EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

April 1 – June 30, 2018

Prepared by the University of Utah Seismograph Stations and funded by
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September 14, 2018

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 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).

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April 1 – June 30, 2018

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During the three-month period April 1 through June 30, 2018, the University of Utah Seismograph Stations (UUSS) located 399 earthquakes within the Yellowstone region (Figure 1). The total includes 1 earthquake in the magnitude 3 range and 24 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 3.1 earthquake on May 6th. There were two earthquakes 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 2018). 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

M_L 3.1	May 06	08:54 MDT	9.0 mi NE of West Yellowstone, MT

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 earthquakes occur as part of a seismic swarm [Farrell et al., 2009].

A. A swarm of 36 earthquakes ($0.0 \leq M \leq 2.7$) occurred about 6 mi N of West Yellowstone, MT from April 2nd – 8th.
B. A swarm of 113 earthquakes ($-0.1 \leq M \leq 2.4$) occurred about 7 mi E of West Thumb Geyser Basin, YNP from April 11th – 12th.
C. A swarm of 11 earthquakes ($0.0 \leq M \leq 2.2$) occurred about 6 mi N of West Yellowstone, MT from April 12th – 13th.
D. A swarm of 32 earthquakes ($0.3 \leq M \leq 3.1$) occurred about 9 mi NE of West Yellowstone, MT on May 5th – 8th.
E. A swarm of 12 earthquakes ($-0.3 \leq M \leq 1.9$) occurred about 8 mi NE of West Yellowstone, MT from May 12th – 16th.
F. A swarm of 17 earthquakes ($0.7 \leq M \leq 2.1$) occurred about 8 mi NE of Norris Geyser Basin, YNP from June 9th – 11th.
G. A swarm of 16 earthquakes ($0.5 \leq M \leq 1.9$) occurred about 10 mi NNE of Old Faithful, YNP on June 12th.

These swarms are labeled in Figure 1.

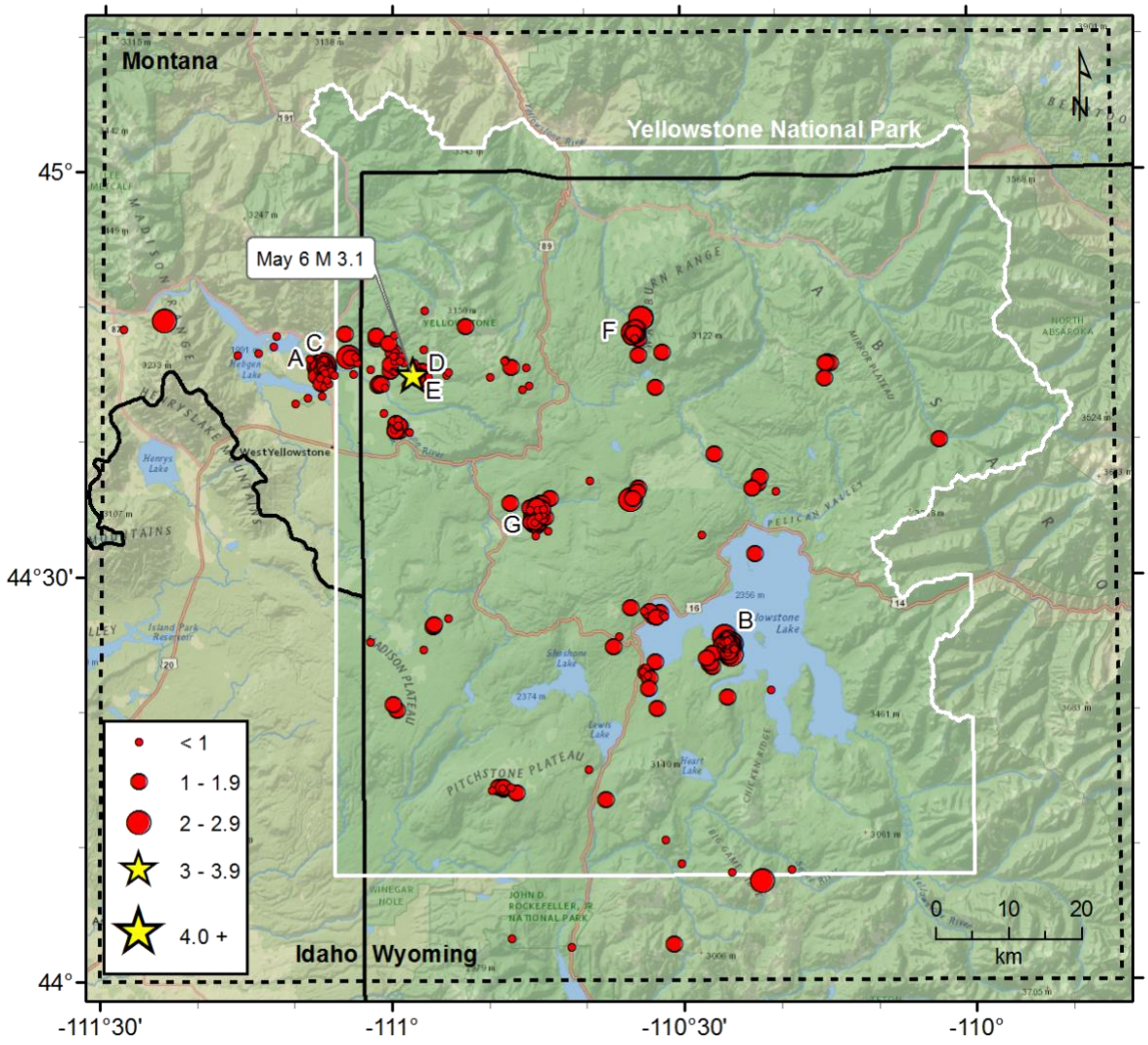

Figure 1. Epicenters of earthquakes located by the University of Utah Seismograph Stations, April 1, 2018, through June 30, 2018. Earthquake swarms (labeled A–G) are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2018 to June 30, 2018

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
February 25	08:10 MST 15:10 UTC	Yellowstone. Felt (III) at West Yellowstone, MT.	44º 45.24′	110º 59.70′	M_L 3.0
May 06	08:54 MDT 14:54 UTC	Yellowstone. Felt (II) at Yellowstone National Park.	44º 45.12′	110º 57.84′	M_L 3.1
May 25	02:04 MDT 08:04 UTC	Yellowstone. Felt (III) at West Yellowstone, MT.	44º 45.72′	111º 07.62′	M_L 2.6

