EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

January 1 – March 31, 2023

Prepared by the University of Utah Seismograph Stations and funded by
the U.S. Geological Survey (Cooperative Agreement No. G21AC10068)

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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 MST through 02:00 (2:00 a.m.) on March 12 and MDT thereafter.

- Earthquake location coordinates in degrees and minutes of north latitude and west longitude, and depth in kilometers below sea level. Note that prior to October 1, 2012, the earthquake depths in these quarterly reports were computed relative to a datum of 2000 m above sea level.

- "*" indicates poor depth resolution: no recording stations within 10 km or twice the depth.

- MAG, the computed Richter local magnitude (M_L) for each earthquake. "W" indicates that peak amplitude measurements from Wood-Anderson records were used. Otherwise, the estimate is calculated from signal durations and is more correctly identified as coda magnitude (M_C). The notation "--" indicates that a reliable magnitude estimate could not be made.

- NO, the number of P and S readings used in the solution.

- GAP, the largest azimuthal separation in degrees between recording stations used in the solution.

- DMN, the epicentral distance in kilometers to the closest station.

- RMS, the weighted root-mean-square of the travel-time residuals in seconds:

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

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

EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION
January 1 – March 31, 2023

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During the three-month period January 1 through March 31, 2023, the University of Utah Seismograph Stations (UUSS) located 597 earthquakes within the Yellowstone region (Figure 1). The total includes 2 earthquakes in the magnitude 3 range, and 61 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 3.7 earthquake on March 29. 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 2023). 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 *https://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	March 29	07:05 MDT	3.1 mi SE of Lake, YNP
M_L 3.7	March 29	08:24 MDT	2.6 mi SE of Lake, YNP

Notable Swarm Seismicity

During the report period, there were nine 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 11 earthquakes ($0.8 \leq M \leq 2.5$) occurred about 8.1 mi E of the South Entrance, YNP from January 5th – 6th.
B. A swarm of 11 earthquakes ($0.3 \leq M \leq 2.0$) occurred about 6.6 mi NW of Norris Geyser Basin, YNP from January 23rd – 27th.
C. A swarm of 17 earthquakes ($0.3 \leq M \leq 1.6$) occurred about 7.3 mi NW of Norris Geyser Basin, YNP from January 30th – February 3rd.
D. A swarm of 75 earthquakes ($-0.1 \leq M \leq 2.9$) occurred about 10.7 mi NE of West Yellowstone, MT from February 6th – 11th.
E. A swarm of 29 earthquakes ($-0.3 \leq M \leq 2.4$) occurred about 7.4 mi NW of Norris Geyser Basin, YNP from February 14th – 19th.
F. A swarm of 12 earthquakes ($0.4 \leq M \leq 1.7$) occurred about 10.6 mi NE of West Yellowstone, MT from March 7th – 14th.
G. A swarm of 138 earthquakes ($-0.5 \leq M \leq 2.7$) occurred about 3.8 mi ESE of West Yellowstone, MT from March 12th – 14th.
H. A swarm of 13 earthquakes ($0.1 \leq M \leq 1.9$) occurred about 3.6 mi ESE of West Yellowstone, MT from March 17th – 18th.
I. A swarm of 106 earthquakes ($-0.1 \leq M \leq 3.7$) occurred about 2.9 mi SE of Lake, YNP from March 29th – 31st.

These swarms are labeled in Figure 1.

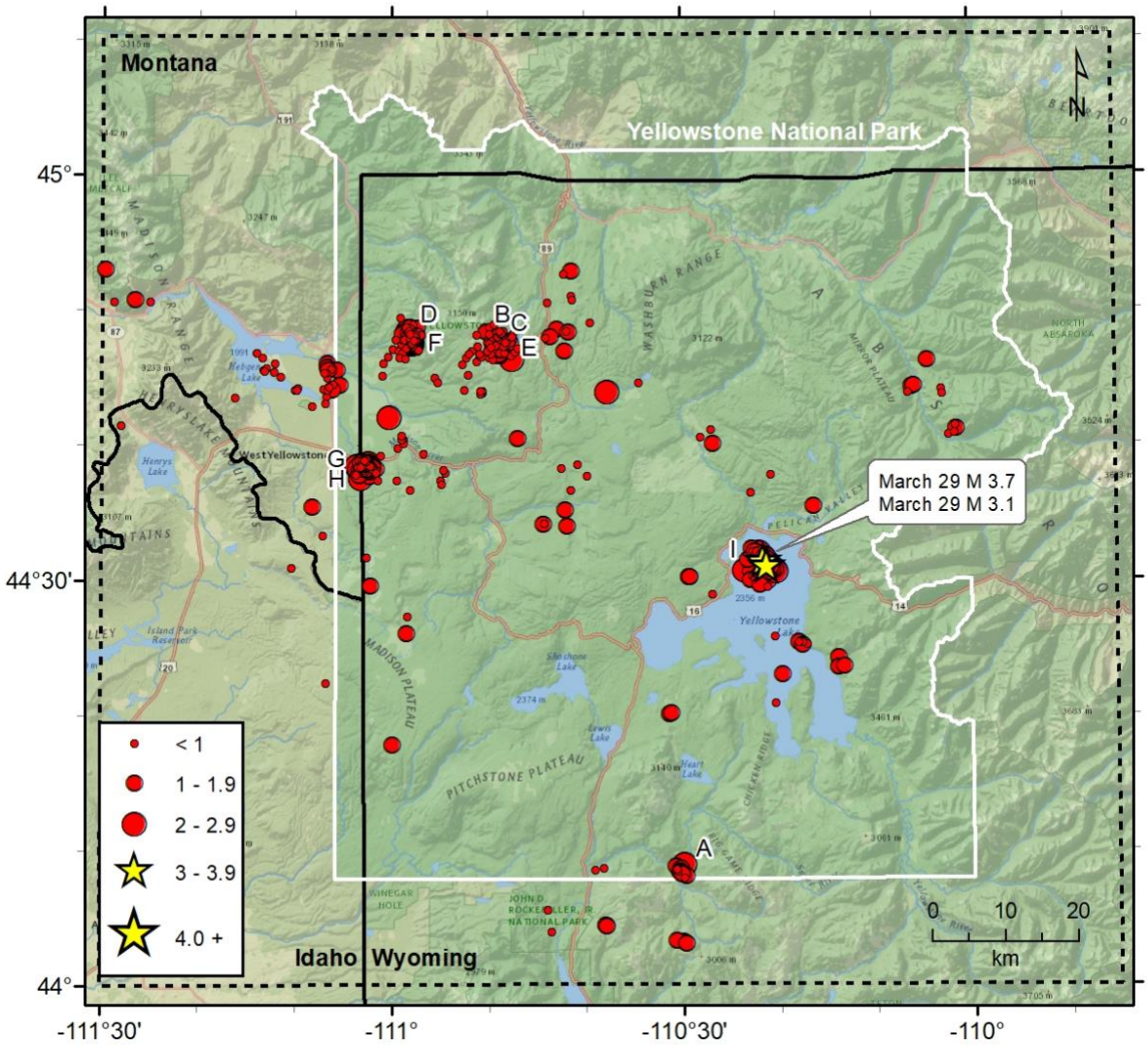

Figure 1. Epicenters of earthquakes located by the University of Utah Seismograph Stations, January 1, 2023, through March 31, 2023. Earthquake swarms (labeled A–I) are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2023, to March 31, 2023

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
March 29	08:24 MDT 14:24 UTC	Yellowstone. Felt (III) at Yellowstone National Park.	44º 31.52′	110º 21.67′	M_L 3.7

† 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 (*https://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
March 31, 2023

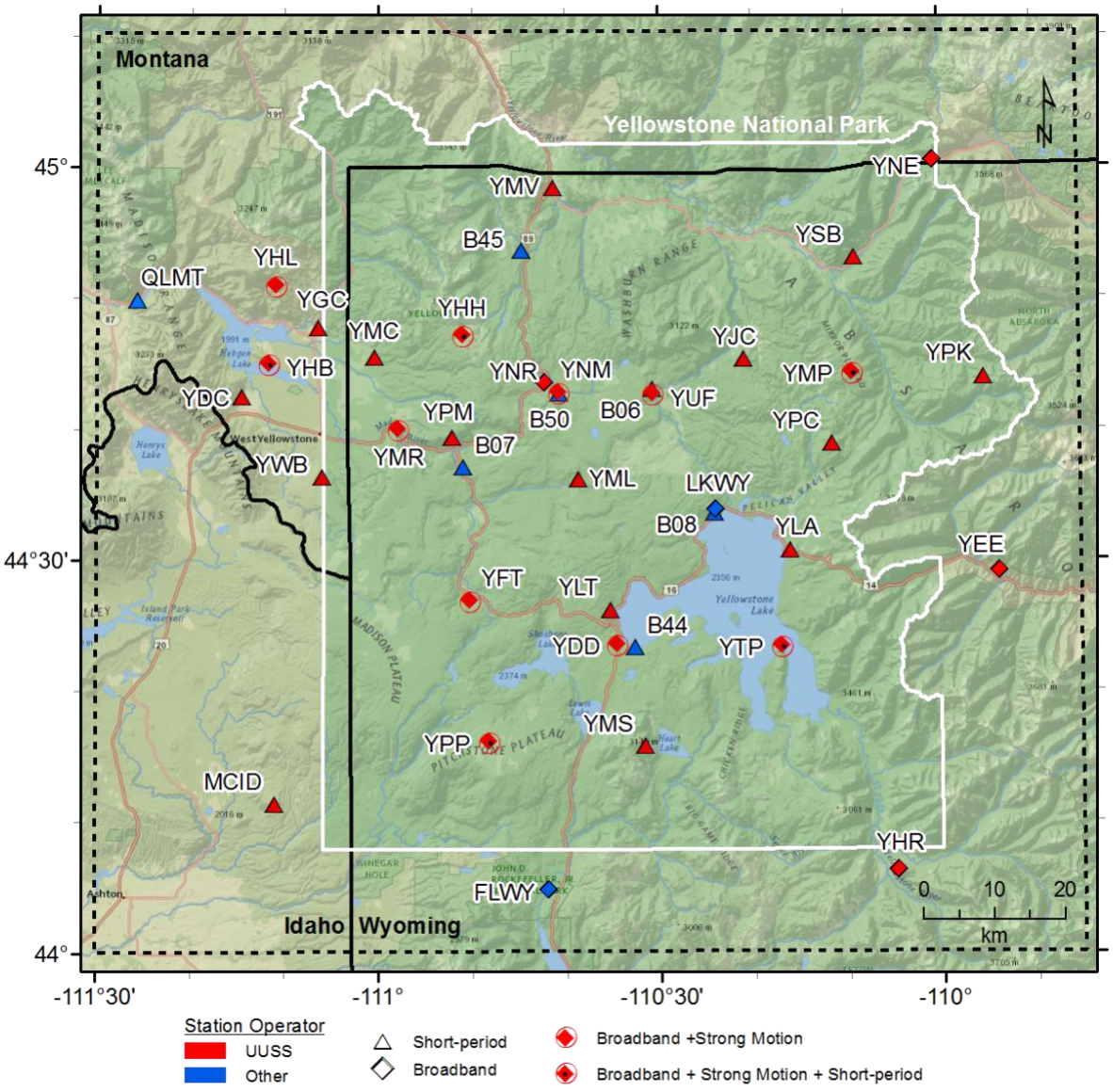

Figure 2. Seismograph stations of the Yellowstone Seismic Network as of March 31, 2023.

