	142	7	0.11
140706	16:03:18.31	44º35.29'	110º43.70'	8.6	2.4W	28	38	7	0.16
140706	16:04:00.39	44º34.75'	110º43.72'	8.7	2.0W	17	65	7	0.15
140706	16:05:30.23	44º35.26'	110º44.16'	8.4	1.7W	19	81	8	0.20
140706	16:06:19.63	44º35.17'	110º44.64'	7.8	1.4W	12	88	8	0.07
140706	16:12:44.27	44º35.03'	110º43.87'	8.8	1.2W	12	83	7	0.10
140706	16:13:24.60	44º34.97'	110º43.73'	9.2	--	8	121	7	0.09
140706	16:13:44.80	44º35.02'	110º42.64'	11.3	1.0W	9	150	6	0.10
140706	16:14:10.78	44º34.82'	110º42.15'	12.0	--	7	158	5	0.11
140706	16:14:52.77	44º35.17'	110º43.02'	8.1	1.0W	11	95	6	0.16

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140706	16:16:10.80	44º35.15'	110º43.03'	9.3	1.0W	11	123	6	0.14
140706	16:16:40.85	44º35.11'	110º42.96'	8.4	--	10	145	6	0.17
140706	16:17:03.45	44º35.34'	110º43.18'	9.8	1.1W	14	77	6	0.15
140706	16:17:48.50	44º35.21'	110º43.48'	9.0	1.1W	13	95	7	0.16
140706	16:22:13.32	44º35.88'	110º42.60'	9.3	0.9W	14	71	5	0.18
140706	16:30:18.96	44º33.92'	110º42.11'	12.6	0.5	9	151	6	0.12
140706	16:32:53.74	44º35.34'	110º44.39'	7.7	1.5W	19	85	8	0.14
140706	16:34:45.82	44º35.69'	110º43.37'	8.3	1.2W	16	76	6	0.16
140706	16:35:54.38	44º35.34'	110º42.87'	9.4	1.0W	12	118	6	0.19
140706	16:36:34.69	44º43.86'	110º46.32'	2.1	0.9	6	148	8	0.06
140706	16:38:21.39	44º35.56'	110º41.78'	11.9	1.1W	11	145	4	0.16
140706	16:45:08.26	44º35.40'	110º42.73'	10.6	0.6W	11	141	6	0.14
140706	16:46:22.21	44º35.08'	110º42.37'	10.7	0.9W	10	150	6	0.14
140706	16:47:11.32	44º35.15'	110º42.72'	9.5	1.1W	16	119	6	0.16
140706	16:59:22.31	44º35.03'	110º42.97'	9.2	1.2W	9	146	6	0.13
140706	16:59:22.58	44º35.28'	110º44.39'	7.6	1.2W	15	82	8	0.24
140706	17:10:45.55	44º35.18'	110º43.16'	9.2	2.0	12	142	6	0.13
140706	17:11:28.98	44º36.90'	110º43.83'	8.1	--	6	175	7	0.09
140706	17:11:52.72	44º35.43'	110º42.74'	9.1	0.6	12	119	6	0.17
140706	17:12:24.08	44º35.87'	110º43.13'	7.3	1.1	14	109	6	0.18
140706	17:35:50.45	44º35.05'	110º44.42'	8.1	1.9W	24	67	8	0.18
140706	17:45:30.43	44º35.39'	110º43.34'	7.9	1.1W	19	63	7	0.17
140707	00:18:57.89	44º44.94'	111º06.86'	6.7	0.9W	10	103	6	0.12
140707	03:49:29.92	44º50.77'	111º22.38'	15.3	1.1W	11	180	15	0.14
140707	04:30:36.94	44º34.27'	110º45.13'	3.5	0.3	9	122	9	0.08
140707	20:06:24.95	44º44.30'	110º45.27'	8.0	1.8W	13	167	7	0.13
140709	01:01:25.33	44º48.56'	110º46.98'	4.3	0.3	6	248	6	0.03
140709	18:13:42.09	44º43.99'	110º46.15'	5.2	1.8W	18	140	5	0.11
140709	18:55:19.54	44º43.94'	110º46.22'	5.1	0.9W	5	149	7	0.07
140709	20:15:01.26	44º44.03'	110º46.29'	6.7	0.6W	6	150	8	0.06
140709	20:15:09.85	44º43.96'	110º46.53'	3.1	0.1	7	147	8	0.06
140711	12:09:24.99	44º48.76'	110º45.10'	7.1	1.3W	13	233	8	0.10
140711	12:20:30.91	44º35.69'	111º07.14'	8.9	0.4W	10	137	2	0.11
140713	05:00:36.61	44º38.87'	110º26.81'	1.3	1.0W	11	188	9	0.07
140714	10:46:30.44	44º41.99'	111º00.51'	6.2	0.5W	7	124	5	0.11
140714	15:21:28.57	44º38.41'	110º21.85'	5.5	2.0	11	146	9	0.06