† 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
June 30, 2018

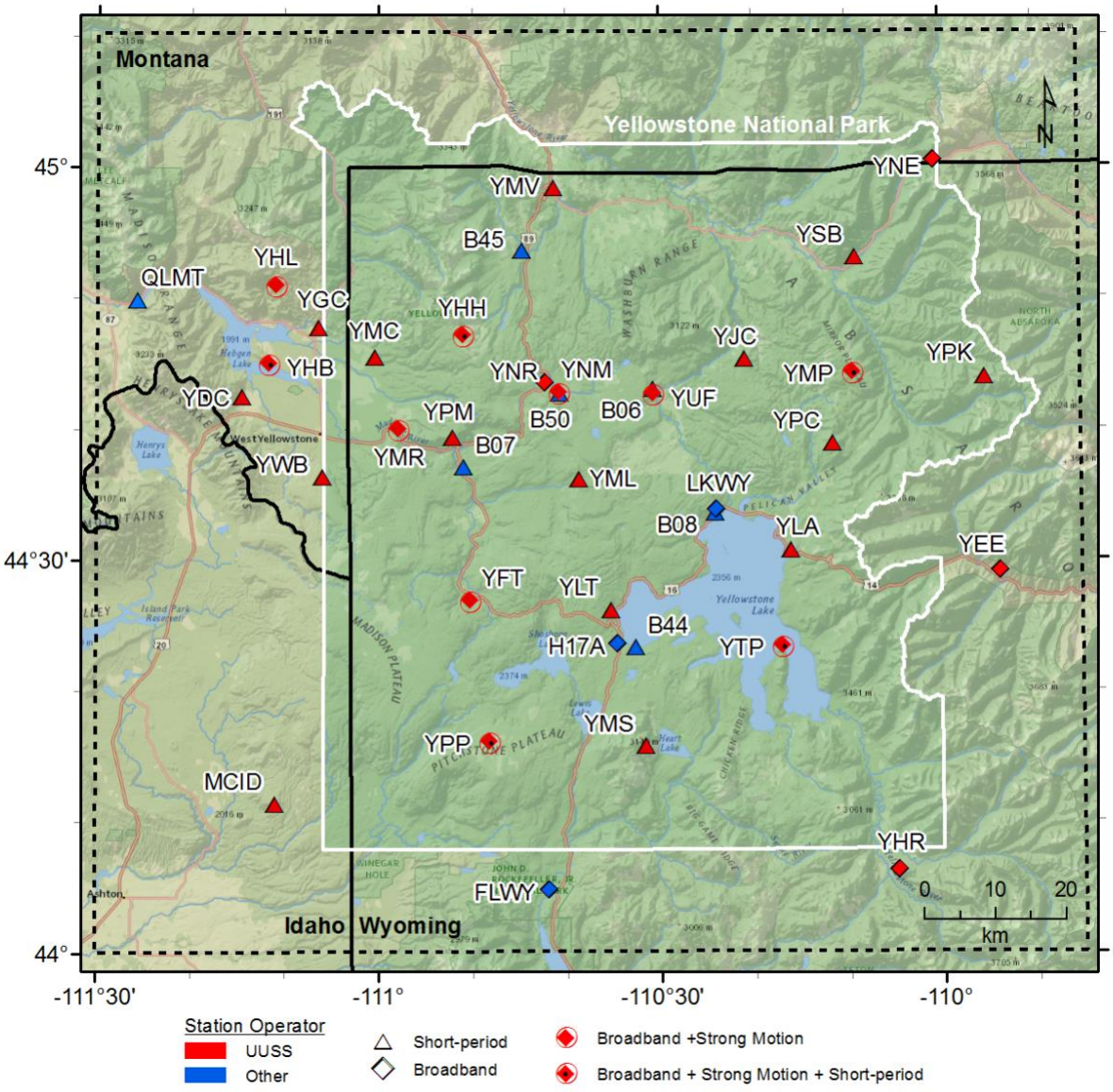

Figure 2. Seismograph stations of the Yellowstone Seismic Network as of June 30, 2018.

Table 2. Earthquakes in the Yellowstone Region: April 1–June 30, 2018

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180401	03:34:54.60	44º44.81’	110º56.96’	6.3	0.3	11	131	5	0.15
180402	07:24:09.36	44º44.85’	111º07.49’	9.4	0.2	7	103	6	0.11
180403	15:42:38.96	44º24.35’	110º26.95’	6.5	1.1W	18	93	8	0.17
180403	17:59:08.61	44º45.06’	111º06.81’	9.2	0.5	15	96	5	0.15
180403	17:59:17.51	44º44.42’	111º06.61’	7.7	0.3	13	82	6	0.18
180403	18:18:40.97	44º08.84’	110º30.17’	12.3	0.5	11	156	13	0.19
180403	18:38:13.94	44º45.75’	111º06.96’	10.3	0.9	17	83	4	0.16
180404	04:19:45.93	44º21.63’	110º20.85’	7.5	0.6	17	139	6	0.16
180404	09:20:03.40	44º45.73’	111º07.44’	10.5	0.4	11	122	4	0.11
180404	12:14:38.19	44º47.32’	111º00.40’	11.2	1.0	15	118	3	0.13
180405	08:07:23.93	44º25.63’	110º36.52’	3.9	0.9	12	88	2	0.09
180405	09:40:55.44	44º45.57’	111º06.99’	9.9	0.8	14	71	4	0.15
180405	10:18:53.18	44º45.66’	111º07.30’	9.8	1.8W	18	65	4	0.14
180405	10:40:40.50	44º45.43’	111º07.17’	9.7	0.3	12	71	4	0.15
180405	13:18:41.33	44º45.39’	111º06.87’	9.5	0.6	15	79	4	0.18
180405	13:22:31.02	44º45.51’	111º07.41’	11.3	2.5W	29	53	4	0.19
180405	13:28:40.92	44º45.77’	111º07.10’	10.0	2.0W	20	86	4	0.14
180405	14:42:42.40	44º45.56’	111º06.89’	10.0	1.5	21	81	4	0.14
180405	14:53:30.15	44º46.15’	111º07.13’	10.9	0.5	13	125	3	0.12
180405	16:09:09.92	44º45.43’	111º06.84’	8.6	0.5	12	73	4	0.12
180405	16:33:16.10	44º45.41’	111º07.07’	9.4	0.6	12	69	4	0.11
180405	16:34:41.48	44º45.19’	111º07.34’	8.7	0.4	9	89	5	0.14
180405	18:20:35.64	44º45.15’	111º07.01’	9.6	0.2	13	100	5	0.16
180405	20:02:04.68	44º45.45’	111º07.26’	11.2	1.3	15	67	4	0.16
180405	23:11:41.20	44º45.29’	111º07.24’	10.3	0.3	15	68	5	0.11
180406	04:25:16.19	44º45.61’	111º06.90’	10.1	0.8	19	81	4	0.14
180406	10:58:20.04	44º45.52’	111º06.88’	10.1	0.7	11	105	4	0.12
180406	11:25:17.00	44º45.79’	111º07.10’	10.2	0.8	15	86	4	0.12
180406	17:16:40.10	44º46.45’	110º59.15’	7.2	0.6	13	156	2	0.12
180406	17:29:42.19	44º48.97’	111º23.68’	11.9	2.3W	22	127	3	0.08
180407	00:21:32.81	44º45.32’	111º07.04’	9.6	1.5W	16	70	5	0.13
180407	09:40:44.05	44º45.50’	111º07.06’	10.2	2.7W	25	56	4	0.10
180407	09:44:13.09	44º45.56’	111º06.93’	10.8	0.5	14	72	4	0.08
180407	10:08:36.96	44º44.66’	111º06.80’	8.9	0.0	9	73	6	0.16
180407	10:31:00.40	44º46.09’	110º48.40’	4.6	0.3	10	176	4	0.15
180407	10:47:01.26	44º45.58’	111º06.99’	10.4	2.0W	20	70	4	0.11
180407	11:39:53.97	44º45.34’	111º06.44’	7.8	0.5	16	79	4	0.16
180407	11:56:34.17	44º45.57’	111º07.24’	9.8	1.4W	15	74	4	0.13
180407	14:03:37.68	44º45.57’	111º07.13’	10.5	1.8W	20	68	4	0.11
180407	14:10:24.91	44º45.40’	111º07.08’	10.9	0.7	13	69	4	0.09
180407	14:27:13.33	44º45.65’	111º07.33’	10.5	1.8W	21	64	4	0.11
180407	17:33:21.24	44º36.34’	110º20.21’	5.1	0.4	10	115	7	0.07
180407	17:44:05.00	44º45.51’	111º07.21’	11.2	0.4	12	75	4	0.11
180407	22:47:28.35	44º45.41’	111º07.02’	10.3	1.1	16	81	4	0.11
180407	22:57:41.66	44º44.19’	111º07.14’	6.1	0.6	9	83	6	0.05