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230101	06:50:26.90	44º48.25’	110º48.78’	7.6	0.5	11	191	3	0.15
230102	11:18:40.93	44º48.66’	110º57.43’	8.5	1.2W	12	148	7	0.10
230103	05:09:29.32	44º47.53’	110º49.91’	4.4	0.4	7	248	2	0.09
230103	08:11:35.64	44º48.22’	110º57.44’	8.4	1.2W	17	145	6	0.19
230103	08:11:45.79	44º47.80’	110º57.51’	5.2	-0.2	7	167	6	0.07
230105	18:19:48.27	44º09.01’	110º29.92’	10.0	2.5W	25	138	13	0.16
230105	18:24:55.84	44º08.73’	110º30.27’	10.9	1.1	11	137	13	0.12
230105	19:21:34.42	44º08.31’	110º30.23’	4.0*	1.0	8	157	14	0.10
230105	19:21:58.68	44º08.51’	110º30.44’	9.9	1.0	8	156	14	0.13
230105	20:37:39.67	44º08.91’	110º30.76’	8.3	1.1	14	136	13	0.18
230105	20:40:55.99	44º08.41’	110º30.08’	7.9	1.7	17	138	14	0.13
230105	20:46:03.09	44º08.68’	110º30.68’	8.6	0.9	10	136	13	0.07
230105	21:09:03.29	44º08.09’	110º29.91’	5.6*	0.8	9	159	15	0.09
230105	22:43:54.47	44º08.55’	110º30.46’	9.0	1.0	12	181	14	0.19
230106	01:47:51.15	44º08.55’	110º30.57’	5.9*	0.9	10	172	14	0.19
230106	02:58:25.14	44º30.94’	111º10.37’	6.0*	0.8	15	120	22	0.24
230106	05:51:50.74	44º08.16’	110º29.73’	7.2	1.2	9	159	14	0.10
230106	13:07:14.36	44º17.92’	111º00.00’	11.0	1.1	14	91	16	0.10
230106	17:09:43.30	44º46.85’	110º48.35’	4.0	0.4	5	276	4	0.02
230107	07:21:32.48	44º46.23’	110º51.24’	2.3	0.5	7	130	2	0.02
230107	07:51:38.62	44º46.78’	110º48.69’	7.0	0.8	15	96	3	0.14
230107	14:34:29.72	44º43.71’	110º02.98’	2.4	0.2	7	192	9	0.15
230107	14:34:48.43	44º44.07’	110º03.08’	3.6	0.9	7	184	8	0.09
230108	06:37:32.64	44º46.78’	110º50.90’	3.0	0.0	7	196	1	0.04
230108	21:09:15.11	44º33.36’	111º07.22’	10.9	0.5	8	175	6	0.09
230109	19:22:03.30	44º46.10’	111º12.10’	9.6	0.5	12	202	2	0.19
230112	00:28:58.82	44º45.21’	110º52.14’	4.9	0.8W	17	86	4	0.14
230113	11:08:05.04	44º23.05’	110º19.70’	10.1	1.1	13	119	4	0.09
230113	21:00:49.65	44º46.86’	110º48.27’	6.7	0.6	10	98	4	0.11
230114	01:54:11.69	44º50.57’	111º28.87’	14.7	0.6	11	132	4	0.08
230115	20:46:30.30	44º47.22’	110º48.41’	5.0	1.4W	18	100	3	0.19
230115	20:58:12.56	44º46.98’	110º48.60’	4.8	0.8	15	99	3	0.20
230115	21:29:02.57	44º45.56’	111º05.76’	10.7	1.0W	12	91	4	0.11
230115	22:24:28.93	44º47.34’	110º48.24’	3.3	0.5	8	222	4	0.16
230118	18:44:31.41	44º43.94’	110º37.71’	6.6	2.0W	19	135	6	0.16
230119	07:46:21.57	44º40.68’	110º02.37’	11.5	0.7	9	155	11	0.16
230120	06:41:27.49	44º49.00’	110º57.79’	7.1	0.9	19	150	7	0.16
230120	18:43:46.45	44º48.01’	110º47.54’	2.8	0.6	14	126	5	0.14
230123	05:38:39.89	44º46.36’	110º47.61’	7.3	2.0W	28	88	5	0.18
230123	08:10:36.96	44º46.90’	110º47.26’	5.0	0.6	10	185	5	0.07
230123	17:40:16.48	44º20.20’	110º31.23’	6.3	1.1	9	114	6	0.08
230124	01:29:17.53	44º45.05’	111º06.74’	10.9	0.8W	12	73	5	0.13
230124	03:39:44.43	44º03.45’	110º30.73’	6.0*	1.2	18	164	23	0.12
230124	05:17:50.42	44º38.18’	110º54.67’	6.2	0.3	11	107	4	0.14
230124	06:35:30.18	44º20.18’	110º31.35’	6.6	1.2	9	113	6	0.06

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230124	06:41:04.57	44º47.84’	110º49.58’	6.7	1.3W	22	105	2	0.18
230124	10:15:35.62	44º37.97’	110º54.47’	6.5	0.3	9	97	4	0.10
230124	11:58:35.72	44º44.10’	110º52.46’	5.6	-0.9	9	92	6	0.12
230124	11:58:45.05	44º37.43’	110º55.02’	6.0	0.4	7	228	5	0.09
230124	11:58:56.93	44º37.17’	110º54.87’	6.1	-0.3	6	234	5	0.09
230124	12:42:29.87	44º47.22’	110º47.01’	5.5	0.3	11	211	5	0.14
230124	12:54:54.92	44º46.64’	110º47.69’	4.8	0.6	12	94	5	0.11
230124	22:54:09.31	44º44.09’	111º06.17’	13.9	1.2W	13	97	7	0.14
230125	00:49:50.04	44º44.19’	111º07.12’	7.7	0.5	10	100	6	0.17
230125	00:52:17.87	44º45.71’	111º13.07’	10.1	0.4	15	98	2	0.15
230125	00:52:52.64	44º45.52’	111º13.22’	10.1	0.3	13	119	2	0.17
230125	01:32:19.97	44º46.85’	111º14.00’	13.7	0.4	11	211	4	0.13
230126	02:33:54.80	44º40.87’	110º01.76’	11.0	0.7	11	150	10	0.16
230126	09:30:08.42	44º44.63’	110º34.47’	5.6*	0.6	7	277	16	0.05
230126	11:59:05.43	44º48.07’	110º49.17’	5.6	0.6	21	107	3	0.15
230126	19:30:54.30	44º51.03’	110º41.46’	3.1*	0.8	13	173	14	0.11
230127	07:10:44.17	44º47.36’	110º49.18’	5.0	1.8W	20	102	2	0.17
230127	07:24:05.50	44º47.62’	110º49.32’	6.3	1.5W	21	62	2	0.19
230127	07:25:40.93	44º47.40’	110º49.19’	4.9	0.8	15	102	2	0.16
230127	08:37:34.45	44º46.92’	110º49.99’	3.4	0.6	6	204	2	0.08
230127	12:09:07.46	44º47.81’	110º49.26’	5.0	1.2W	15	105	3	0.15
230128	00:47:42.49	44º50.80’	110º41.35’	17.8	0.8	19	89	14	0.19
230129	13:18:10.99	44º52.70’	110º42.23’	11.5	0.3	8	288	15	0.04
230129	19:15:54.54	44º44.47’	111º05.43’	11.8	1.3W	13	84	6	0.12
230130	12:34:41.88	44º52.90’	110º41.43’	16.1	1.3W	18	94	10	0.11
230130	20:33:31.67	44º47.63’	110º47.73’	7.5	1.4W	17	188	4	0.17
230130	22:32:57.74	44º34.07’	110º41.89’	6.9	1.2W	23	75	6	0.21
230131	09:15:18.12	44º47.47’	110º49.96’	6.1	0.8	15	105	1	0.16
230131	10:52:32.08	44º47.63’	110º50.15’	5.7	0.8	13	106	1	0.14
230131	16:26:29.82	44º47.36’	110º49.56’	5.0	1.3W	21	103	2	0.17
230201	17:46:13.62	44º47.29’	110º49.76’	4.0	0.3	7	232	2	0.08
230201	20:02:30.44	44º48.33’	110º49.22’	6.7	0.9	18	190	3	0.17
230203	02:42:22.91	44º47.42’	110º49.10’	4.4	0.8	12	221	3	0.12
230203	03:25:57.54	44º48.35’	110º48.68’	5.7	0.5	12	243	4	0.14
230203	03:31:14.74	44º47.31’	110º49.23’	5.1	1.5W	29	102	2	0.18
230203	03:34:30.65	44º47.88’	110º49.18’	5.0	1.2W	23	105	3	0.14
230203	03:46:03.61	44º47.38’	110º49.26’	4.4	0.4	11	220	2	0.08
230203	08:33:59.38	44º47.43’	110º49.30’	4.8	0.8	21	103	2	0.18
230203	11:14:29.32	44º48.45’	110º48.84’	5.4	0.4	9	257	4	0.09
230203	11:15:10.63	44º50.55’	110º43.86’	5.7	0.1	7	277	11	0.12
230203	11:15:43.55	44º48.08’	110º49.02’	5.6	0.5	10	254	3	0.12
230203	19:09:03.46	44º47.73’	110º49.03’	5.1	1.5W	21	104	3	0.18
230203	19:19:22.44	44º47.77’	110º48.27’	4.6	1.6W	20	102	4	0.20
230203	19:28:32.45	44º47.02’	110º50.10’	3.7	0.4	6	251	1	0.08
230203	21:34:41.47	44º04.09’	110º43.61’	7.0*	0.9	12	124	23	0.17