140714	21:01:06.80	44º47.09'	110º50.90'	1.8	0.6W	6	205	0	0.16
140715	05:06:25.76	44º49.28'	110º49.13'	4.2	1.1W	11	214	4	0.11
140717	21:41:36.92	44º47.38'	111º10.66'	8.1	0.7	10	148	5	0.07
140717	22:48:09.89	44º48.90'	111º13.56'	14.2	2.0W	17	156	5	0.10
140719	06:47:10.20	44º49.15'	110º45.34'	5.2	1.5W	15	235	8	0.15
140719	11:35:25.74	44º34.33'	110º57.96'	13.2	1.1W	20	87	11	0.25
140719	11:54:17.59	44º33.77'	110º57.57'	11.2	0.4W	13	115	11	0.10
140721	07:43:47.34	44º35.16'	110º42.39'	6.9	1.4W	25	74	5	0.17
140721	07:44:08.30	44º35.16'	110º42.57'	6.8	1.5W	19	75	6	0.15

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140725	07:06:55.27	44º48.69’	111º24.52’	11.7	1.1W	14	271	18	0.07
140725	19:05:40.80	44º47.51’	110º46.94’	4.8	1.7W	16	98	5	0.19
140725	20:34:28.23	44º48.01’	110º45.98’	4.4	0.8	8	245	7	0.07
140725	21:25:04.28	44º47.27’	110º46.39’	2.1	0.4	11	120	6	0.09
140726	15:43:10.67	44º45.82’	111º12.73’	10.4	0.3	13	173	2	0.16
140727	12:13:13.97	44º44.14’	111º07.64’	14.5	0.7W	12	67	6	0.10
140728	03:19:51.50	44º49.08’	111º00.91’	12.8	1.8W	19	83	7	0.23
140729	08:03:07.38	44º28.52’	110º26.32’	6.5	1.4W	16	79	10	0.17
140729	21:39:25.29	44º48.97’	110º55.94’	7.4	0.1	11	193	7	0.14
140730	10:44:18.88	44º50.67’	110º59.20’	6.1	0.6W	14	207	10	0.10
140801	01:35:44.84	44º27.04’	110º59.04’	7.3	1.2W	14	123	12	0.20
140801	01:37:48.90	44º26.65’	111º00.20’	7.4	1.1W	15	121	13	0.25
140801	01:41:05.40	44º25.95’	110º57.68’	9.7	0.8W	7	153	10	0.14
140801	01:42:42.31	44º26.77’	111º01.56’	5.6*	0.5	10	172	15	0.21
140801	01:56:37.42	44º26.57’	110º59.75’	8.5	1.2W	14	127	13	0.23
140801	02:36:55.39	44º26.68’	110º57.87’	6.3	0.6W	8	148	10	0.04
140801	02:37:32.36	44º26.97’	110º59.52’	10.5	0.9W	14	126	12	0.23
140801	04:53:59.04	44º27.10’	110º59.52’	8.0	0.8W	10	185	12	0.20
140801	20:00:42.84	44º27.36’	110º59.61’	4.4*	1.1	7	190	13	0.23
140802	04:39:24.77	44º27.05’	111º00.84’	9.7	1.0W	14	132	14	0.25
140802	04:41:14.60	44º26.87’	111º00.75’	11.3	0.7W	9	198	14	0.26
140802	16:06:53.32	44º32.57’	110º12.75’	6.4	1.4	12	183	6	0.06
140802	20:23:26.11	44º45.91’	110º37.12’	2.8	1.4W	11	198	7	0.21
140803	20:14:20.52	44º27.28’	110º59.57’	9.6	0.8	9	125	13	0.18
140804	15:14:50.38	44º46.12’	111º12.17’	14.0	0.3	10	165	2	0.23
140806	04:23:08.13	44º44.32’	111º03.56’	10.1	0.5W	15	99	5	0.14
140806	06:24:47.89	44º43.93’	111º03.24’	9.9	0.9W	18	81	5	0.16
140806	08:49:36.17	44º32.75’	110º16.61’	3.2	0.5	11	140	4	0.07
140806	08:49:55.69	44º33.16’	110º15.42’	5.6	1.5W	17	163	5	0.12
140806	11:52:31.18	44º46.37’	110º47.46’	5.5	1.2W	22	88	5	0.16
140806	11:54:18.89	44º46.63’	110º47.40’	6.6	0.9W	16	181	5	0.12
140806	11:55:44.74	44º47.76’	110º45.89’	7.4	0.3	10	222	7	0.13
140806	11:55:57.26	44º46.01’	110º47.46’	4.9	2.2W	25	82	5	0.17
140806	11:56:42.68	44º46.34’	110º46.91’	4.9	0.8	16	176	6	0.11
140806	20:33:58.73	44º43.73’	111º03.74’	8.8	0.6W	13	87	6	0.13
140806	20:34:05.84	44º44.34’	111º03.76’	11.6	1.8W	17	86	5	0.16