Table 2. Earthquakes in the Yellowstone Region: April 1–June 30, 2018

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180408	04:43:49.96	44º45.69’	111º07.14’	10.1	1.0	11	86	4	0.06
180408	10:17:44.99	44º47.97’	110º59.79’	7.6	0.9	13	179	5	0.13
180409	07:04:02.41	44º46.92’	110º56.77’	5.1	0.8	10	193	5	0.18
180411	02:33:03.25	44º44.67’	110º15.07’	3.6	1.1	8	108	8	0.10
180411	02:33:23.08	44º45.78’	110º14.48’	4.8	1.7	8	122	7	0.09
180411	02:42:10.76	44º24.95’	110º25.34’	4.6*	0.7	12	104	11	0.08
180411	02:43:10.25	44º24.92’	110º25.38’	4.8*	0.5	11	108	11	0.11
180411	03:01:26.55	44º24.93’	110º25.43’	4.8*	0.9	17	104	11	0.11
180411	03:04:33.69	44º25.31’	110º25.92’	4.5*	0.7	12	105	12	0.13
180411	03:05:01.61	44º24.91’	110º25.34’	4.7*	0.3	12	109	11	0.13
180411	03:05:43.72	44º25.12’	110º25.45’	3.8*	1.5	14	101	11	0.12
180411	03:06:09.56	44º24.97’	110º25.21’	3.9*	1.0	14	103	11	0.12
180411	03:06:42.25	44º25.02’	110º25.36’	4.4*	0.4	10	107	11	0.09
180411	03:07:02.62	44º25.00’	110º25.36’	7.1	1.8W	19	103	11	0.14
180411	03:08:30.56	44º24.87’	110º25.63’	7.1	0.7	17	104	12	0.15
180411	03:08:40.76	44º25.18’	110º25.32’	2.9*	0.8	13	102	11	0.10
180411	03:08:56.70	44º25.15’	110º25.54’	3.5*	0.6	13	106	12	0.11
180411	03:13:03.24	44º24.90’	110º25.34’	6.9	1.9W	16	104	11	0.14
180411	03:17:32.66	44º25.00’	110º25.57’	5.0*	1.9W	15	103	12	0.11
180411	03:18:58.85	44º24.79’	110º25.31’	4.0*	1.6W	16	106	11	0.10
180411	03:25:34.60	44º25.14’	110º25.54’	5.5*	1.4W	16	101	12	0.12
180411	03:28:17.26	44º25.10’	110º25.45’	4.4*	1.0	14	102	11	0.12
180411	03:37:03.07	44º25.12’	110º25.38’	3.5*	1.4	13	101	11	0.07
180411	03:37:21.69	44º25.23’	110º25.45’	2.3*	1.6W	11	100	12	0.11
180411	03:39:39.74	44º25.22’	110º25.65’	4.7*	1.1	13	100	12	0.16
180411	03:40:52.74	44º25.11’	110º25.54’	3.8*	1.9W	16	102	12	0.13
180411	03:46:40.39	44º25.20’	110º25.67’	9.3	1.7W	15	88	12	0.14
180411	03:47:39.39	44º25.15’	110º25.89’	6.9	1.4	12	88	12	0.08
180411	03:48:54.02	44º25.05’	110º25.43’	3.9*	0.8	15	102	11	0.15
180411	03:49:24.10	44º25.07’	110º25.96’	3.8*	0.4	13	101	12	0.16
180411	03:50:22.63	44º24.90’	110º25.45’	8.5	1.8W	18	87	11	0.13
180411	03:51:48.08	44º25.05’	110º25.53’	6.9	1.8W	11	107	12	0.08
180411	03:52:02.27	44º24.72’	110º24.67’	2.2	0.1	11	111	10	0.25
180411	03:52:10.16	44º25.27’	110º25.39’	2.6*	-0.1	12	105	11	0.14
180411	03:52:24.62	44º25.16’	110º25.62’	2.2*	-0.1	12	106	12	0.16
180411	04:03:46.41	44º45.86’	110º14.80’	6.7	1.8	12	125	8	0.17
180411	04:12:57.05	44º24.81’	110º25.41’	6.5	1.1	12	88	11	0.10
180411	05:00:04.37	44º45.83’	110º15.03’	4.8	1.5	9	126	8	0.14
180411	15:57:09.18	44º25.05’	110º25.60’	4.9*	0.9	10	102	12	0.14
180411	15:57:19.20	44º25.23’	110º25.62’	2.8*	0.7	11	100	12	0.14
180411	15:57:34.07	44º24.94’	110º25.79’	2.0*	0.5	10	158	12	0.19
180411	15:59:27.71	44º24.87’	110º25.60’	7.2	0.6	15	88	12	0.13
180411	16:00:14.20	44º24.93’	110º25.42’	8.3	2.1W	23	87	11	0.20
180411	16:00:30.96	44º24.98’	110º25.58’	4.6*	1.4	17	87	12	0.15
180411	16:05:55.66	44º25.68’	110º25.48’	4.7*	0.8	14	101	12	0.17