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230204	06:28:25.80	44º49.43’	110º59.12’	10.0	0.6	5	277	7	0.09
230206	07:38:49.54	44º48.73’	110º58.51’	9.1	0.3	6	262	6	0.07
230206	09:58:52.13	44º36.76’	110º58.14’	9.4	0.4	8	110	6	0.07
230206	20:23:36.16	44º45.47’	111º12.26’	11.4	0.4	12	117	1	0.15
230206	23:19:06.33	44º47.82’	110º57.74’	8.5	1.9W	20	118	5	0.16
230206	23:24:29.44	44º47.42’	110º57.78’	8.6	1.2W	16	159	5	0.15
230206	23:28:38.09	44º47.79’	110º57.71’	8.9	1.8W	21	117	5	0.15
230206	23:41:54.92	44º47.21’	110º57.74’	7.7	0.2	9	219	5	0.15
230207	00:00:32.71	44º47.63’	110º57.96’	7.7	0.5	15	162	5	0.14
230207	00:12:34.19	44º47.39’	110º57.66’	7.9	0.4	9	224	5	0.12
230207	00:12:59.29	44º47.58’	110º58.23’	8.4	0.5	9	235	5	0.15
230207	00:28:44.80	44º47.55’	110º58.05’	7.8	0.7	11	232	5	0.17
230207	00:46:02.79	44º47.51’	110º57.87’	7.8	0.7	17	141	5	0.16
230207	01:08:01.85	44º47.78’	110º57.79’	8.0	1.1W	17	165	5	0.16
230207	02:53:12.26	44º47.52’	110º58.05’	8.1	0.7	20	115	5	0.15
230207	09:34:29.35	44º47.87’	110º58.16’	7.7	0.2	9	241	5	0.15
230207	11:51:20.42	44º47.55’	110º57.98’	9.5	2.4W	24	106	5	0.14
230207	11:52:54.29	44º48.64’	110º58.63’	9.4	0.7	9	261	6	0.10
230207	11:57:06.06	44º47.27’	110º57.78’	7.9	0.2	9	221	5	0.16
230207	13:28:06.14	44º47.94’	110º58.09’	8.0	0.1	9	242	5	0.12
230207	13:35:08.91	44º47.35’	110º57.80’	7.5	0.2	10	224	5	0.13
230207	14:43:18.49	44º48.03’	110º57.92’	8.0	1.1W	15	119	6	0.09
230207	16:02:30.99	44º47.52’	110º58.02’	7.8	0.2	9	231	5	0.15
230207	16:13:34.34	44º47.53’	110º57.66’	8.4	0.6	12	161	5	0.17
230207	16:26:50.94	44º47.68’	110º58.15’	7.9	0.5	7	237	5	0.16
230207	16:40:06.12	44º47.41’	110º57.96’	8.8	0.8	14	159	5	0.16
230207	16:42:05.12	44º47.93’	110º57.60’	9.6	1.7W	22	143	6	0.16
230207	18:17:57.78	44º48.24’	110º58.92’	8.8	1.3	9	257	5	0.16
230207	20:23:39.86	44º47.89’	110º58.46’	9.0	0.9	8	245	5	0.16
230207	21:11:27.26	44º47.37’	110º58.13’	8.3	1.5W	18	114	4	0.15
230207	21:42:19.27	44º47.60’	110º57.63’	8.1	0.6	16	162	5	0.16
230207	23:27:05.91	44º47.78’	110º58.19’	8.7	0.4	11	165	5	0.15
230208	01:23:39.82	44º47.47’	110º57.60’	7.1	0.7	8	226	5	0.16
230208	02:32:20.32	44º47.58’	110º57.92’	9.4	2.5W	28	116	5	0.17
230208	02:32:37.84	44º47.46’	110º57.77’	8.7	0.8	11	160	5	0.14
230208	02:33:07.27	44º47.70’	110º57.46’	6.0	-0.1	6	182	6	0.12
230208	02:33:20.27	44º47.67’	110º57.78’	8.6	1.4W	14	164	5	0.15
230208	03:09:47.92	44º47.84’	110º58.02’	10.0	2.5W	28	118	5	0.16
230208	03:25:23.81	44º47.46’	110º57.72’	8.6	0.3	13	160	5	0.14
230208	03:25:47.12	44º47.94’	110º57.79’	8.2	0.5	13	168	6	0.15
230208	03:35:44.65	44º48.40’	110º57.94’	10.2	2.5W	27	122	6	0.13
230208	03:44:07.88	44º47.34’	110º58.55’	9.5	1.4W	11	119	4	0.12
230208	03:44:14.06	44º47.51’	110º57.97’	10.0	2.9W	27	116	5	0.16
230208	03:49:47.34	44º46.45’	110º58.60’	7.4	--	6	206	3	0.09
230208	04:40:07.16	44º47.54’	110º58.11’	8.6	0.5	10	232	5	0.15

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230208	04:53:08.11	44º47.92’	110º57.80’	8.4	0.3	12	168	6	0.10
230208	04:53:30.61	44º47.91’	110º57.84’	9.4	0.6	12	168	5	0.13
230208	06:03:42.80	44º22.45’	111º06.89’	11.8	0.9	14	160	21	0.15
230208	07:24:37.96	44º47.78’	110º58.16’	9.2	1.5W	19	118	5	0.12
230208	07:25:47.70	44º47.87’	110º58.06’	9.2	1.4W	14	118	5	0.13
230208	07:38:13.02	44º03.20’	110º29.79’	7.0*	1.2	12	167	24	0.13
230208	07:44:02.61	44º47.81’	110º57.77’	8.4	-0.2	8	166	5	0.06
230208	12:53:19.65	44º48.13’	110º57.57’	8.1	1.0	10	172	6	0.11
230208	12:53:28.05	44º48.16’	110º56.96’	16.7	0.3	8	174	7	0.19
230208	12:54:45.90	44º48.13’	110º57.59’	8.6	0.7	13	172	6	0.11
230208	12:59:32.49	44º47.70’	110º58.16’	9.9	2.1W	24	107	5	0.16
230208	13:49:56.42	44º47.37’	110º58.38’	10.1	1.3W	10	157	4	0.13
230208	13:59:05.27	44º47.96’	110º57.64’	9.2	0.6	10	169	6	0.09
230208	17:20:47.53	44º48.40’	110º57.20’	11.0	0.8	10	178	8	0.13
230208	18:12:13.81	44º47.60’	110º57.65’	9.9	1.8W	23	115	5	0.20
230208	18:13:53.71	44º47.31’	110º58.08’	8.0	0.8	11	157	4	0.18
230208	18:42:53.49	44º47.40’	110º58.05’	8.5	1.9W	22	115	5	0.16
230208	19:58:03.64	44º47.87’	110º58.39’	8.8	0.4	8	244	5	0.15
230208	20:03:40.42	44º47.47’	110º58.06’	8.1	1.1	14	115	5	0.17
230208	20:04:48.27	44º47.54’	110º57.88’	7.8	0.1	7	230	5	0.15
230208	20:05:03.99	44º47.20’	110º58.48’	7.8	0.3	7	228	4	0.15
230208	20:31:53.77	44º30.26’	110º29.23’	3.5	1.5W	18	80	9	0.18
230209	02:14:10.08	44º48.44’	110º48.45’	5.6	0.6	11	194	4	0.14
230209	02:55:44.97	44º40.47’	110º59.02’	4.8	0.7	11	91	2	0.15
230209	03:49:26.65	44º47.90’	110º48.87’	5.0	1.2W	16	104	3	0.14
230209	07:22:31.64	44º47.80’	110º57.93’	8.0	0.4	11	237	5	0.13
230209	08:57:00.01	44º48.03’	110º57.77’	9.7	0.6	12	144	6	0.12
230209	14:40:09.43	44º41.14’	110º26.98’	6.1	0.9	20	83	6	0.15
230210	06:16:48.44	44º47.15’	110º48.74’	5.7	1.1	15	101	3	0.15
230210	06:17:46.78	44º48.24’	110º47.41’	7.4	0.9	8	258	5	0.11
230210	08:34:49.88	44º48.51’	110º58.18’	9.6	0.1	7	255	6	0.09
230210	10:20:26.25	44º48.06’	110º57.66’	9.3	0.2	10	171	6	0.10
230210	10:35:39.67	44º47.65’	110º57.77’	9.6	1.2W	14	117	5	0.13
230210	10:46:41.34	44º46.82’	110º48.77’	5.2	1.6W	18	97	3	0.15
230210	12:09:51.85	44º48.07’	110º57.85’	9.4	0.5	10	171	6	0.09
230210	13:17:26.41	44º47.44’	110º58.00’	8.8	1.8W	21	115	5	0.14
230210	13:21:19.44	44º47.97’	110º57.80’	8.9	0.6	11	168	6	0.09
230210	14:23:46.43	44º47.37’	110º57.93’	9.0	1.6W	16	114	5	0.14
230210	14:25:26.16	44º48.66’	110º58.14’	9.9	0.4	8	256	6	0.09
230210	14:31:10.27	44º47.73’	110º57.97’	11.0	2.8W	31	40	5	0.16
230210	15:20:57.44	44º47.96’	110º57.71’	8.8	0.8	13	168	6	0.11
230210	15:30:43.80	44º46.08’	111º00.89’	7.8	0.2	11	135	1	0.10
230211	01:05:15.49	44º47.00’	110º57.36’	5.8	0.2	10	209	5	0.10
230212	21:03:52.43	44º48.46’	110º41.96’	4.3*	0.4	8	225	12	0.03
230212	23:05:34.55	44º49.07’	110º39.50’	4.3*	0.6	6	279	16	0.06