140806	20:38:48.18	44º44.31’	111º03.51’	11.9	1.2W	16	83	5	0.15
140808	21:44:43.33	44º36.57’	110º26.40’	2.2	2.2W	14	105	6	0.17
140810	18:01:07.80	44º47.05’	110º40.96’	6.8	0.5	11	197	8	0.19
140811	04:03:17.03	44º50.20’	110º59.32’	5.7	-0.1	10	200	9	0.11
140811	09:33:10.62	44º37.71’	110º20.40’	5.1	0.9	14	77	8	0.07
140811	13:28:04.17	44º50.61’	110º59.28’	6.2	0.7W	16	205	9	0.12
140811	13:46:00.91	44º50.48’	110º59.55’	5.4	0.2	12	202	9	0.10
140811	14:02:20.51	44º50.63’	110º59.29’	5.8	0.3	13	206	9	0.09
140811	18:15:00.66	44º44.39’	111º02.48’	6.0	1.0W	11	91	4	0.16

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140813	10:45:20.90	44º39.73’	109º57.06’	10.5	2.2W	24	211	18	0.14
140814	03:32:28.91	44º34.54’	110º44.86’	6.8	1.3	13	114	9	0.18
140814	19:43:24.89	44º38.11’	111º14.23’	10.8	1.2W	14	185	8	0.18
140814	22:06:13.96	44º18.87’	110º59.99’	11.8	0.7	6	173	16	0.16
140815	06:57:01.40	44º28.73’	110º25.57’	2.3	1.4	11	121	9	0.10
140815	07:05:19.32	44º29.83’	110º28.17’	2.1	--	6	179	9	0.13
140815	07:05:37.52	44º28.55’	110º25.89’	2.7	0.4	10	123	10	0.10
140815	07:06:23.50	44º28.56’	110º25.83’	2.9	0.7	11	122	10	0.14
140815	07:06:43.92	44º28.34’	110º25.92’	2.9	1.2	10	120	10	0.14
140815	07:08:46.57	44º29.63’	110º25.03’	2.8	1.0	7	123	7	0.09
140815	07:09:28.94	44º28.89’	110º26.12’	2.7	--	8	146	9	0.06
140815	07:10:06.50	44º28.82’	110º24.39’	2.0	1.4W	10	93	9	0.31
140815	07:10:57.81	44º29.51’	110º22.35’	2.8	1.2W	6	162	8	0.08
140815	07:14:13.21	44º28.57’	110º25.58’	3.3	0.2	7	146	10	0.05
140815	07:14:19.81	44º28.90’	110º25.97’	2.9	0.9	8	145	9	0.14
140815	10:53:37.67	44º46.47’	111º10.53’	13.2	1.5W	13	210	3	0.17
140816	10:23:46.47	44º19.11’	110º36.60’	2.1	0.6	11	124	9	0.08
140816	11:48:53.73	44º29.05’	110º25.92’	3.2	0.5	7	128	9	0.07
140816	13:19:25.95	44º23.78’	110º35.52’	2.9	1.4W	11	111	4	0.05
140816	13:56:19.31	44º23.34’	110º35.82’	2.3	1.5W	16	76	2	0.09
140816	13:56:26.50	44º23.15’	110º35.12’	2.0	1.4W	11	146	1	0.12
140816	13:56:34.31	44º23.17’	110º35.57’	2.1	1.5	12	145	2	0.12
140816	13:56:43.40	44º23.77’	110º35.67’	1.9	2.0W	12	155	1	0.14
140816	14:00:23.17	44º23.35’	110º35.76’	1.9	2.0W	18	69	2	0.11
140816	14:04:51.97	44º22.79’	110º35.29’	4.4	1.3W	12	113	2	0.23
140816	14:32:22.17	44º23.40’	110º35.30’	2.0	0.6	8	105	4	0.03
140816	14:33:19.16	44º23.43’	110º35.64’	2.0	1.7W	17	75	2	0.11
140816	14:35:31.44	44º23.53’	110º36.02’	1.8	1.8W	17	81	2	0.10
140816	14:50:36.45	44º23.17’	110º36.06’	1.9	1.3	6	176	2	0.08
140816	15:36:01.13	44º46.37’	110º46.00’	2.0	1.2W	12	207	7	0.28
140816	20:56:23.70	44º28.88’	110º25.63’	3.2	1.2W	11	123	9	0.06
140817	03:56:04.78	44º24.06’	110º48.58’	2.6	1.5W	14	108	6	0.07
140817	03:56:37.93	44º24.22’	110º48.78’	2.9	1.1	9	110	6	0.09
140817	16:54:43.14	44º45.47’	111º04.04’	9.2	-0.2	10	172	5	0.11
140817	19:53:20.36	44º40.72’	111º01.65’	6.9	0.5W	11	86	5	0.14
140818	01:25:49.17	44º45.20’	111º11.48’	13.2	1.4W	16	179	0	0.11
140818	01:25:49.32	44º45.22’	111º10.59’	9.7	--	7	150	2	0.12