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180411	16:06:36.49	44º24.56’	110º25.25’	6.7	2.4W	20	90	11	0.15
180411	16:29:05.60	44º24.33’	110º25.66’	2.2*	1.8W	13	110	11	0.17
180411	16:30:50.32	44º24.45’	110º25.46’	6.5	1.5W	14	102	11	0.18
180411	16:31:09.40	44º24.44’	110º25.41’	6.2	0.9	13	102	11	0.15
180411	16:31:49.76	44º25.05’	110º25.55’	2.2*	1.6	7	107	12	0.31
180411	16:32:08.47	44º24.89’	110º25.43’	2.2*	0.6	12	109	11	0.13
180411	16:32:39.34	44º24.71’	110º25.35’	6.8	1.8W	17	89	11	0.18
180411	16:33:10.04	44º24.64’	110º25.12’	6.3	1.1	14	89	11	0.11
180411	16:34:55.32	44º24.85’	110º25.26’	4.7*	1.2	11	110	11	0.07
180411	16:35:52.62	44º24.65’	110º25.68’	5.2*	1.5W	12	90	12	0.12
180411	16:36:38.75	44º25.29’	110º25.67’	1.6*	1.4	10	99	12	0.27
180411	16:38:05.54	44º24.87’	110º25.52’	3.0*	1.8W	15	105	11	0.13
180411	16:41:35.77	44º24.84’	110º25.70’	3.7*	1.4W	11	109	12	0.12
180411	16:42:04.06	44º24.82’	110º25.47’	3.5*	2.1W	13	105	11	0.10
180411	16:42:36.29	44º25.58’	110º25.70’	12.1	2.2	7	96	12	0.08
180411	16:43:30.51	44º24.41’	110º25.24’	7.0	1.0	7	111	11	0.03
180411	16:43:46.10	44º24.60’	110º25.30’	8.5	2.0W	19	108	11	0.19
180411	16:45:29.01	44º24.84’	110º25.44’	4.5*	1.1	15	105	11	0.10
180411	16:47:24.67	44º24.49’	110º25.31’	7.9	1.6W	12	91	11	0.11
180411	16:50:20.23	44º24.91’	110º25.41’	1.9*	2.3W	15	104	11	0.11
180411	16:52:06.76	44º24.88’	110º25.54’	2.0*	1.6	13	104	11	0.21
180411	16:52:15.03	44º24.83’	110º25.36’	7.5	2.2W	20	105	11	0.16
180411	16:52:38.15	44º24.93’	110º25.52’	2.2*	1.3	11	108	11	0.12
180411	16:59:21.21	44º25.21’	110º25.58’	3.2*	1.0	10	101	12	0.11
180411	17:03:14.52	44º24.71’	110º25.61’	4.9*	1.1	11	110	12	0.08
180411	17:03:55.02	44º25.17’	110º25.42’	3.7*	0.4	12	106	11	0.17
180411	17:04:19.16	44º24.86’	110º25.30’	5.7	1.9W	12	105	11	0.23
180411	17:06:11.91	44º24.13’	110º25.23’	8.9	1.5W	16	94	11	0.11
180411	17:08:42.17	44º24.77’	110º25.36’	6.8	1.6W	17	89	11	0.19
180411	17:09:20.88	44º25.26’	110º25.69’	5.6*	1.6W	12	100	12	0.15
180411	17:10:51.15	44º24.71’	110º25.54’	8.9	0.9	13	99	11	0.12
180411	17:12:27.20	44º21.13’	110º25.36’	11.5	1.1	7	149	12	0.08
180411	17:16:42.42	44º24.67’	110º25.26’	6.0	1.4	13	99	11	0.14
180411	17:19:20.14	44º24.85’	110º25.55’	2.8*	2.1W	17	105	11	0.12
180411	17:22:56.09	44º24.61’	110º25.04’	7.1	1.6W	14	90	11	0.16
180411	17:35:36.05	44º25.09’	110º24.96’	6.7	1.3	14	95	11	0.21
180411	17:41:57.61	44º24.24’	110º24.96’	8.2	2.0W	18	93	11	0.15
180411	18:09:40.76	44º25.28’	110º26.14’	4.7*	0.5	12	105	12	0.15
180411	18:10:23.84	44º24.96’	110º25.73’	6.0	0.8	13	96	12	0.11
180411	18:21:03.07	44º24.79’	110º25.16’	5.8	0.8	11	101	11	0.14
180411	18:27:56.87	44º24.99’	110º25.94’	3.0*	1.4	12	107	12	0.16
180411	18:42:18.15	44º25.06’	110º25.19’	2.7*	0.2	12	108	11	0.09
180411	19:35:27.67	44º25.02’	110º25.56’	3.7*	1.1	12	108	12	0.17
180411	19:37:00.24	44º24.92’	110º25.33’	4.5*	0.9	13	104	11	0.08
180411	19:38:43.91	44º25.08’	110º25.43’	2.0*	0.9	12	107	11	0.12