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230212	23:09:01.98	44º46.99’	110º42.10’	4.3*	1.7W	14	89	12	0.14
230213	00:19:48.17	44º41.38’	110º01.65’	13.7	0.9	7	95	10	0.09
230214	10:03:08.90	44º47.05’	110º48.86’	8.1	2.4W	34	100	3	0.18
230214	10:47:02.00	44º46.89’	110º49.16’	5.2	0.9	18	97	3	0.17
230214	14:49:22.96	44º46.70’	110º48.93’	4.2	1.0	9	120	3	0.07
230214	14:52:08.57	44º47.17’	110º48.68’	5.2	0.7	8	231	3	0.08
230214	15:07:56.70	44º48.95’	110º49.47’	6.2	0.5	7	261	4	0.20
230214	15:52:32.55	44º47.11’	110º48.80’	6.4	0.9	17	100	3	0.17
230214	16:19:14.98	44º46.98’	110º48.82’	7.7	1.9W	24	99	3	0.20
230214	16:53:31.17	44º47.73’	110º48.02’	6.5	0.7	11	250	4	0.10
230214	17:41:19.83	44º46.52’	110º49.94’	3.3	0.5	6	185	2	0.02
230214	19:24:41.59	44º47.96’	110º58.48’	9.0	0.9	17	167	5	0.12
230214	20:56:59.63	44º47.63’	110º48.25’	6.0	-0.3	6	231	4	0.04
230214	20:57:26.66	44º47.61’	110º48.29’	5.4	0.1	6	230	4	0.05
230214	22:01:52.79	44º47.56’	110º48.48’	6.9	0.7	9	207	3	0.11
230214	22:51:13.39	44º47.45’	110º48.77’	6.4	0.8	17	185	3	0.15
230214	22:54:13.42	44º47.01’	110º48.74’	6.4	0.7	20	183	3	0.21
230215	00:02:52.51	44º47.19’	110º48.98’	5.5	0.9	16	101	3	0.16
230215	00:52:35.68	44º40.61’	110º28.03’	3.3*	0.5	9	113	13	0.14
230215	04:01:03.32	44º47.73’	110º48.81’	5.9	0.9	16	146	3	0.12
230215	06:28:29.83	44º46.57’	110º50.70’	3.2	0.2	7	198	1	0.07
230215	21:28:03.28	44º47.63’	110º47.64’	6.6	0.8	11	247	5	0.11
230216	00:14:26.78	44º37.79’	110º20.81’	6.6	0.7	9	89	9	0.07
230216	02:22:34.37	44º43.82’	110º06.55’	13.9	--	6	99	4	0.05
230216	03:50:56.39	44º44.32’	110º05.96’	14.5	1.3	11	71	4	0.15
230216	05:12:07.67	44º44.24’	110º06.15’	15.3	1.8	8	74	4	0.08
230216	05:12:16.15	44º46.20’	110º04.55’	2.0	1.9	6	134	7	0.23
230216	10:22:34.04	44º46.90’	110º49.42’	5.0	0.6	11	213	2	0.14
230216	10:27:51.68	44º46.33’	110º49.53’	3.4	0.5	9	189	3	0.08
230216	16:18:07.17	44º46.66’	110º48.85’	5.4	1.6W	23	91	3	0.18
230216	17:25:47.11	44º47.94’	110º48.61’	7.2	0.9	16	189	3	0.13
230216	17:26:32.67	44º46.64’	110º48.90’	5.4	1.5W	21	90	3	0.19
230216	17:27:04.22	44º29.00’	110º26.93’	3.2	-0.2	8	156	9	0.13
230216	17:30:39.38	44º47.49’	110º48.64’	5.7	0.7	14	187	3	0.14
230216	18:42:27.63	44º50.59’	111º25.10’	13.7	0.6	9	135	2	0.13
230217	02:31:20.70	44º47.64’	110º48.64’	6.9	0.6	16	187	3	0.15
230217	09:29:35.58	44º44.08’	111º06.66’	8.5	-0.2	11	99	7	0.16
230217	09:29:49.15	44º44.36’	111º06.58’	8.4	0.5	10	95	6	0.18
230217	16:52:27.05	44º47.83’	110º58.75’	7.4	0.3	8	248	5	0.12
230217	17:56:15.21	44º44.55’	111º06.08’	10.0	0.8	15	91	6	0.16
230217	18:01:54.32	44º44.33’	111º06.53’	8.1	--	16	95	6	0.21
230217	18:01:58.17	44º43.64’	111º06.77’	5.7	0.8W	12	117	7	0.18
230218	01:56:15.09	44º44.08’	111º06.80’	7.9	0.6	14	100	7	0.15
230218	06:36:51.24	44º47.34’	110º48.49’	5.6	0.3	11	220	3	0.08
230218	16:25:52.17	44º47.80’	110º49.69’	5.0	0.9	15	106	2	0.12

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230218	23:32:24.92	44º46.78’	110º48.87’	3.8	0.9	10	194	3	0.12
230219	01:48:24.11	44º46.86’	110º48.84’	4.2	0.5	11	198	3	0.11
230219	08:37:57.14	44º43.95’	110º50.62’	6.5	0.4	9	136	6	0.11
230219	08:38:24.62	44º44.03’	110º50.78’	6.9	-0.2	7	184	6	0.10
230219	08:41:00.56	44º47.83’	110º59.64’	5.2	0.7W	13	162	4	0.11
230219	08:48:13.70	44º43.85’	110º50.80’	6.1	0.0	9	132	6	0.13
230219	11:46:42.82	44º43.89’	110º50.60’	6.5	0.4	10	136	6	0.12
230219	13:25:55.83	44º44.06’	110º50.59’	6.6	0.1	8	137	6	0.09
230222	02:44:44.10	44º47.84’	110º47.49’	7.0	0.8	13	239	5	0.14
230223	05:33:08.13	44º08.81’	110º38.25’	10.4	0.9	15	120	16	0.12
230223	17:18:23.70	44º44.26’	111º09.74’	11.1	-0.2	10	117	3	0.16
230223	17:18:44.31	44º44.08’	111º09.85’	10.6	--	11	124	3	0.16
230223	17:19:16.97	44º44.09’	111º10.09’	10.7	0.4	13	127	3	0.15
230225	10:38:13.99	44º48.21’	110º57.53’	6.4	0.3	11	187	6	0.16
230226	20:18:51.28	44º45.07’	111º11.59’	10.2	0.6	6	102	0	0.08
230228	03:08:59.75	44º47.65’	110º57.96’	7.3	0.4	10	234	5	0.12
230228	04:57:41.62	44º05.74’	110º43.99’	6.3*	0.7	16	122	20	0.14
230228	18:39:26.64	44º45.56’	111º13.31’	10.0	0.8	11	181	2	0.15
230301	07:58:17.50	44º48.01’	110º58.07’	8.6	1.5W	18	168	5	0.12
230302	21:29:25.66	44º48.02’	110º43.63’	2.4	1.4	9	154	10	0.12
230302	22:18:33.99	44º48.40’	110º41.76’	6.7	1.0	9	268	12	0.20
230302	22:43:28.75	44º47.95’	110º44.15’	2.8	0.7	8	258	9	0.12
230302	22:48:44.83	44º48.59’	110º42.96’	5.3*	1.8W	16	88	11	0.15
230303	00:05:50.52	44º40.09’	110º26.79’	9.3	1.0	10	119	12	0.20
230303	01:44:41.30	44º47.35’	110º48.98’	5.8	0.5	9	279	3	0.12
230303	02:59:17.44	44º47.94’	110º58.39’	8.0	1.9W	26	119	5	0.16
230304	04:57:17.29	44º45.19’	111º00.96’	6.7	0.3	8	215	1	0.09
230304	13:34:50.43	44º35.48’	110º16.41’	2.2	1.2	18	72	9	0.33
230304	21:34:57.20	44º34.18’	110º44.38’	5.0	1.0	14	106	9	0.09
230304	22:45:49.57	44º03.33’	110º30.08’	4.9*	1.3	15	145	23	0.11
230305	19:49:56.04	44º35.43’	111º08.26’	8.5	1.5W	14	106	3	0.18
230307	11:46:44.20	44º47.88’	110º58.70’	8.1	1.6W	25	118	5	0.15
230307	11:46:58.25	44º46.60’	111º00.42’	7.8	0.5	9	203	2	0.22
230307	11:48:59.04	44º46.53’	110º59.23’	6.4	0.4	10	263	2	0.10
230307	12:01:07.13	44º46.85’	110º58.91’	6.5	0.4	10	266	3	0.13
230307	14:00:28.94	44º47.85’	110º58.94’	8.0	0.7	20	173	5	0.15
230307	15:12:03.39	44º48.42’	110º58.74’	8.6	1.7W	24	102	6	0.15
230308	10:48:20.15	44º41.14’	110º01.61’	12.9	1.0	7	146	10	0.06
230309	03:51:19.26	44º38.59’	110º40.75’	2.1	0.4	12	122	5	0.10
230309	03:54:21.65	44º37.76’	110º39.81’	5.3	0.8	12	209	3	0.14
230309	05:59:36.44	44º47.49’	110º59.03’	7.7	0.8	16	194	4	0.16
230309	06:26:53.11	44º42.95’	111º08.28’	12.1	0.8W	17	82	6	0.15
230310	21:51:39.14	44º48.35’	110º58.33’	7.5	1.1	11	174	6	0.11
230310	22:13:41.45	44º47.98’	110º58.64’	7.1	1.4W	15	119	5	0.15
230311	10:56:12.47	44º46.47’	111º13.44’	9.8	0.6	14	203	3	0.11