140818	14:01:42.99	44º36.94’	111º08.15’	7.4	1.4W	14	137	3	0.16
140818	15:05:52.38	44º47.98’	110º47.70’	2.6	0.4	8	127	5	0.06
140818	15:44:42.70	44º48.51’	110º47.47’	2.0	1.2W	8	246	5	0.12
140818	16:41:23.35	44º45.98’	111º08.28’	11.7	1.3W	10	146	4	0.08
140818	16:43:37.10	44º46.33’	111º07.86’	11.3	0.3	10	199	6	0.08
140818	17:07:08.60	44º48.03’	110º47.76’	2.7	1.0W	9	128	5	0.09
140818	17:46:35.68	44º44.76’	111º07.80’	8.2	0.9W	12	102	5	0.12
140818	18:01:37.80	44º45.77’	111º08.45’	13.1	1.2W	10	142	5	0.12

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140818	18:04:42.77	44º48.70'	110º47.34'	2.7	0.9W	7	248	6	0.07
140818	18:11:08.56	44º45.76'	111º08.36'	14.0	0.6	10	140	5	0.11
140818	22:15:01.13	44º45.77'	111º08.19'	13.2	1.6W	14	137	4	0.15
140818	22:23:20.94	44º45.75'	111º08.35'	12.9	1.8W	15	140	5	0.12
140818	22:24:28.66	44º45.56'	111º07.59'	11.8	1.5W	17	120	4	0.18
140818	22:24:56.37	44º45.26'	111º07.78'	11.4	1.6W	14	115	5	0.15
140818	22:29:34.28	44º45.83'	111º08.37'	12.9	2.0W	16	142	4	0.11
140818	22:32:19.80	44º45.71'	111º08.37'	12.7	1.8W	14	139	5	0.14
140818	22:34:06.46	44º44.85'	111º07.97'	9.9	1.1W	10	106	5	0.11
140819	00:02:07.64	44º45.91'	111º06.69'	6.3	-0.1	8	185	7	0.12
140819	04:15:49.15	44º48.09'	111º09.23'	9.9	0.5W	9	239	4	0.12
140819	04:34:09.29	44º46.19'	111º08.13'	9.4	-0.1	9	197	5	0.12
140819	04:36:46.77	44º45.54'	111º08.22'	11.9	1.3W	16	131	5	0.11
140819	06:37:22.79	44º48.34'	111º08.90'	9.9	-0.1	10	239	3	0.13
140819	07:07:49.26	44º45.13'	111º08.05'	11.4	0.7W	10	115	5	0.14
140819	10:16:15.40	44º45.86'	111º08.34'	12.7	1.6W	15	144	4	0.11
140819	10:26:53.53	44º46.35'	111º07.87'	10.8	--	9	200	6	0.08
140819	10:26:55.15	44º45.51'	111º08.17'	12.1	1.5W	17	129	5	0.13
140819	10:40:30.26	44º46.00'	111º07.27'	9.6	-0.3	7	189	6	0.14
140819	11:02:58.88	44º45.51'	111º08.12'	10.9	0.0	11	128	5	0.12
140819	11:09:50.67	44º45.56'	111º08.01'	11.9	1.0W	15	127	5	0.12
140819	11:34:56.98	44º45.47'	111º07.82'	11.4	1.7W	19	121	5	0.14
140819	11:47:03.12	44º45.27'	111º08.08'	11.6	0.2	12	119	5	0.12
140819	11:47:45.30	44º45.40'	111º08.23'	11.7	1.1W	15	125	5	0.12
140819	11:51:00.05	44º46.00'	111º08.44'	12.4	0.5W	12	150	4	0.13
140819	11:58:48.57	44º44.95'	111º08.04'	10.6	0.1	9	109	5	0.15
140819	12:19:33.03	44º45.05'	111º07.88'	9.4	0.0	10	110	5	0.12
140819	12:36:02.98	44º44.76'	111º07.93'	8.0	0.2	12	103	5	0.10
140819	13:19:03.74	44º46.50'	111º08.02'	11.3	0.0	9	160	3	0.13
140819	13:40:10.08	44º45.60'	111º07.99'	10.5	0.9W	14	128	5	0.11
140819	14:32:21.19	44º45.75'	111º08.23'	12.5	1.0W	10	138	4	0.13
140819	15:24:16.38	44º28.35'	110º26.06'	3.4	1.5	12	98	10	0.07
140819	15:24:46.62	44º28.59'	110º26.01'	5.9	--	7	124	10	0.05
140819	15:26:53.26	44º28.39'	110º26.06'	3.1	1.1	11	122	10	0.06
140819	15:27:44.14	44º28.05'	110º25.61'	2.1*	0.9	10	102	11	0.16
140819	15:29:16.90	44º28.21'	110º26.02'	3.1	0.8	10	120	10	0.08
140819	15:29:31.52	44º27.96'	110º26.94'	7.3	0.0	7	125	11	0.02