Table 2. Earthquakes in the Yellowstone Region: April 1–June 30, 2018

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180411	19:38:55.06	44º25.24’	110º25.89’	2.2*	0.3	8	152	12	0.18
180411	20:33:37.43	44º25.05’	110º25.48’	4.2*	1.6W	19	102	11	0.12
180411	20:38:15.83	44º24.98’	110º25.51’	3.9*	0.6	13	108	11	0.13
180411	20:54:50.22	44º25.35’	110º25.48’	2.3*	0.6	10	104	12	0.12
180411	20:57:04.58	44º24.85’	110º25.19’	6.8	1.5W	16	110	11	0.23
180411	20:59:42.72	44º24.95’	110º25.45’	2.6*	0.6	12	108	11	0.11
180411	21:02:06.95	44º24.95’	110º25.00’	7.6	1.8W	23	86	11	0.18
180411	21:03:28.43	44º25.33’	110º25.24’	3.8*	0.8	11	104	11	0.10
180411	21:04:20.42	44º25.35’	110º24.90’	7.4	1.8W	20	82	11	0.18
180411	21:06:00.08	44º24.99’	110º24.87’	8.5	1.8W	22	86	11	0.18
180411	21:11:28.92	44º25.37’	110º25.21’	2.6*	0.7	11	104	11	0.13
180411	21:12:13.71	44º25.00’	110º25.11’	7.2	1.6W	22	86	11	0.14
180411	21:13:56.87	44º25.06’	110º24.95’	7.3	2.1W	25	95	11	0.17
180411	21:17:03.37	44º25.48’	110º25.39’	3.0*	1.6W	13	98	12	0.09
180411	21:22:28.19	44º25.05’	110º25.23’	6.8	1.8W	17	86	11	0.10
180411	21:25:55.56	44º25.03’	110º25.37’	2.2*	0.1	10	107	11	0.27
180411	21:26:19.28	44º24.86’	110º25.31’	5.7	0.5	12	98	11	0.09
180411	21:26:59.05	44º24.71’	110º25.33’	5.4*	0.4	13	99	11	0.13
180411	21:27:16.45	44º25.20’	110º25.53’	2.1*	0.2	10	106	12	0.22
180411	21:41:47.35	44º25.17’	110º25.33’	6.7	1.7W	14	87	11	0.11
180411	21:46:50.12	44º25.30’	110º25.42’	2.2*	0.4	12	105	12	0.22
180411	22:48:54.78	44º24.85’	110º25.51’	7.4	0.4	12	98	11	0.21
180412	00:30:14.03	44º43.47’	111º07.28’	5.4	0.4	13	76	7	0.10
180412	00:48:19.78	44º45.00’	111º06.02’	10.5	0.0	12	84	5	0.09
180412	01:05:28.45	44º24.90’	110º24.80’	9.6	1.9W	25	86	11	0.17
180412	02:35:59.44	44º25.14’	110º25.31’	7.4	1.1W	19	86	11	0.18
180412	02:36:12.52	44º25.17’	110º25.33’	7.4	1.0	20	95	11	0.14
180412	02:36:25.60	44º25.36’	110º25.51’	2.5*	-0.1	10	110	12	0.09
180412	02:37:17.70	44º25.07’	110º25.58’	8.1	1.2W	14	102	12	0.10
180412	02:38:00.00	44º24.99’	110º25.30’	6.2	1.3W	17	103	11	0.18
180412	02:39:19.80	44º25.24’	110º25.33’	8.5	1.4W	14	88	11	0.11
180412	02:46:20.25	44º25.11’	110º25.48’	7.6	1.7W	22	86	12	0.18
180412	03:02:29.96	44º25.15’	110º25.51’	8.5	1.0	10	87	12	0.12
180412	04:46:52.68	44º45.63’	111º07.67’	10.4	1.6W	16	94	4	0.11
180412	08:03:04.68	44º45.57’	111º07.54’	10.0	1.7W	20	66	4	0.13
180412	14:52:00.59	44º45.54’	111º07.55’	10.1	1.8W	20	91	4	0.12
180412	22:40:41.95	44º45.08’	111º04.00’	9.1	0.5	7	111	5	0.11
180412	22:50:15.16	44º46.39’	111º04.52’	11.9	2.2W	25	78	4	0.14
180412	22:51:40.68	44º46.27’	111º04.35’	12.2	1.2	16	87	4	0.15
180413	01:03:40.21	44º14.07’	110º47.14’	5.2	1.0	14	91	4	0.24
180413	02:21:45.86	44º45.92’	111º03.65’	7.8	0.7	13	179	4	0.16
180413	06:42:07.38	44º45.58’	111º07.55’	10.1	0.5	11	120	4	0.14
180413	10:59:12.90	44º46.40’	111º03.86’	10.3	0.6	14	136	4	0.11
180416	02:49:52.57	44º24.64’	110º25.24’	6.0	1.2	10	100	11	0.08
180416	02:52:29.04	44º24.67’	110º25.23’	7.2	1.4	13	94	11	0.15

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180418	09:07:16.18	44º46.16’	110º48.21’	4.7	0.6	16	103	4	0.12
180419	06:18:09.26	44º14.49’	110º49.06’	7.0	1.1	11	162	3	0.22
180419	07:05:06.11	44º14.51’	110º48.53’	7.3	1.0	15	159	3	0.25
180419	09:42:55.13	44º26.42’	110º55.81’	3.9	1.9W	19	118	8	0.18
180419	23:33:57.25	44º27.75’	110º35.32’	4.8	1.6	8	119	3	0.05
180420	00:01:13.91	44º48.08’	111º04.98’	6.2	1.9W	24	93	2	0.16
180420	03:35:02.82	44º27.53’	110º34.01’	4.7	0.9	6	232	3	0.18
180422	05:08:14.67	44º44.40’	111º07.40’	9.0	1.0W	16	90	6	0.19
180422	09:51:03.93	44º44.86’	111º07.58’	10.2	0.4	15	102	6	0.11
180422	22:43:59.99	44º46.20’	111º08.57’	11.1	0.5	14	160	4	0.09
180422	23:50:26.86	44º44.99’	111º07.90’	10.4	1.3W	17	109	5	0.14
180424	10:59:53.25	44º27.37’	110º32.28’	2.0	1.7W	22	68	5	0.13
180424	11:00:09.29	44º27.26’	110º32.06’	2.4	0.3	13	130	5	0.17
180424	11:00:21.10	44º27.09’	110º31.82’	2.1	-0.1	10	128	5	0.11
180424	19:08:32.93	44º49.82’	110º56.61’	4.9	0.8	17	171	9	0.13
180425	14:56:05.37	44º37.17’	110º39.48’	5.9	0.8	13	97	2	0.14
180427	08:14:48.38	44º45.86’	111º07.11’	8.3	1.1	15	87	4	0.15
180428	05:48:25.49	44º45.47’	111º07.56’	9.6	1.7W	19	90	5	0.13
180430	01:17:54.65	44º21.79’	110º33.53’	2.7	1.2W	19	102	4	0.19
180430	09:50:10.61	44º02.86’	110º31.00’	9.1	0.9	14	164	15	0.16
180504	14:10:02.66	44º34.18’	110º45.14’	6.0	2.1W	17	86	9	0.10
180504	15:35:11.40	44º34.07’	110º44.98’	6.7	1.5W	14	98	9	0.10
180504	17:08:27.41	44º33.82’	110º45.06’	3.0	1.5W	11	76	10	0.17
180504	17:10:46.67	44º34.11’	110º45.27’	7.2	1.0W	8	100	9	0.08
180504	17:11:53.36	44º33.17’	110º45.11’	2.2	0.8W	9	103	10	0.15
180504	23:34:01.92	44º34.12’	110º45.24’	8.6	0.4	11	100	9	0.14
180504	23:34:34.57	44º34.26’	110º45.17’	6.8	1.2	17	99	9	0.18
180504	23:35:18.06	44º34.15’	110º45.30’	6.3	1.2	17	100	9	0.17
180505	01:55:30.69	44º34.27’	110º45.52’	7.6	1.7W	22	61	9	0.11
180505	14:46:54.91	44º45.19’	110º57.30’	8.2	1.4W	21	114	4	0.17
180505	16:56:54.11	44º44.97’	110º57.50’	10.9	1.5W	24	112	4	0.18
180506	01:40:51.10	44º24.74’	110º56.81’	6.2	0.8	12	113	10	0.17
180506	03:25:50.77	44º45.29’	110º56.98’	9.2	0.9	11	147	5	0.14
180506	03:27:42.06	44º45.13’	110º57.57’	8.7	1.4W	20	114	4	0.15
180506	04:54:43.84	44º45.04’	110º57.45’	8.0	0.9	14	138	4	0.19
180506	04:58:07.70	44º45.11’	110º57.59’	11.0	1.8W	29	68	4	0.20
180506	04:59:06.29	44º45.07’	110º57.40’	8.3	1.4W	19	113	4	0.14
180506	11:02:58.42	44º44.61’	110º57.23’	6.5	0.4	12	124	5	0.17
180506	14:54:02.89	44º45.10’	110º57.85’	10.8	3.0W	35	35	3	0.18
180506	15:23:12.87	44º44.71’	110º57.11’	7.1	1.0	18	113	5	0.12
180506	15:23:34.18	44º44.52’	110º56.83’	7.9	0.6	13	123	5	0.17
180506	15:29:17.21	44º46.65’	110º31.99’	5.4	1.6W	19	151	7	0.15
180506	15:30:18.63	44º44.62’	110º56.65’	6.6	0.9	18	113	5	0.12
180506	15:34:28.25	44º45.26’	110º57.14’	8.0	0.6	11	146	4	0.11
180506	15:39:27.56	44º44.63’	110º56.89’	7.1	0.9	15	112	5	0.13