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230312	00:10:57.46	44º48.29’	110º49.92’	4.3	0.8	9	294	2	0.14
230312	00:11:55.82	44º48.43’	110º50.19’	4.4	1.7W	20	177	2	0.13
230312	01:03:54.80	44º27.39’	110º58.47’	14.8	0.5	9	119	19	0.23
230312	01:18:09.38	44º26.13’	110º58.49’	5.2*	1.1W	17	190	11	0.15
230312	08:21:17.00	44º37.44’	110º59.47’	5.8	0.7	11	99	5	0.12
230312	18:18:01.59	44º47.01’	110º59.30’	8.2	0.5	14	188	3	0.16
230312	23:22:04.84	44º47.71’	110º58.37’	8.1	1.0W	14	163	5	0.16
230313	01:36:01.00	44º38.61’	111º02.72’	8.5	0.6	14	94	6	0.14
230313	01:39:50.08	44º38.77’	111º02.56’	7.9	0.6	11	146	6	0.13
230313	02:06:51.15	44º38.34’	111º02.75’	9.2	0.6	15	87	6	0.09
230313	03:05:31.41	44º38.49’	111º02.70’	8.4	0.5W	16	87	6	0.17
230313	03:27:57.69	44º38.66’	111º02.57’	9.0	0.7	19	87	6	0.15
230313	04:13:49.17	44º36.50’	110º22.89’	4.2	0.8	16	89	6	0.07
230313	04:23:26.30	44º38.25’	111º02.65’	9.7	1.9W	17	49	6	0.13
230313	04:37:41.71	44º38.44’	111º02.95’	9.2	0.5	12	90	6	0.10
230313	04:58:00.94	44º38.46’	111º02.81’	8.2	0.6	9	95	6	0.09
230313	05:03:06.10	44º38.45’	111º02.42’	7.4	0.3	11	139	6	0.12
230313	05:14:34.33	44º38.88’	111º02.48’	7.1	0.4	11	146	6	0.15
230313	05:37:14.06	44º38.51’	111º02.94’	8.4	0.5	11	95	6	0.10
230313	05:53:51.36	44º38.51’	111º02.78’	9.3	0.5	13	88	6	0.10
230313	06:09:17.72	44º38.61’	111º02.75’	9.8	0.7W	13	89	6	0.12
230313	06:12:57.64	44º38.40’	111º02.55’	7.6	0.2	9	141	6	0.09
230313	06:13:15.17	44º38.27’	111º02.10’	7.1	0.2	9	133	6	0.07
230313	06:34:58.37	44º38.42’	111º02.64’	7.9	0.8	9	142	6	0.08
230313	06:35:12.42	44º38.47’	111º02.22’	6.4	0.3	8	137	6	0.08
230313	08:06:31.33	44º38.33’	111º02.73’	11.1	0.7W	13	86	6	0.15
230313	08:08:37.10	44º38.56’	111º02.59’	8.0	0.4	10	143	6	0.14
230313	08:28:56.37	44º38.69’	111º03.05’	8.5	0.4	9	93	6	0.08
230313	08:29:26.96	44º38.43’	111º03.08’	9.4	0.4	9	91	6	0.10
230313	12:29:59.75	44º38.38’	111º03.02’	9.1	0.6	10	90	6	0.10
230313	12:57:36.00	44º38.41’	111º03.10’	9.0	0.6	9	92	5	0.09
230313	13:39:16.26	44º38.35’	111º02.99’	9.3	0.7W	12	89	5	0.12
230313	15:07:28.65	44º38.35’	111º03.05’	9.1	0.5	14	90	5	0.14
230313	15:27:50.36	44º39.09’	111º02.94’	7.9	0.6W	12	94	7	0.11
230313	15:28:24.76	44º38.37’	111º02.58’	8.5	0.8W	17	85	6	0.16
230313	15:28:39.83	44º38.68’	111º02.77’	9.0	1.5W	17	89	6	0.14
230313	15:30:15.56	44º38.38’	111º02.84’	8.9	1.6W	19	88	6	0.16
230313	15:31:05.86	44º38.66’	111º02.90’	8.4	0.8W	15	91	6	0.14
230313	15:37:07.26	44º38.58’	111º02.99’	9.6	0.9W	16	91	6	0.15
230313	15:44:14.36	44º37.43’	111º01.44’	4.8	0.5	8	151	6	0.11
230313	16:20:19.02	44º38.41’	111º02.61’	9.2	2.2W	22	51	6	0.15
230313	16:21:52.01	44º38.42’	111º02.64’	8.4	0.9	15	86	6	0.16
230313	16:22:09.72	44º38.20’	111º02.73’	8.4	1.0	15	84	6	0.17
230313	16:24:05.49	44º38.39’	111º02.61’	9.1	1.8W	19	85	6	0.16
230313	16:24:36.27	44º38.38’	111º02.84’	8.9	1.0	15	88	6	0.18

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230313	16:31:28.80	44º38.69’	111º02.55’	6.2	0.7	9	145	6	0.10
230313	17:03:28.68	44º38.57’	111º02.60’	11.5	2.7W	23	53	6	0.16
230313	17:07:00.34	44º38.35’	111º02.45’	9.0	1.8W	20	83	6	0.17
230313	17:08:07.16	44º38.46’	111º02.82’	8.7	0.9W	15	123	7	0.14
230313	17:12:54.17	44º38.45’	111º02.40’	7.5	0.7	9	139	6	0.11
230313	17:13:11.86	44º38.59’	111º02.46’	6.9	0.5	9	143	6	0.09
230313	17:15:33.20	44º38.77’	111º03.12’	7.1	0.4	12	95	6	0.12
230313	17:15:54.20	44º38.75’	111º02.93’	7.3	0.7	12	93	6	0.09
230313	17:23:37.59	44º38.61’	111º02.48’	6.3	0.8	10	143	6	0.11
230313	17:24:57.42	44º38.47’	111º02.94’	9.4	1.3W	14	90	6	0.12
230313	17:25:48.27	44º38.54’	111º02.30’	9.0	0.9	15	83	6	0.20
230313	17:26:26.31	44º38.34’	111º02.56’	8.8	2.0W	25	84	6	0.17
230313	17:28:22.01	44º38.38’	111º02.76’	8.3	0.8	13	89	6	0.12
230313	17:28:41.77	44º38.31’	111º02.55’	8.8	1.6W	18	84	6	0.17
230313	17:31:03.04	44º38.57’	111º02.43’	6.0	0.8	9	141	6	0.12
230313	17:39:12.53	44º38.36’	111º02.46’	9.0	2.0W	22	84	6	0.17
230313	17:39:47.74	44º38.71’	111º02.54’	8.6	0.7	17	87	6	0.18
230313	17:41:29.32	44º38.61’	111º02.58’	8.7	0.9W	18	87	6	0.14
230313	17:47:33.67	44º38.51’	111º02.46’	7.4	0.2	10	94	6	0.12
230313	17:52:32.00	44º38.76’	111º02.35’	6.8	0.4	9	92	6	0.07
230313	17:52:40.39	44º38.56’	111º02.59’	5.5	0.4	9	94	6	0.13
230313	17:53:42.71	44º38.47’	111º02.55’	7.3	0.7	8	142	6	0.13
230313	18:01:53.39	44º38.35’	111º02.98’	8.8	0.8	13	89	5	0.16
230313	18:21:17.83	44º39.38’	110º56.76’	-0.4	--	7	112	2	0.11
230313	18:21:47.99	44º38.77’	111º02.55’	8.1	0.6	11	92	6	0.08
230313	18:22:04.31	44º38.63’	111º02.49’	8.6	0.7W	17	86	6	0.17
230313	18:23:49.33	44º38.42’	111º02.89’	9.1	0.7	9	95	6	0.11
230313	18:24:10.53	44º38.73’	111º02.77’	8.2	0.5	9	93	6	0.09
230313	18:31:11.24	44º38.30’	111º02.95’	7.9	2.5W	22	53	5	0.16
230313	18:31:26.29	44º37.55’	111º03.27’	7.8	2.1	13	101	4	0.11
230313	18:31:35.46	44º37.99’	111º02.58’	8.6	2.6	14	97	6	0.18
230313	18:36:14.91	44º38.49’	111º02.64’	9.1	0.8W	18	87	6	0.17
230313	18:42:39.27	44º39.01’	111º02.84’	7.3	--	9	114	6	0.08
230313	18:43:18.96	44º38.19’	111º02.98’	10.3	0.9W	13	88	5	0.14
230313	18:51:45.58	44º38.08’	111º02.81’	9.7	0.9	12	84	5	0.13
230313	18:57:45.03	44º38.42’	111º02.18’	7.8	0.6	8	136	6	0.06
230313	18:59:09.05	44º38.66’	111º03.19’	8.6	0.4	9	95	6	0.11
230313	19:02:24.61	44º38.43’	111º03.06’	8.5	0.6W	11	91	6	0.12
230313	19:02:40.37	44º38.30’	111º03.35’	7.5	2.0W	13	94	5	0.15
230313	19:32:56.20	44º38.89’	111º02.89’	7.7	--	14	93	6	0.15
230313	19:32:59.38	44º38.90’	111º02.56’	8.1	0.8W	13	92	7	0.11
230313	19:35:53.55	44º38.89’	111º03.19’	7.3	0.4	12	97	6	0.13
230313	19:36:22.75	44º39.01’	111º02.85’	7.4	0.1	12	93	6	0.13
230313	19:37:24.93	44º39.08’	111º02.66’	5.9	-0.3	8	120	7	0.09
230313	19:37:34.64	44º37.97’	111º01.68’	7.4	--	7	147	6	0.22