140819	15:30:18.61	44º28.53'	110º26.20'	2.2	0.5	10	95	10	0.08
140819	15:33:56.05	44º28.55'	110º26.34'	2.7	0.8	10	126	10	0.10
140819	15:35:47.36	44º28.18'	110º25.59'	4.5	1.4	11	86	10	0.09
140819	15:40:05.87	44º28.57'	110º26.25'	5.9	0.9	7	125	10	0.06
140819	15:40:39.16	44º47.51'	111º10.32'	16.4	-0.1	8	233	5	0.19
140819	15:44:23.10	44º46.54'	111º08.54'	12.7	0.3	9	173	4	0.08
140819	15:46:27.79	44º28.27'	110º25.68'	3.6	1.2	7	214	10	0.12
140819	15:46:33.27	44º29.45'	110º28.17'	2.3	1.0	7	173	9	0.14

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140819	15:46:33.54	44º46.85’	111º08.53’	13.2	0.3	8	185	3	0.10
140819	15:49:36.02	44º46.33’	111º08.31’	11.9	0.1	10	160	4	0.13
140819	15:55:32.96	44º28.47’	110º26.10’	2.1	0.5	10	123	10	0.05
140819	16:41:52.28	44º28.35’	110º26.27’	2.9	0.3	11	124	10	0.12
140819	16:58:20.62	44º46.20’	111º08.09’	12.8	0.8	9	150	4	0.09
140819	16:59:41.69	44º48.55’	111º09.95’	10.6	1.6W	15	131	5	0.11
140819	17:10:42.19	44º28.43’	110º26.33’	2.7	0.7	10	125	10	0.11
140819	17:14:24.54	44º48.79’	111º09.25’	11.4	0.7	8	245	4	0.08
140819	17:22:29.35	44º10.89’	110º22.65’	11.6	0.6	14	180	15	0.20
140819	18:14:41.32	44º43.55’	111º07.42’	2.2	-0.2	6	191	6	0.07
140819	20:25:19.17	44º28.46’	110º26.25’	3.2	0.6	9	125	10	0.06
140820	00:28:18.17	44º27.74’	110º25.75’	6.0	0.2	7	113	11	0.23
140820	00:28:47.78	44º28.44’	110º26.01’	3.2	0.1	9	122	10	0.06
140820	00:28:57.31	44º29.21’	110º26.22’	3.6	0.2	7	142	9	0.21
140820	00:29:10.89	44º28.56’	110º25.93’	3.4	0.1	8	151	10	0.05
140820	02:14:52.49	44º30.15’	110º32.80’	4.0	1.5W	13	80	8	0.09
140820	08:00:52.27	44º45.46’	111º16.08’	13.9	1.1W	17	172	6	0.12
140820	13:12:30.69	44º30.16’	111º01.97’	17.3	0.7	13	135	13	0.16
140820	18:36:14.65	44º38.28’	111º02.51’	8.8	0.9W	13	96	6	0.10
140820	18:40:18.51	44º37.97’	111º02.55’	9.6	1.1W	13	61	6	0.16
140820	18:43:10.30	44º38.59’	111º02.02’	5.0	0.7	6	133	6	0.04
140820	19:21:52.20	44º49.50’	110º41.17’	4.5	1.9W	16	111	9	0.14
140820	21:50:26.43	44º45.38’	111º06.90’	10.5	0.6W	12	107	6	0.15
140820	21:50:26.70	44º44.78’	111º07.45’	7.8	0.6W	8	165	6	0.15
140820	22:16:48.73	44º45.28’	111º06.74’	6.3	1.6W	9	106	7	0.16
140821	00:36:10.72	44º45.16’	111º07.10’	9.4	0.2	10	104	6	0.13
140821	00:38:34.42	44º45.15’	111º06.58’	7.4	-0.3	9	117	7	0.18
140821	00:38:50.04	44º45.84’	111º05.80’	2.9	-0.4	6	125	8	0.10
140821	00:40:27.40	44º45.14’	111º07.60’	8.5	0.0	10	101	6	0.14
140821	00:49:57.28	44º45.19’	111º06.87’	8.3	0.5W	13	72	5	0.17
140821	00:56:35.42	44º45.11’	111º07.42’	10.8	1.0W	11	106	5	0.13
140821	03:07:09.45	44º45.09’	111º07.54’	12.4	0.9W	16	68	5	0.12
140821	03:12:02.29	44º45.28’	111º07.15’	8.2	0.6W	14	68	5	0.17
140821	03:20:48.40	44º45.11’	111º07.40’	9.9	0.6W	11	71	5	0.12
140821	04:15:35.84	44º44.73’	111º07.08’	9.4	-0.1	11	68	6	0.21
140821	06:37:00.97	44º45.37’	111º07.50’	11.9	1.3W	16	72	5	0.10
140821	06:39:48.54	44º46.11’	111º07.36’	11.5	0.1	10	111	6	0.12