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180506	15:39:38.71	44º44.92’	110º56.29’	5.2	0.5	13	134	6	0.18
180506	15:43:51.67	44º44.92’	110º57.61’	9.1	1.1W	13	133	4	0.09
180506	15:53:04.62	44º44.78’	110º57.02’	6.9	1.5W	17	115	5	0.11
180506	18:28:52.51	44º44.75’	110º56.80’	7.1	0.7	14	130	5	0.13
180506	18:50:22.50	44º44.76’	110º57.05’	7.6	0.5	12	130	5	0.13
180506	19:22:02.80	44º44.51’	110º56.94’	6.9	0.9	12	122	5	0.15
180506	21:04:09.90	44º44.81’	110º57.07’	8.0	1.5W	16	116	5	0.08
180506	22:45:38.42	44º45.39’	110º57.65’	9.7	1.9W	19	116	4	0.10
180507	00:19:01.41	44º44.68’	110º57.23’	7.0	0.4	13	127	4	0.12
180507	00:50:07.11	44º44.91’	110º57.34’	7.3	1.2W	18	118	4	0.11
180507	03:21:22.92	44º45.13’	110º57.49’	8.1	1.4W	17	124	4	0.16
180507	03:53:06.22	44º44.81’	110º57.55’	8.2	1.7W	21	110	4	0.12
180507	06:33:19.77	44º44.97’	110º57.35’	8.1	0.3	12	136	4	0.15
180507	07:03:49.71	44º44.75’	110º57.08’	8.3	0.3	14	129	5	0.13
180507	18:51:07.54	44º45.15’	110º58.39’	10.1	0.3	13	121	3	0.13
180508	02:19:02.28	44º41.66’	110º59.95’	10.2	0.6	10	136	7	0.08
180508	05:33:32.10	44º44.90’	110º57.36’	7.3	1.2W	19	117	4	0.14
180508	07:04:13.93	44º26.52’	110º55.72’	4.1	1.6W	16	139	7	0.15
180508	07:08:35.27	44º27.00’	110º54.19’	5.1	0.9	8	100	5	0.12
180508	12:58:23.33	44º45.31’	110º57.44’	8.1	0.5	18	130	4	0.12
180508	21:36:48.16	44º10.59’	110º31.89’	11.4	0.9	16	147	17	0.20
180508	22:50:45.43	44º45.34’	110º57.31’	7.4	0.8	14	150	4	0.12
180509	23:47:48.43	44º41.15’	110º59.58’	9.4	1.5W	19	47	8	0.14
180510	00:06:39.31	44º40.90’	110º59.68’	8.5	0.9	13	48	9	0.16
180510	00:07:31.79	44º41.74’	110º59.41’	9.9	0.6	9	154	7	0.15
180510	04:49:49.14	44º20.27’	110º32.71’	5.0	1.4W	15	131	6	0.14
180510	11:59:02.95	44º48.37’	111º27.90’	12.1	0.9	12	110	4	0.17
180512	02:30:04.48	44º44.35’	110º58.65’	2.2	-0.3	7	173	3	0.03
180512	04:27:33.91	44º44.15’	111º00.76’	6.6	0.4	14	71	3	0.15
180512	22:46:51.08	44º41.44’	110º59.60’	9.1	1.0	12	54	8	0.08
180512	22:47:14.34	44º41.29’	110º59.43’	8.6	0.4	10	99	8	0.11
180513	13:09:34.15	44º44.29’	111º01.50’	9.6	1.7W	21	76	3	0.18
180513	14:18:15.50	44º45.47’	111º02.25’	10.6	0.9	14	170	2	0.12
180513	16:42:20.92	44º45.78’	111º00.22’	11.8	1.8W	21	81	0	0.17
180513	17:21:53.73	44º45.35’	110º59.86’	9.4	0.8	16	112	1	0.14
180513	17:29:38.97	44º33.47’	110º43.92’	5.5	0.8W	9	162	9	0.09
180513	22:50:05.08	44º44.34’	111º01.17’	8.0	1.3W	19	72	2	0.22
180514	02:35:29.05	44º46.46’	111º16.08’	9.1	0.8	17	142	6	0.16
180514	11:09:36.39	44º44.42’	111º01.35’	9.6	1.4W	20	77	2	0.18
180514	17:35:58.72	44º41.21’	110º59.40’	8.3	1.1	11	73	8	0.09
180514	19:45:00.38	44º41.20’	110º59.21’	8.1	1.1	12	72	8	0.09
180515	08:40:02.49	44º45.32’	111º00.21’	11.0	1.9W	25	70	0	0.19
180515	14:30:29.73	44º41.25’	110º59.51’	8.0	0.5	8	128	8	0.08
180515	15:54:46.44	44º45.28’	110º59.73’	8.9	0.5	18	109	1	0.14
180516	07:53:03.50	44º45.17’	110º57.12’	8.2	1.2W	16	126	4	0.17