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230313	19:37:38.26	44º38.98’	111º02.63’	5.9	0.7	10	121	7	0.11
230313	19:40:58.20	44º38.39’	111º03.52’	9.0	0.7	14	97	5	0.20
230313	19:45:40.54	44º38.42’	111º02.99’	9.1	1.7W	18	90	6	0.17
230313	19:45:56.08	44º38.71’	111º02.77’	8.1	1.2	12	90	6	0.15
230313	19:47:23.69	44º38.77’	111º03.26’	7.5	0.9W	9	120	6	0.10
230313	19:47:38.70	44º38.35’	111º03.12’	9.8	2.4W	20	55	5	0.12
230313	19:47:48.58	44º37.94’	111º02.84’	9.1	2.5W	9	96	5	0.19
230313	19:50:53.44	44º38.53’	111º03.22’	8.8	2.0W	12	80	5	0.15
230313	19:53:31.13	44º38.52’	111º03.20’	7.8	1.1	10	94	6	0.13
230313	19:58:59.10	44º38.33’	111º02.52’	8.9	2.2W	24	50	6	0.14
230313	19:59:40.93	44º38.48’	111º02.50’	8.7	2.2W	19	66	6	0.18
230313	20:00:49.95	44º38.30’	111º02.68’	9.2	1.2W	15	96	6	0.17
230313	20:00:54.37	44º38.31’	111º01.71’	7.1	1.4W	9	103	6	0.06
230313	20:02:46.31	44º38.36’	111º02.74’	9.0	0.9W	14	87	6	0.14
230313	20:03:11.58	44º38.66’	111º02.52’	8.0	0.8	14	87	6	0.10
230313	20:03:45.72	44º38.40’	111º02.97’	8.7	0.9W	16	89	6	0.17
230313	20:15:12.08	44º38.18’	111º01.93’	7.3	0.7	7	129	6	0.09
230313	20:15:32.88	44º38.90’	111º03.46’	7.0	0.7	11	106	6	0.14
230313	20:16:59.77	44º39.29’	111º01.23’	5.5	-0.2	8	135	5	0.08
230313	20:17:24.70	44º38.39’	111º03.01’	8.5	0.7	9	147	6	0.15
230313	20:17:38.53	44º38.51’	111º02.26’	6.4	0.1	9	138	6	0.08
230313	20:17:50.64	44º38.83’	111º02.75’	5.6	0.1	8	150	6	0.09
230313	20:19:47.75	44º38.33’	111º02.73’	7.0	0.5	10	142	6	0.13
230313	20:21:00.10	44º38.72’	111º03.25’	8.4	0.5	10	96	6	0.16
230313	20:21:51.56	44º38.31’	111º02.53’	8.6	1.1	15	83	6	0.17
230313	20:40:28.73	44º38.43’	111º03.15’	8.9	1.1W	11	94	5	0.14
230313	20:41:49.33	44º38.84’	111º03.11’	7.9	0.6	10	95	6	0.07
230313	20:42:20.12	44º38.22’	111º01.78’	8.8	0.7	7	128	6	0.07
230313	20:45:32.99	44º38.38’	111º03.21’	11.7	2.5W	26	56	5	0.21
230313	20:52:56.44	44º38.89’	111º03.44’	6.7	0.5	7	120	6	0.08
230313	20:53:21.94	44º38.43’	111º03.24’	7.8	0.2	7	113	5	0.11
230313	21:00:22.52	44º38.48’	111º03.62’	10.7	2.0W	18	79	5	0.13
230313	21:04:04.16	44º38.92’	111º02.82’	5.0	0.1	10	113	6	0.10
230313	21:04:21.41	44º38.32’	111º02.96’	8.3	0.8	15	89	5	0.15
230313	21:07:43.37	44º38.68’	111º02.94’	7.8	0.8	8	150	6	0.12
230313	21:18:47.95	44º38.87’	111º02.97’	7.2	0.7W	13	93	6	0.13
230313	21:26:30.84	44º38.32’	111º02.28’	5.7	0.3	9	136	6	0.12
230313	21:26:44.96	44º38.64’	111º02.30’	5.1	0.6	9	141	6	0.10
230313	21:27:16.42	44º39.83’	110º59.44’	5.1	-0.5	7	241	2	0.07
230313	21:27:23.31	44º38.69’	111º02.39’	5.4	0.3	9	142	6	0.07
230313	21:33:23.16	44º38.59’	111º02.87’	7.7	0.7	13	94	6	0.14
230313	22:09:55.40	44º38.15’	111º03.47’	10.2	1.3W	14	94	5	0.14
230313	22:37:49.14	44º38.24’	111º03.14’	9.6	1.8W	17	78	5	0.12
230313	22:49:29.43	44º38.40’	111º02.98’	9.0	0.9	14	90	6	0.18
230313	22:49:33.19	44º37.85’	111º03.70’	5.2	0.6	7	185	9	0.16

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230313	22:49:36.40	44º37.78’	111º03.48’	6.2	1.0	7	183	9	0.13
230313	23:37:18.61	44º38.67’	111º02.62’	8.2	0.5	12	93	6	0.13
230314	00:04:08.68	44º38.83’	111º02.67’	4.9	0.1	9	124	6	0.13
230314	00:04:12.57	44º38.69’	111º02.82’	8.2	1.4W	16	93	6	0.19
230314	01:02:08.83	44º38.77’	111º03.29’	7.6	0.7	14	97	6	0.17
230314	03:00:18.46	44º38.22’	111º02.99’	8.2	0.8W	14	88	5	0.14
230314	04:54:54.77	44º47.11’	110º59.87’	7.9	0.8W	8	207	3	0.06
230314	05:11:46.44	44º38.45’	111º02.10’	6.3	1.1W	15	52	6	0.21
230314	05:44:49.33	44º38.09’	111º02.88’	9.1	0.9W	14	85	5	0.13
230314	05:47:55.06	44º38.42’	111º02.72’	8.8	2.2W	24	53	6	0.15
230314	05:48:04.16	44º38.70’	111º02.43’	8.8	2.4	14	86	6	0.18
230314	06:24:14.37	44º38.34’	111º02.53’	7.7	0.6	10	140	6	0.13
230314	10:54:23.98	44º23.60’	110º13.91’	7.6	1.4	12	132	4	0.15
230314	19:28:57.83	44º41.45’	111º28.05’	6.8*	0.8	6	129	16	0.02
230314	20:05:04.96	44º45.59’	111º06.57’	10.9	1.0W	10	87	4	0.10
230314	20:24:19.65	44º45.64’	111º06.33’	10.3	0.8	12	92	4	0.10
230314	22:44:00.28	44º29.64’	111º02.30’	12.4	1.4W	17	138	13	0.16
230315	15:40:12.73	44º46.09’	111º06.73’	11.6	1.8W	15	88	3	0.12
230315	16:01:01.92	44º45.82’	111º06.73’	11.2	1.5W	14	87	4	0.12
230315	16:38:36.27	44º45.35’	111º06.85’	9.8	0.3	10	81	5	0.09
230315	17:10:29.89	44º45.38’	111º07.03’	10.3	0.1	7	140	5	0.11
230316	01:36:30.83	44º35.22’	110º42.14’	4.4	1.3	10	117	5	0.28
230316	07:46:09.39	44º48.17’	110º51.24’	6.8	0.6	9	188	13	0.10
230317	09:23:45.82	44º38.44’	111º02.54’	9.6	0.5	10	95	6	0.13
230317	10:50:35.25	44º38.04’	111º02.64’	9.9	1.3W	14	82	5	0.15
230317	11:22:25.82	44º38.10’	111º02.40’	10.2	1.4W	13	80	6	0.15
230317	11:37:21.76	44º38.49’	111º02.62’	9.8	0.5	10	143	6	0.13
230317	12:21:50.31	44º37.98’	111º02.50’	10.6	1.9W	18	79	6	0.19
230317	12:51:59.24	44º38.37’	111º01.93’	8.8	0.3	10	132	6	0.12
230317	12:52:29.02	44º38.47’	111º02.17’	8.9	0.3	11	137	6	0.15
230317	13:12:09.42	44º44.70’	110º55.22’	4.9	-0.8	9	124	7	0.07
230317	13:12:23.38	44º45.04’	110º55.56’	5.5	0.2	11	135	6	0.11
230317	13:41:21.24	44º45.99’	110º52.74’	1.2	0.5	7	136	3	0.07
230317	13:56:25.71	44º38.33’	111º02.47’	10.2	1.1W	12	95	6	0.12
230317	17:00:54.81	44º48.07’	110º58.46’	7.0	0.4	10	249	5	0.15
230317	22:11:45.31	44º38.58’	111º02.27’	10.1	0.1	7	177	6	0.14
230318	03:16:31.18	44º46.79’	110º49.78’	3.6	0.4	6	253	2	0.03
230318	03:34:53.00	44º38.44’	111º02.15’	8.9	0.7	13	137	6	0.15
230318	08:49:35.83	44º24.28’	110º13.86’	5.1	1.5	12	155	5	0.22
230318	10:22:45.80	44º20.97’	110º20.45’	7.0	0.9	8	158	6	0.10
230318	12:55:26.60	44º23.66’	110º13.29’	7.7	1.1	10	159	5	0.17
230318	14:12:28.34	44º37.69’	111º02.36’	10.8	1.5W	15	74	5	0.19
230318	14:19:17.47	44º38.18’	111º01.64’	9.1	0.4	10	127	6	0.12
230318	14:20:25.04	44º37.87’	111º02.30’	11.9	1.7W	18	47	6	0.19
230318	16:32:38.01	44º47.45’	110º57.66’	5.1	0.5	11	225	5	0.11