140821	06:48:21.15	44º45.32’	111º07.10’	13.0	2.0W	21	69	5	0.16
140821	06:49:49.18	44º45.44’	111º06.68’	11.1	-0.2	11	108	7	0.14
140821	06:50:22.70	44º45.57’	111º06.61’	10.8	1.0W	18	77	4	0.16
140821	06:53:04.04	44º45.39’	111º07.45’	12.3	0.8W	17	73	5	0.14
140821	06:53:53.50	44º44.73’	111º07.62’	12.4	-0.4	7	154	6	0.13
140821	07:33:26.11	44º44.93’	111º07.24’	8.0	0.5W	11	101	6	0.12
140821	09:24:37.59	44º45.45’	111º07.88’	5.8	-0.9	6	151	5	0.03
140821	09:58:41.38	44º45.02’	111º07.27’	10.1	-0.4	11	119	5	0.12

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140821	10:48:05.90	44º45.01'	111º07.29'	10.1	0.2W	13	101	6	0.14
140821	11:18:21.32	44º45.46'	111º06.98'	8.0	-0.3	12	113	6	0.22
140821	11:36:00.44	44º45.63'	111º06.84'	12.8	0.8W	17	73	4	0.12
140821	11:48:07.58	44º45.52'	111º06.70'	8.8	0.2W	10	108	7	0.11
140821	14:23:00.79	44º45.43'	111º07.84'	11.7	1.4W	15	76	5	0.12
140821	20:08:12.31	44º44.75'	111º06.82'	6.7	-0.1	6	116	6	0.09
140821	20:19:22.30	44º45.30'	111º07.54'	10.9	-0.1	11	71	5	0.15
140821	20:50:04.68	44º45.10'	111º07.75'	9.0	-0.1	10	109	5	0.13
140821	20:56:41.97	44º45.03'	111º07.10'	10.8	0.9W	12	68	5	0.13
140821	20:56:54.17	44º45.47'	111º06.44'	10.7	-0.3	10	112	4	0.13
140821	21:38:18.06	44º45.06'	111º07.27'	8.5	0.3	8	118	6	0.19
140821	21:40:35.90	44º45.21'	111º06.68'	12.7	-0.3	8	116	7	0.13
140821	22:03:20.51	44º45.24'	111º07.17'	10.4	-0.4	12	103	6	0.14
140821	22:03:39.22	44º45.27'	111º06.28'	6.9	-0.5	12	109	7	0.08
140821	22:47:59.65	44º45.48'	111º07.44'	11.6	0.3	15	105	9	0.09
140822	18:44:55.10	44º27.89'	110º25.64'	3.1*	0.5	10	113	11	0.08
140822	18:45:10.25	44º28.06'	110º25.48'	2.9	0.4	10	114	10	0.13
140822	18:45:25.91	44º29.13'	110º27.69'	3.7	--	6	165	10	0.09
140822	18:45:35.32	44º28.10'	110º25.65'	3.0	0.1	10	116	10	0.08
140822	18:55:00.16	44º28.09'	110º25.70'	3.2	0.6	9	159	10	0.07
140822	18:55:22.87	44º28.36'	110º26.03'	3.5	-0.1	8	153	10	0.14
140822	18:59:31.02	44º28.20'	110º25.84'	3.6	0.4	10	118	10	0.12
140822	19:00:36.12	44º28.20'	110º25.86'	3.0	1.2	9	119	10	0.10
140825	04:59:13.50	44º27.13'	110º55.06'	2.3	0.8W	8	165	7	0.07
140825	11:44:26.32	44º24.71'	110º17.92'	10.1	0.6	12	142	2	0.15
140825	14:51:46.91	44º49.55'	111º23.53'	13.6	1.6W	23	91	3	0.14
140826	17:15:00.45	44º21.39'	110º33.60'	3.4	1.0	11	122	4	0.18
140826	17:29:50.93	44º21.58'	110º33.58'	2.0	1.6	12	98	4	0.12
140827	08:21:17.62	44º37.13'	111º10.00'	14.1	0.2	11	226	5	0.15
140828	01:54:43.61	44º37.25'	110º24.35'	2.1	0.6	12	108	6	0.35
140828	02:26:56.01	44º08.43'	110º36.83'	12.0	0.7	12	136	9	0.16
140829	13:20:24.22	44º37.11'	111º07.68'	7.0	0.6	12	133	3	0.14
140830	10:27:51.65	44º44.18'	110º47.49'	2.2	0.2	9	142	7	0.06
140830	11:08:50.98	44º44.69'	110º47.12'	8.1	0.6W	10	153	7	0.08
140830	17:35:28.05	44º44.19'	110º43.56'	4.0	0.6	5	205	2	0.20
140831	10:15:27.22	44º48.59'	110º53.47'	7.1	0.2	10	226	4	0.09
140831	14:50:21.15	44º45.37'	110º55.87'	9.3	1.1W	11	146	6	0.10