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180516	09:39:15.85	44º36.59’	110º22.71’	4.9	1.5W	15	71	5	0.08
180516	09:45:20.83	44º45.92’	110º57.72’	10.1	0.6	14	146	4	0.13
180517	17:47:23.13	44º41.25’	110º59.28’	8.9	0.7	13	72	8	0.08
180518	07:25:08.11	44º43.36’	111º08.76’	3.5	0.0	8	76	5	0.10
180518	10:50:03.19	44º42.24’	111º00.88’	12.1	0.4	13	112	6	0.25
180518	12:27:52.36	44º41.04’	110º59.79’	9.6	0.8	17	76	8	0.13
180518	12:30:05.32	44º41.13’	110º59.65’	8.8	1.5W	25	46	8	0.16
180518	12:44:50.79	44º41.33’	110º59.28’	9.3	1.0	13	52	8	0.11
180518	13:48:23.64	44º40.91’	110º59.32’	8.4	1.3W	17	73	9	0.11
180518	18:36:53.58	44º40.81’	110º58.26’	7.5	0.7	10	89	9	0.08
180518	19:10:02.64	44º40.94’	110º59.72’	11.5	1.0	16	47	9	0.18
180518	19:25:00.55	44º23.32’	110º33.83’	2.9	0.9	13	110	2	0.17
180518	19:25:26.72	44º23.74’	110º32.87’	6.2	1.4W	11	80	1	0.24
180518	19:28:54.42	44º23.00’	110º33.78’	2.7	1.4W	15	112	2	0.13
180518	19:43:55.82	44º23.06’	110º34.14’	3.0	0.8	10	111	2	0.10
180518	19:50:52.52	44º22.57’	110º33.48’	1.9	1.2W	13	101	2	0.22
180518	20:12:11.62	44º22.76’	110º33.67’	2.4	0.4	9	113	2	0.13
180518	22:19:07.67	44º36.88’	110º22.15’	4.8	1.7W	16	69	6	0.09
180519	16:05:05.54	44º44.24’	110º45.80’	7.3	0.7	13	159	7	0.19
180519	16:07:42.71	44º44.00’	110º46.46’	3.1	0.5	12	148	8	0.15
180519	20:05:31.01	44º47.70’	111º01.63’	11.2	1.8W	20	174	4	0.15
180519	20:08:53.08	44º47.90’	111º01.66’	11.7	1.3	19	177	5	0.13
180520	01:25:03.15	44º41.38’	110º59.62’	10.7	1.1W	16	52	8	0.15
180520	02:05:23.65	44º46.65’	111º13.95’	12.4	0.5	12	147	4	0.13
180520	05:13:43.14	44º45.22’	110º57.27’	8.2	1.0	17	132	4	0.16
180521	04:58:56.46	44º02.71’	110º41.54’	3.0	0.5	11	154	4	0.15
180522	02:40:04.15	44º39.09’	110º26.60’	2.2	1.0	10	130	9	0.06
180524	07:27:33.73	44º46.42’	110º59.72’	7.9	0.6	11	191	2	0.11
180524	07:29:39.01	44º46.11’	110º59.76’	8.6	0.7	13	176	1	0.16
180524	07:35:03.43	44º45.97’	110º58.79’	6.6	0.6	9	185	2	0.13
180524	07:36:48.29	44º46.42’	110º59.90’	7.7	0.6	11	191	2	0.13
180524	07:50:52.93	44º46.10’	110º59.18’	8.0	0.6	11	185	2	0.12
180524	10:38:24.12	44º46.75’	110º59.90’	10.5	1.8W	17	85	2	0.16
180524	18:09:00.47	44º46.75’	110º59.74’	8.3	0.8	10	195	2	0.13
180525	08:04:21.77	44º45.69’	111º07.63’	9.9	2.6W	29	52	4	0.13
180525	10:11:12.90	44º45.94’	111º07.37’	9.8	0.5	13	125	4	0.15
180525	21:38:03.95	44º45.98’	111º06.98’	9.4	0.5	5	118	3	0.09
180525	21:39:45.29	44º45.75’	111º07.28’	9.6	1.8W	21	89	4	0.15
180526	12:02:36.02	44º25.30’	111º02.26’	4.9*	0.9	11	79	16	0.18
180528	02:42:45.37	44º33.12’	110º27.94’	2.2	0.3	14	117	5	0.15
180528	23:20:50.11	44º45.02’	110º54.33’	7.4	0.6	16	120	6	0.15
180529	05:10:23.31	44º44.88’	110º49.84’	9.3	0.1	9	125	5	0.14
180529	10:16:43.12	44º45.26’	110º54.15’	8.4	0.5	12	133	6	0.12
180529	20:03:51.04	44º44.08’	110º32.66’	5.6	1.6W	17	122	3	0.15
180530	08:15:11.29	44º45.28’	111º06.62’	9.7	0.6	14	76	5	0.14

Table 2. Earthquakes in the Yellowstone Region: April 1–June 30, 2018

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180530	13:08:06.64	44º27.10’	110º33.00’	4.3	1.4W	14	94	3	0.11
180530	13:08:47.97	44º27.48’	110º33.42’	-3.5	1.4W	6	177	3	0.11
180530	13:13:20.98	44º27.03’	110º32.76’	3.7	1.2W	8	156	4	0.03
180531	15:33:08.81	44º35.86’	110º35.06’	2.1	1.3W	13	80	5	0.15
180531	16:01:56.23	44º36.37’	110º34.61’	1.4	1.4W	11	216	5	0.14
180531	18:04:43.64	44º35.98’	110º35.04’	2.0	1.5W	16	81	5	0.19
180531	18:06:16.72	44º36.64’	110º34.53’	1.3	1.4	6	218	5	0.10
180531	19:52:39.31	44º35.78’	110º35.33’	4.2	2.0	17	78	4	0.12
180601	01:24:43.93	44º23.67’	110º27.20’	2.4	1.3	12	154	7	0.20
180601	01:42:12.64	44º23.58’	110º27.27’	2.6	1.9W	16	120	7	0.11
180601	01:45:03.26	44º24.03’	110º27.49’	2.3	1.1	11	150	7	0.12
180601	01:47:55.49	44º23.39’	110º26.97’	2.1	1.6W	17	123	8	0.25
180601	17:00:01.49	44º45.80’	111º06.88’	9.8	0.8	13	111	4	0.10
180604	08:08:36.67	44º15.81’	110º39.75’	10.1	0.8	19	112	11	0.21
180604	18:33:13.66	44º08.36’	110º18.86’	6.3*	0.9	10	162	28	0.21
180606	16:58:01.48	44º45.77’	110º57.57’	9.6	0.7	11	167	4	0.09
180608	14:19:05.78	44º47.92’	111º12.01’	8.0	0.7	15	170	5	0.17
180609	04:54:41.39	44º14.46’	110º48.63’	6.4	0.9	10	160	3	0.17
180609	07:23:49.01	44º45.62’	110º47.68’	4.8	1.9W	19	86	5	0.13
180609	10:33:17.93	44º47.92’	110º34.75’	3.7	1.6W	16	154	10	0.12
180609	10:50:41.54	44º49.17’	110º34.14’	9.8	2.1W	20	87	12	0.19
180609	11:12:03.17	44º47.66’	110º34.41’	3.9	1.8W	14	194	10	0.10
180609	11:23:37.66	44º24.86’	110º37.13’	1.5	1.2	5	179	4	0.07
180609	12:30:06.02	44º48.06’	110º34.77’	6.6	1.5W	14	156	11	0.14
180609	13:00:40.31	44º49.19’	110º34.08’	9.8	2.1W	19	87	12	0.21
180609	13:32:12.30	44º48.02’	110º34.59’	4.6*	1.4	17	156	11	0.13
180609	13:39:23.98	44º48.41’	110º34.51’	3.8*	1.8W	15	161	11	0.16
180609	13:50:12.48	44º48.06’	110º34.90’	2.2*	1.0	15	156	11	0.10
180609	14:03:07.37	44º48.09’	110º34.78’	3.2*	1.0	17	156	11	0.12
180610	11:38:58.33	44º48.25’	110º34.84’	4.8*	1.6W	15	158	11	0.10
180610	12:50:11.04	44º48.00’	110º34.51’	4.6	1.7W	15	156	10	0.10
180610	12:50:30.78	44º46.44’	110º34.41’	7.0	0.9	10	223	8	0.12
180610	21:09:41.06	44º40.08’	110º03.29’	9.6	1.9W	9	155	11	0.15
180611	05:36:43.81	44º48.65’	110º52.40’	11.0	1.3W	17	117	3	0.18
180611	12:05:02.09	44º48.16’	110º34.94’	7.1	2.0W	25	128	11	0.18
180611	12:24:55.41	44º47.83’	110º35.13’	8.2	1.6W	15	152	11	0.17
180611	12:25:26.96	44º47.73’	110º34.81’	5.1	0.7	14	152	10	0.15
180611	12:28:11.15	44º48.11’	110º34.99’	8.2	1.0	11	156	11	0.15
180611	12:31:17.78	44º48.51’	110º34.70’	6.9	1.3	13	161	11	0.14
180612	05:51:47.89	44º35.16’	110º44.55’	7.8	1.3	13	87	8	0.15
180612	05:58:37.84	44º35.32’	110º45.29’	9.6	1.3	8	92	8	0.08
180612	06:05:11.82	44º35.50’	110º44.65’	8.8	1.9W	20	68	8	0.18
180612	06:07:28.02	44º35.27’	110º44.73’	8.1	1.2W	17	69	8	0.18
180612	06:08:57.08	44º35.16’	110º45.26’	10.1	1.1	15	86	8	0.15
180612	06:09:04.36	44º35.54’	110º47.79’	9.8	1.1W	7	109	5	0.18