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230318	19:46:33.53	44º48.28’	110º58.06’	7.8	1.8W	18	173	6	0.14
230318	21:02:14.53	44º46.67’	110º50.90’	2.0	0.3	7	189	1	0.06
230319	14:12:59.68	44º43.53’	111º16.24’	8.7	0.9W	15	129	7	0.16
230319	14:13:10.78	44º25.83’	110º20.50’	5.2	0.2	9	122	6	0.17
230319	16:42:41.65	44º48.49’	110º58.28’	7.8	2.3W	25	147	6	0.11
230319	20:05:51.04	44º48.37’	110º58.31’	7.3	0.3	11	174	6	0.09
230320	11:30:43.38	44º47.04’	110º57.22’	4.4	0.1	10	209	5	0.09
230321	02:09:17.73	44º04.50’	110º37.95’	5.4*	1.1	11	126	23	0.07
230321	10:47:37.71	44º47.76’	110º58.03’	6.0	1.0	12	184	5	0.10
230321	13:23:46.55	44º47.33’	110º57.71’	4.9	0.5	9	223	5	0.10
230321	13:24:58.24	44º04.57’	110º38.05’	7.1*	1.1	17	125	23	0.14
230321	21:25:13.36	44º48.72’	110º49.91’	7.3	0.9	8	296	3	0.09
230321	22:00:01.14	44º48.16’	110º58.59’	7.5	0.8	17	169	5	0.14
230323	08:45:02.19	44º38.36’	110º42.51’	1.6	0.5	9	159	6	0.12
230323	09:01:45.50	44º36.69’	110º41.53’	8.5	0.5	9	131	4	0.11
230323	09:09:10.26	44º25.42’	110º18.05’	4.9	1.5	12	83	4	0.08
230324	00:43:45.06	44º08.68’	110º39.12’	10.6	0.7	9	130	17	0.16
230324	19:23:37.34	44º48.24’	110º58.10’	7.3	-0.2	7	172	6	0.06
230324	20:33:05.29	44º48.74’	110º58.09’	9.4	1.7W	22	72	7	0.13
230325	02:06:33.52	44º47.75’	110º57.59’	5.4	0.1	6	232	5	0.09
230325	14:54:50.16	44º52.98’	111º29.73’	8.6*	1.2	13	173	25	0.12
230326	16:15:42.21	44º48.41’	110º58.39’	6.5	0.5	9	174	6	0.09
230326	19:34:16.74	44º42.09’	111º00.30’	7.5	2.0W	20	74	5	0.18
230326	21:40:36.01	44º30.27’	110º29.34’	5.3	1.7W	18	72	9	0.17
230327	13:11:57.17	44º43.16’	111º06.87’	10.4	0.5W	12	122	7	0.14
230328	05:51:08.11	44º40.42’	110º58.80’	4.7	0.9	10	116	1	0.16
230328	08:35:24.25	44º25.28’	110º17.10’	7.2	0.7	11	105	3	0.12
230329	05:18:26.70	44º31.08’	110º21.51’	2.4	0.6	11	124	6	0.04
230329	06:55:26.38	44º31.01’	110º21.82’	3.2	0.9	10	71	6	0.08
230329	07:15:08.25	44º50.75’	111º26.69’	11.7	1.0	15	100	21	0.08
230329	08:59:44.90	44º40.49’	110º58.82’	4.8	0.9	7	116	1	0.15
230329	09:01:06.74	44º40.77’	110º59.03’	4.7	0.6	8	120	2	0.13
230329	11:11:07.06	44º31.00’	110º21.01’	6.8	2.7W	27	64	6	0.20
230329	11:11:48.61	44º30.73’	110º23.56’	3.4*	2.2	7	244	18	0.06
230329	11:12:07.68	44º30.96’	110º21.40’	4.2	2.3	13	70	6	0.13
230329	11:16:28.40	44º31.28’	110º21.52’	4.1	2.2W	28	61	5	0.18
230329	11:20:26.91	44º31.32’	110º21.27’	3.7	2.5W	26	67	6	0.20
230329	11:22:13.11	44º31.15’	110º22.12’	2.0	0.4	11	181	5	0.14
230329	11:25:14.77	44º31.36’	110º21.54’	3.8	1.3	20	68	5	0.17
230329	11:25:40.40	44º31.34’	110º21.46’	4.8	0.8	11	72	5	0.12
230329	11:33:28.72	44º31.21’	110º21.45’	2.9	0.9	16	69	6	0.17
230329	11:41:48.94	44º31.14’	110º21.45’	3.1	2.0W	24	62	6	0.16
230329	11:44:58.44	44º31.06’	110º21.55’	4.4	1.4	22	70	6	0.14
230329	12:38:26.79	44º31.04’	110º21.53’	4.2	1.8W	27	62	6	0.17
230329	12:43:46.14	44º31.22’	110º21.10’	2.4	2.9W	28	64	6	0.19

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230329	12:47:41.66	44º31.32’	110º21.68’	3.7	2.2W	23	68	5	0.16
230329	12:49:35.78	44º31.46’	110º21.50’	4.1	1.6	15	67	5	0.14
230329	13:01:47.26	44º31.28’	110º21.27’	4.3	2.5W	25	62	6	0.16
230329	13:05:13.57	44º31.15’	110º21.32’	3.4	3.1W	26	63	6	0.15
230329	13:07:52.84	44º31.45’	110º21.62’	2.0	2.3W	13	186	5	0.30
230329	13:11:40.29	44º31.29’	110º21.29’	3.5	2.5W	20	62	6	0.12
230329	13:11:58.56	44º31.17’	110º22.29’	1.4	2.6W	11	110	5	0.16
230329	13:15:49.41	44º31.61’	110º21.50’	4.3	--	9	127	5	0.04
230329	13:16:00.51	44º31.20’	110º20.88’	2.7	0.9	7	126	6	0.05
230329	13:18:15.09	44º31.68’	110º21.55’	3.2	1.5	11	140	5	0.12
230329	13:18:28.84	44º31.64’	110º21.39’	2.8	1.2	12	127	5	0.14
230329	13:19:02.33	44º31.68’	110º22.25’	2.1	0.6	10	183	4	0.11
230329	13:19:39.89	44º31.49’	110º21.62’	2.0	1.0	12	73	5	0.17
230329	13:21:47.09	44º31.49’	110º21.63’	4.2	1.2	15	73	5	0.14
230329	13:42:25.36	44º31.29’	110º22.38’	1.5	2.7W	12	109	5	0.14
230329	13:43:41.25	44º31.07’	110º21.23’	2.6	2.8	17	70	6	0.19
230329	13:45:26.91	44º31.14’	110º21.23’	3.6	2.7W	30	63	6	0.15
230329	13:50:12.75	44º31.00’	110º21.50’	3.4	1.4	12	70	6	0.12
230329	13:56:12.05	44º31.16’	110º21.38’	4.1	1.1	14	71	6	0.17
230329	13:56:34.64	44º30.95’	110º21.16’	3.6	0.9	14	70	6	0.19
230329	13:57:16.67	44º30.94’	110º20.86’	3.1	1.2	19	69	7	0.14
230329	13:58:05.14	44º30.86’	110º22.17’	2.2	0.7	10	120	6	0.17
230329	14:02:03.15	44º30.92’	110º21.58’	7.0	2.7W	32	61	6	0.19
230329	14:10:30.23	44º30.92’	110º21.27’	4.5	2.2W	28	63	6	0.16
230329	14:13:28.76	44º30.77’	110º20.67’	3.7	1.5W	16	70	7	0.19
230329	14:13:42.29	44º30.81’	110º20.51’	2.3	2.2W	11	69	7	0.22
230329	14:18:07.89	44º30.62’	110º22.11’	2.3	2.0W	12	111	6	0.27
230329	14:18:19.07	44º30.71’	110º22.75’	-0.9	2.3W	9	106	6	0.12
230329	14:20:04.56	44º31.33’	110º21.42’	3.4	1.4	15	72	6	0.15
230329	14:22:35.46	44º30.77’	110º20.50’	4.9	2.5W	27	67	7	0.15
230329	14:24:39.36	44º31.52’	110º21.67’	3.7	3.7W	29	61	5	0.17
230329	14:28:41.11	44º30.78’	110º20.35’	2.0	1.8W	14	69	7	0.19
230329	14:37:19.43	44º30.55’	110º21.11’	4.3	2.3	20	73	7	0.18
230329	14:37:31.34	44º30.15’	110º21.44’	2.2	2.2W	10	181	7	0.19
230329	14:41:59.88	44º31.08’	110º21.42’	3.9	1.7W	18	70	6	0.14
230329	14:44:58.74	44º31.81’	110º21.39’	3.4	-0.1	11	144	5	0.15
230329	14:45:14.61	44º31.44’	110º21.69’	3.3	0.8	14	68	5	0.15
230329	14:46:36.67	44º31.69’	110º21.92’	4.1	2.0W	21	66	5	0.16
230329	14:54:03.97	44º31.44’	110º21.80’	3.7	0.9	12	73	5	0.09
230329	14:57:47.28	44º31.55’	110º21.52’	3.2	1.5	13	74	5	0.11
230329	14:58:16.19	44º32.13’	110º22.54’	1.9	0.9	11	183	3	0.17
230329	14:59:54.26	44º31.71’	110º21.73’	3.9	2.4W	24	60	5	0.19
230329	15:05:20.14	44º32.03’	110º22.02’	1.9	0.8	11	127	4	0.06
230329	15:05:41.22	44º32.31’	110º21.79’	2.9	--	7	190	4	0.03
230329	15:11:42.81	44º29.51’	110º21.24’	5.3	0.3	10	116	8	0.18

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230329	15:11:51.02	44º31.97’	110º22.49’	1.9	1.9	15	107	4	0.10
230329	15:22:27.27	44º31.51’	110º21.83’	3.3	1.1	14	72	5	0.16
230329	15:36:35.46	44º31.84’	110º21.30’	3.4	1.4	13	75	5	0.10
230329	15:53:10.48	44º30.57’	110º21.04’	3.5	1.5W	18	72	7	0.13
230329	16:01:55.79	44º31.39’	110º21.61’	2.6	1.3	17	72	5	0.15
230329	16:08:58.23	44º31.48’	110º22.31’	4.0	1.8W	22	69	5	0.14
230329	16:25:47.95	44º31.65’	110º22.07’	4.2	0.8	14	74	5	0.15
230329	16:41:07.53	44º31.63’	110º21.70’	3.4	1.5	19	67	5	0.16
230329	17:04:27.13	44º30.36’	110º22.09’	4.2	1.4	12	76	7	0.10
230329	17:31:34.57	44º31.66’	110º22.07’	4.0	1.8W	20	67	5	0.15
230329	18:27:18.82	44º31.52’	110º23.21’	1.8	1.0	12	103	4	0.13
230329	18:28:18.48	44º31.82’	110º22.13’	3.5	1.1	14	74	4	0.16
230329	18:31:22.52	44º31.33’	110º22.14’	2.6	1.6W	20	69	5	0.26
230329	18:38:30.71	44º31.95’	110º22.00’	3.7	0.4	13	126	4	0.18
230329	18:38:39.43	44º31.73’	110º21.63’	2.8	2.3W	24	61	5	0.18
230329	18:40:09.88	44º32.11’	110º22.74’	2.0	0.6	11	182	3	0.14
230329	18:46:32.29	44º31.83’	110º22.28’	2.9	1.3	16	75	4	0.14
230329	19:00:40.83	44º32.09’	110º22.03’	3.9	2.0W	23	65	4	0.19
230329	19:00:54.71	44º32.32’	110º22.80’	2.0	1.6	9	183	3	0.18
230329	19:08:49.30	44º30.68’	110º20.34’	2.1	2.0W	19	69	7	0.35
230329	19:24:56.21	44º31.99’	110º21.84’	2.6	1.5	15	75	4	0.15
230329	19:25:37.00	44º31.93’	110º22.29’	3.8	0.5	13	125	4	0.19
230329	19:51:18.58	44º30.51’	110º22.17’	5.0	0.8	13	109	6	0.14
230329	20:20:38.68	44º32.16’	110º22.36’	3.8	0.4	15	127	4	0.15
230329	21:01:48.46	44º29.64’	110º21.97’	3.3	1.0	14	95	8	0.24
230329	21:40:31.63	44º31.76’	110º21.68’	4.4	1.3	21	71	5	0.13
230329	21:48:21.32	44º32.14’	110º22.53’	4.1	0.8	11	77	9	0.10
230329	22:27:10.46	44º46.49’	110º52.28’	1.9	0.5	7	146	2	0.04
230329	22:38:26.67	44º31.59’	110º22.35’	4.0	2.1W	22	55	4	0.14
230329	22:38:53.90	44º31.68’	110º22.56’	3.9	1.7	15	74	4	0.15
230329	22:50:07.28	44º31.48’	110º22.80’	2.1	0.6	12	121	4	0.09
230329	23:16:29.14	44º30.63’	110º22.92’	2.2	1.5	10	75	6	0.04
230329	23:23:37.21	44º31.66’	110º22.42’	4.0	1.3	21	68	4	0.16
230329	23:27:57.24	44º31.88’	110º22.58’	4.0	1.1	13	76	4	0.11
230329	23:40:02.58	44º31.06’	110º21.85’	2.4	0.7	12	77	6	0.09
230329	23:56:24.15	44º30.51’	110º22.40’	2.4	0.2	10	107	6	0.09
230330	00:14:05.14	44º32.18’	110º22.29’	4.0	0.5	14	127	4	0.14
230330	00:14:25.24	44º30.33’	110º22.79’	4.0	0.3	12	99	6	0.12
230330	01:41:48.80	44º47.36’	110º51.08’	4.8	0.4	10	246	0	0.10
230330	01:43:45.84	44º46.98’	110º51.70’	3.6	0.3	9	158	1	0.07
230330	02:02:21.13	44º31.37’	110º22.40’	2.0	0.6	11	124	5	0.12
230330	02:31:34.84	44º31.83’	110º22.26’	4.1	0.5	15	125	4	0.17
230330	03:10:28.11	44º31.59’	110º21.93’	3.9	2.0W	26	55	5	0.14
230330	04:52:15.22	44º30.05’	110º22.92’	4.2	1.1	13	94	7	0.09
230330	09:36:47.16	44º25.42’	110º17.98’	5.0	0.5	12	99	4	0.14