140901	15:04:06.81	44º38.86'	111º14.10'	11.2	0.7W	14	111	7	0.12
140904	05:39:59.49	44º50.53'	110º40.48'	4.0*	1.4W	17	84	14	0.18
140905	05:33:02.66	44º37.24'	110º21.50'	-2.6	0.6	6	165	7	0.02
140906	12:30:24.03	44º21.67'	110º46.48'	3.8	0.9	8	95	10	0.16
140906	16:29:27.38	44º48.28'	111º06.92'	9.8	0.2	9	140	1	0.09
140906	19:54:08.01	44º47.24'	111º05.11'	10.3	0.0	12	136	7	0.09
140907	11:28:07.35	44º47.65'	111º00.86'	5.7	-0.2	13	156	4	0.18
140907	11:54:39.43	44º07.30'	110º46.58'	10.4	0.6	10	94	8	0.19

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140907	12:19:51.17	44º47.72'	111º01.02'	5.8	0.9W	14	157	4	0.14
140907	19:08:52.42	44º16.77'	110º42.68'	4.0	0.7	6	130	7	0.04
140907	22:07:37.07	44º39.24'	110º27.86'	4.2	1.6W	10	114	8	0.10
140907	23:57:13.81	44º43.78'	111º05.65'	11.0	0.3	9	91	8	0.08
140908	09:43:52.42	44º36.88'	110º24.46'	2.4	--	7	157	6	0.04
140908	11:06:02.02	44º38.19'	111º02.75'	10.7	0.6W	12	65	6	0.12
140908	16:46:09.19	44º50.59'	110º59.77'	7.8	0.3	9	203	9	0.08
140910	08:25:29.67	44º47.43'	111º05.08'	11.9	0.4	9	139	7	0.07
140910	10:48:47.13	44º44.59'	111º09.67'	8.7	1.2W	16	58	3	0.16
140911	19:43:51.48	44º34.29'	110º41.19'	5.1	1.2	6	110	5	0.15
140911	19:44:13.26	44º35.26'	110º41.64'	5.1	1.9	9	89	4	0.12
140911	19:44:40.03	44º34.78'	110º41.19'	4.4	1.2	7	170	4	0.10
140911	19:50:17.29	44º36.36'	110º41.73'	3.9	1.5	10	122	4	0.07
140911	21:13:40.69	44º35.87'	110º41.23'	6.0	1.6W	12	86	4	0.15
140911	22:23:24.49	44º34.87'	110º40.99'	7.0	0.9W	15	103	4	0.16
140913	10:23:56.42	44º40.78'	110º01.61'	13.2	1.5	7	201	10	0.21
140913	13:38:22.86	44º14.96'	110º37.98'	12.3	0.7	12	100	9	0.16
140913	17:10:27.18	44º15.15'	110º37.89'	12.3	0.4	10	105	8	0.19
140913	21:08:18.07	44º14.99'	110º38.20'	12.6	1.4	13	98	9	0.14
140914	07:22:10.44	44º41.10'	110º24.95'	5.3	0.8	10	141	8	0.12
140914	08:22:56.59	44º40.65'	110º27.60'	5.0	1.6W	15	114	6	0.16
140914	09:34:13.28	44º15.38'	110º38.57'	8.6	1.1	12	110	9	0.05
140914	23:35:52.97	44º44.22'	111º14.49'	11.6	0.1	9	130	4	0.14
140916	12:56:07.48	44º50.18'	110º41.96'	4.0*	1.7W	15	128	13	0.20
140917	02:50:00.78	44º46.53'	111º09.69'	6.1	0.0	11	123	4	0.13
140917	07:10:50.74	44º42.12'	110º59.45'	9.2	0.1	10	130	4	0.08
140917	15:24:44.66	44º37.68'	110º39.96'	5.0	1.8W	16	92	3	0.19
140918	18:34:24.93	44º29.61'	110º33.48'	4.1	1.9	9	131	7	0.06
140920	05:52:48.82	44º25.32'	110º50.08'	1.6	0.6	7	112	3	0.06
140920	20:39:21.90	44º43.52'	111º05.24'	13.8	0.3	11	74	7	0.09
140920	20:42:44.87	44º44.02'	111º04.83'	12.6	0.7W	11	95	7	0.19
140920	23:18:39.20	44º51.51'	111º29.95'	14.3	1.0W	11	228	6	0.10
140921	02:24:22.32	44º47.94'	110º54.66'	8.8	0.9W	14	177	5	0.08
140922	10:15:18.04	44º44.25'	111º01.08'	8.0	1.3W	16	66	3	0.14
140922	21:32:15.78	44º38.52'	110º41.66'	2.3	0.4	9	126	6	0.18
140924	03:09:40.59	44º40.19'	110º00.05'	16.0	1.7	8	175	9	0.12
140924	09:41:51.84	44º51.13'	110º41.18'	6.2*	3.2W	43	99	14	0.22
140924	09:44:19.75	44º51.45'	110º40.74'	3.0*	0.7	12	87	13	0.14