Table 2. Earthquakes in the Yellowstone Region: April 1–June 30, 2018

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
180612	06:09:14.79	44º34.99’	110º44.91’	6.5	1.5	10	91	9	0.13
180612	06:33:40.47	44º35.49’	110º44.52’	8.0	1.3W	15	68	8	0.18
180612	06:33:46.55	44º35.84’	110º43.63’	8.4	1.5W	12	76	7	0.15
180612	06:40:27.00	44º35.35’	110º44.62’	7.6	1.7W	22	68	8	0.18
180612	06:43:17.76	44º34.71’	110º44.50’	4.8	0.6W	9	91	8	0.08
180612	06:46:53.58	44º35.08’	110º44.38’	6.8	0.5	9	135	8	0.07
180612	06:58:11.05	44º35.28’	110º45.08’	7.4	1.0W	14	91	8	0.18
180612	07:06:43.98	44º35.08’	110º44.49’	5.3	1.0	8	88	8	0.09
180612	08:29:16.60	44º34.75’	110º44.56’	4.8	0.9	7	139	8	0.10
180612	08:53:48.84	44º35.03’	110º44.91’	7.1	0.9	7	91	9	0.09
180613	01:02:29.95	44º31.68’	110º22.49’	2.2	1.0	10	126	4	0.13
180613	21:30:54.15	44º13.60’	110º38.03’	12.1	1.0	16	121	14	0.17
180615	21:20:59.83	44º14.40’	110º48.59’	6.8	1.1	14	159	3	0.23
180617	04:43:03.62	44º45.61’	110º46.10’	2.0	0.5	9	189	6	0.19
180617	14:18:26.02	44º47.12’	111º12.36’	5.9	0.5	14	88	4	0.13
180619	17:34:23.95	44º42.92’	111º10.01’	14.0	0.4	17	82	5	0.16
180621	07:57:26.73	44º14.27’	110º49.74’	6.3	0.9	12	99	4	0.20
180621	07:59:26.90	44º14.52’	110º47.79’	7.9	0.7	9	106	3	0.22
180621	16:37:43.10	44º35.21’	110º45.77’	5.9	1.3	14	73	8	0.22
180622	18:13:29.97	44º08.20’	110º25.03’	17.4	0.8	8	214	23	0.14
180622	19:18:17.09	44º07.50’	110º21.92’	6.5*	2.1W	26	157	27	0.17
180625	05:16:44.17	44º34.13’	110º45.68’	6.1	1.0	7	139	9	0.06
180626	08:04:34.39	44º20.62’	110º59.86’	2.6*	1.0	7	139	17	0.21
180626	08:10:02.29	44º20.20’	110º59.53’	6.2*	1.6	17	111	17	0.14
180630	01:46:03.80	44º03.31’	110º47.71’	11.1	0.4	13	94	8	0.17
180630	09:41:01.35	44º37.40’	110º21.92’	8.6	1.6W	9	250	8	0.31
180630	10:20:45.14	44º34.71’	110º45.13’	5.9	1.6W	15	85	9	0.11
180630	10:24:58.23	44º34.49’	110º45.20’	5.8	1.0W	9	98	9	0.19
180630	10:32:08.25	44º34.39’	110º44.85’	2.1	1.6W	19	58	9	0.23
180630	10:35:57.81	44º34.36’	110º44.33’	2.6	0.7	8	146	8	0.13
180630	10:36:14.61	44º34.30’	110º44.74’	6.0	0.7	13	94	9	0.11
180630	10:50:19.88	44º34.73’	110º44.83’	6.8	1.3	8	93	9	0.12
180630	10:56:04.73	44º34.47’	110º44.17’	2.6	1.1W	19	66	8	0.16
180630	11:17:20.69	44º34.59’	110º44.88’	6.4	1.3W	11	94	9	0.11
180630	11:18:46.62	44º34.53’	110º44.90’	5.7	--	6	139	9	0.10
180630	11:20:15.20	44º34.70’	110º45.35’	6.6	1.1W	6	97	9	0.08
180630	11:24:59.67	44º34.77’	110º45.14’	5.2	2.3W	26	71	9	0.18
180630	11:38:48.47	44º35.05’	110º45.69’	8.3	0.1	9	107	8	0.19
180630	11:49:50.52	44º34.55’	110º44.62’	3.5	1.1W	8	141	9	0.22

number of earthquakes = 399
* indicates poor depth control
W indicates Wood-Anderson data used for magnitude calculation

Table 3
UNIVERSITY OF UTAH YELLOWSTONE SEISMIC NETWORK
Operating Seismograph Stations
June 30, 2018

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	Centaur	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					Compact	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	S13	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	40T	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)
Centaur	Nanometrics Centaur (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 April 1–June 30, 2018

None