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2023

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
230330	14:57:44.25	44º32.00’	110º22.43’	3.4	0.5	14	125	4	0.14
230330	20:09:33.04	44º31.62’	110º21.53’	3.9	2.5W	26	56	5	0.17
230330	20:12:53.86	44º31.05’	110º21.72’	3.6	1.5	14	70	6	0.11
230330	23:56:53.77	44º32.13’	110º22.45’	3.7	0.8	16	77	3	0.16
230331	00:01:42.37	44º31.86’	110º22.39’	1.9	0.8	13	75	4	0.10
230331	02:25:16.70	44º40.18’	110º58.84’	5.1	0.8	10	115	1	0.14
230331	09:31:11.92	44º34.28’	110º44.30’	7.2	0.5	14	88	8	0.07
230331	10:12:03.82	44º46.79’	110º51.98’	2.1	0.3	9	153	2	0.09
230331	11:20:40.97	44º25.42’	110º17.63’	5.6	0.6	13	92	4	0.18
230331	11:52:53.94	44º25.25’	110º17.66’	8.1	1.4	18	90	3	0.21
230331	16:58:40.01	44º31.76’	111º02.68’	15.7	0.3	10	140	10	0.11
230331	20:03:46.78	44º40.49’	110º46.99’	5.2	1.1W	15	97	7	0.14

number of earthquakes = 597
* indicates poor depth control
W indicates Wood-Anderson data used for magnitude calculation

Table 3
UNIVERSITY OF UTAH YELLOWSTONE SEISMIC NETWORK
Operating Seismograph Stations
March 31, 2023

SEED Station	Location	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
B206*	Canyon206bwy2008, Yellowstone, WY	EH[ZEN]	3	PB	44° 46.66′	110° 30.70′	2400	IESE-S2	Q330	Digital	PBO
B207*	Madisn207bwy2007, Yellowstone, WY	EH[ZEN]	3	PB	44° 37.14′	110° 50.91′	2182	IESE-S2	Q330	Digital	PBO
B208*	Lakejn208bwy2008, Yellowstone, WY	EH[ZEN]	3	PB	44° 33.61′	110° 24.09′	2406	IESE-S2	Q330	Digital	PBO
B944*	Grantt944bwy2008, Yellowstone, WY	EH[ZEN]	3	PB	44° 23.38′	110° 32.63′	2365	IESE-S2	Q330	Digital	PBO
B945*	Panthr944swy2008, Yellowstone, WY	EH[ZEN]	3	PB	44° 53.64′	110° 44.65′	2249	IESE-S2	Q330	Digital	PBO
B950*	Norris950bwy2013, Yellowstone, WY	EH[ZEN]	3	PB	44° 42.77′	110° 40.71′	2328	IESE-S2	Q330	Digital	PBO
FLWY*	Flagg Ranch, WY	BH[ZEN]	3	IW	44° 04.96′	110° 41.96′	2078	3ESP	RT-130	Digital	ANSS
IMW*	Indian Meadows, WY	BH[ZEN]	3	IW	43° 53.58′	110° 56.58′	2670	3ESP	RT-130	Digital	ANSS
LKWY*	Lake, WY	BH[ZEN]	3	US	44° 33.91′	110° 24.00′	2424	STS-2	Q330	Digital	USGS
LOHW*	National Elk Refuge, WY	BH[ZEN]	3	IW	43° 36.76′	110° 36.30′	2245	3ESP	RT-130	Digital	ANSS
MCID	Moose Creek, ID	EHZ	1	WY	44° 11.45′	111° 11.03′	2137	L4C	PSN	Analog	USGS
MOOW*	Moose Ponds, WY	BH[ZEN]	3	IW	43° 44.92′	110° 44.69′	2128	3ESP	RT-130	Digital	ANSS
QLMT*	Earthquake Lake, MT	EHZ	1	MB	44° 49.84′	111° 25.80′	2064	L4C	-	Analog	MBMT
REDW*	Red-Top Meadows, WY	BH[ZEN]	3	IW	43° 21.74′	110° 51.18′	2322	3ESP	RT-130	Digital	ANSS
SNOW*	Snow King Mountain, WY	BH[ZEN]	3	IW	43° 27.75′	110° 45.31′	2390	3ESP	RT-130	Digital	ANSS
TPAW*	Teton Pass, WY	BH[ZEN]	3	IW	43° 29.41′	110° 57.04′	2512	3ESP	RT-130	Digital	ANSS
TPMT*	Teepe Creek, MT	EHZ	1	MB	44° 43.79′	111° 39.94′	2518	L4C	-	Analog	MBMT
YDC	Denny Creek, MT	EHZ	1	WY	44° 42.51′	111° 14.60′	2025	L4C	PSN	Analog	USGS
YDD	Grant Junction, Yellowstone, WY	HH[ZEN]	3	WY	44° 24.00′	110° 34.80′	2400	STS-2	Q330	Digital	NSF
		EN[ZEN]	3					Episensor			
YEE	East Entrance (YNP), WY	HH[ZEN]	3	WY	44° 29.12′	109° 53.81′	2270	Compact PH	Centaur	Digital	USGS
YFT	Old Faithful (YNP), WY	HH[ZEN]	3	WY	44° 27.05′	110° 50.24′	2292	Compact	Centaur	Digital	USGS
		EN[ZEN]	3					Titan			
YGC	Grayling Creek, MT	EHZ	1	WY	44° 47.77′	111° 06.45′	2075	L4C	PSN	Analog	USGS
YHB	Horse Butte, MT	EHZ	1	WY	44° 45.07′	111° 11.71′	2157	L4C	PSN	Analog	USGS
		HH[ZEN]	3					Compact	Centaur	Digital	
		EN[ZEN]	3					Titan			
YHH	Holmes Hill (YNP), WY	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			

SEED Station	Location	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
YHL	Hebgen Lake, MT	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	HH[ZEN]	3	WY	44° 06.36′	110° 04.90′	2976	Trillium 120	Q330	Digital	USGS
YJC	Joseph′s Coat (YNP), WY	EH[ZEN]	3	WY	44° 45.33′	110° 20.95′	2684	S13	PSN	Analog	USGS
YLA	Lake Butte (YNP), WY	EHZ	1	WY	44° 30.76′	110° 16.12′	2580	L4C	PSN	Analog	USGS
YLT	Little Thumb Creek (YNP), WY	EHZ	1	WY	44° 26.25′	110° 35.28′	2439	L4C	PSN	Analog	USGS
YMC	Maple Creek (YNP), WY	EH[ZEN]	3	WY	44° 45.53′	111° 00.41′	2073	S13	PSN	Analog	USGS
YML	Mary Lake (YNP), WY	EH[ZEN]	3	WY	44° 36.20′	110° 38.63′	2653	S13	PSN	Analog	USGS
YMP	Mirror Plateau (YNP), WY	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	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	EHZ	1	WY	44° 15.84′	110° 31.67′	3106	L4C	PSN	Analog	USGS
YMV	Mammoth Vault (YNP), WY	EHZ	1	WY	44° 58.42′	110° 41.33′	1829	L4C	PSN	Analog	USGS
YNE	Northeast Entrance (YNP), WY	HH[ZEN]	3	WY	45° 00.46′	110° 00.48′	2343	Compact	Centaur	Digital	USGS
YNM	Norris Museum (YNP), WY	HH[ZEN]	3	WY	44° 43.59′	110° 42.22′	2311	Trillium 240	Q330	Digital	USGS
YNR	Norris Junction (YNP), WY	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	EHZ	1	WY	44° 38.88′	110° 11.55′	2932	L4C	PSN	Analog	USGS
YPK	Parker Peak (YNP), WY	EH[ZEN]	3	WY	44° 43.91′	109° 55.32′	2897	L4C	PSN	Analog	USGS
YPM	Purple Mountain (YNP), WY	EHZ	1	WY	44° 39.43′	110° 52.12′	2582	L4C	PSN	Analog	USGS
YPP	Pitchstone Plateau (YNP), WY	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	EHZ	1	WY	44° 53.04′	110° 09.06′	2072	L4C	PSN	Analog	USGS
YTP	The Promontory (YNP), WY	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	HH[ZEN]	3	WY	44° 42.76′	110° 30.71′	2394	Trillium 120	Centaur	Digital	USGS
		EN[ZEN]	3					Titan			
YWB	West Boundary (YNP), WY	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: 150 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
Compact PH	Nanometrics Compact Posthole 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 January 1–March 31, 2023

None