140924	14:10:59.67	44º43.75'	111º07.96'	15.7	0.5	8	96	6	0.08
140925	00:29:33.16	44º36.24'	110º42.56'	7.4	1.6	10	123	5	0.18
140925	00:36:12.25	44º35.80'	110º41.94'	9.4	1.3	8	138	5	0.10
140926	00:31:03.40	44º48.48'	110º49.36'	4.5	2.3W	21	102	3	0.18
140926	00:41:53.65	44º48.41'	110º49.11'	4.1	1.8W	13	85	3	0.19
140926	00:42:15.52	44º48.29'	110º49.28'	3.1	1.8W	18	108	3	0.20
140926	00:50:13.08	44º48.17'	110º49.21'	4.1	2.0W	22	107	3	0.17

Table 2. Earthquakes in the Yellowstone Region: July 1–September 30, 2014

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
140926	00:50:38.25	44º47.87’	110º49.04’	2.3	1.6	17	132	3	0.14
140926	01:07:49.46	44º48.16’	110º48.52’	1.7	1.1	9	240	4	0.18
140926	01:08:10.37	44º47.34’	110º48.29’	1.3	1.1	9	220	4	0.19
140926	02:45:35.61	44º37.08’	110º39.58’	5.5	0.6	9	145	2	0.09
140926	03:11:20.19	44º35.70’	110º41.26’	5.6	0.3	11	86	4	0.18
140926	03:11:43.15	44º36.43’	110º40.86’	9.4	0.7W	13	81	3	0.17
140926	13:33:41.90	44º45.90’	110º46.65’	4.9	1.6W	23	87	6	0.15
140927	07:01:46.09	44º48.18’	110º49.24’	3.2	1.5W	16	135	3	0.16
140927	07:56:56.87	44º48.10’	110º50.87’	5.7	0.6W	11	203	1	0.15
140928	09:37:50.52	44º48.46’	111º25.68’	12.4	1.3W	19	78	3	0.07
140928	13:03:46.89	44º45.21’	111º08.38’	11.9	1.3W	14	83	4	0.14
140928	19:36:28.64	44º33.78’	110º46.02’	3.5	0.8W	10	103	9	0.08
140928	22:53:24.04	44º32.82’	110º58.25’	6.3	0.9W	8	99	12	0.14
140928	22:53:51.19	44º33.20’	110º57.74’	8.1	1.0W	12	95	12	0.21
140928	22:55:02.99	44º32.55’	110º58.14’	2.1*	0.6W	9	100	13	0.25
140928	23:04:23.99	44º33.07’	110º58.07’	6.2	0.5W	8	96	12	0.11
140930	00:02:49.33	44º48.97’	110º49.41’	4.4	1.1W	18	113	4	0.16
140930	22:47:06.77	44º45.39’	111º07.65’	11.1	0.4	10	74	5	0.09

number of earthquakes = 378
* 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, 2014

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	ES
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	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
QLMT*	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
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	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	Trillium 120	72A-07	Digital	USGS
			EN[ZEN]	3					Titan			
			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			
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 Code	Location	SEED Station	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
YHR	Hawk's Rest, WY	YHR	HH[ZEN]	3	WY	44° 06.36′	110° 04.90′	2976	Trillium 120	Q330	Digital	USGS
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	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	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	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	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>> 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
ES	EarthScope

NETWORK CHANGES DURING JULY 1-SEPTEMBER 30, 2014

August 28	YHR HH[ZEN] telemetry on