

EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

October 1 – December 31, 2022

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 MDT through 02:00 (2:00 a.m.) on November 6 and MST thereafter.
- Earthquake location coordinates in degrees and minutes of north latitude and west longitude, and depth in kilometers below sea level. Note that prior to October 1, 2012, the earthquake depths in these quarterly reports were computed relative to a datum of 2000 m above sea level.
- "*" indicates poor depth resolution: no recording stations within 10 km or twice the depth.
- MAG, the computed Richter local magnitude (M_L) for each earthquake. "W" indicates that peak amplitude measurements from Wood-Anderson records were used. Otherwise, the estimate is calculated from signal durations and is more correctly identified as coda magnitude (M_C). The notation "--" indicates that a reliable magnitude estimate could not be made.
- NO, the number of P and S readings used in the solution.
- GAP, the largest azimuthal separation in degrees between recording stations used in the solution.
- DMN, the epicentral distance in kilometers to the closest station.
- RMS, the weighted root-mean-square of the travel-time residuals in seconds:

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

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

EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION
October 1 – December 31, 2022

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During the three-month period October 1 through December 31, 2022, the University of Utah Seismograph Stations (UUSS) located 584 earthquakes within the Yellowstone region (Figure 1). The total includes 29 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 2.9 earthquake on October 13. No earthquakes were reported felt in the region during the report period (see Table 1, a cumulative tabulation of earthquakes that were felt in the Yellowstone region during 2022). 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

None

Notable Swarm Seismicity

During the report period, there were five 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 273 earthquakes ($-0.5 \leq M \leq 2.9$) occurred about 6.6 mi NW of Norris Junction, YNP from October 1st – November 7th.
- B. A swarm of 16 earthquakes ($0.0 \leq M \leq 2.8$) occurred about 7.0 mi N of West Yellowstone, MT from October 1st – 3rd.
- C. A swarm of 31 earthquakes ($0.1 \leq M \leq 2.5$) occurred about 9.9 mi ESE of Madison Junction, YNP from October 5th – 7th.
- D. A swarm of 85 earthquakes ($-0.3 \leq M \leq 2.6$) occurred about 7.7 mi NW of Norris Junction, YNP from November 9th – 24th.
- E. A swarm of 18 earthquakes ($0.3 \leq M \leq 2.1$) occurred about 6.9 mi NW of Norris Junction, YNP from December 7th – 12th.

These swarms are labeled in Figure 1.

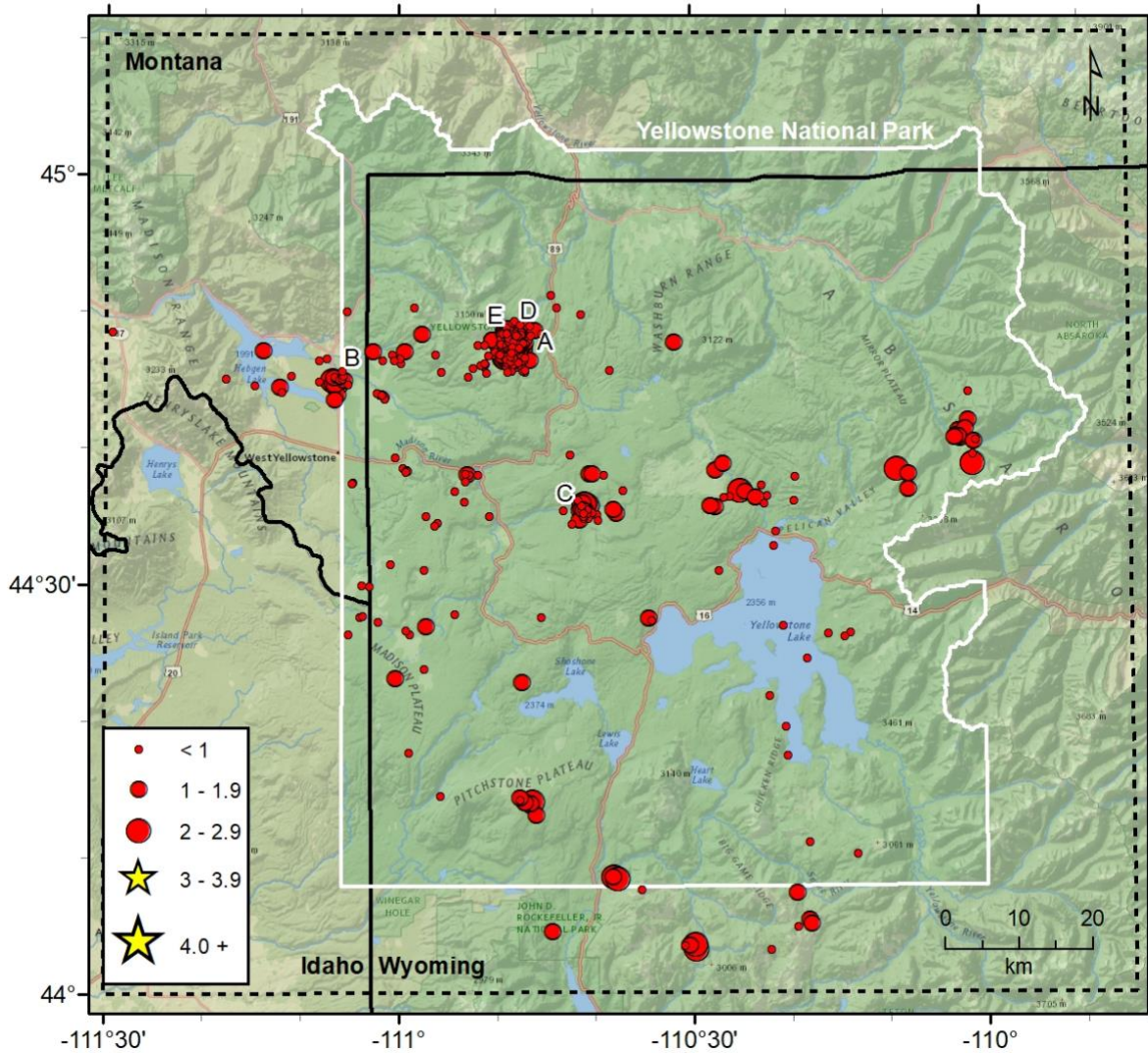


Figure 1. Epicenters of earthquakes located by the University of Utah Seismograph Stations, October 1, 2022, through December 31, 2022. Earthquake swarms (labeled A–E) are discussed in the text.

Table 1
EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2022, to December 31, 2022

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
May 11	07:32 MDT 13:32 UTC	Yellowstone. Felt (V) at Yellowstone National Park.	44° 40.86'	109° 59.78'	M _L 4.2
August 31 September 01	19:33 MDT 01:33 UTC	Yellowstone. Felt (III) at Yellowstone National Park.	44° 15.60'	110° 36.36'	M _L 3.3
September 18	06:55 MDT 12:55 UTC	Yellowstone. Felt (IV) at Yellowstone National Park.	44° 47.34'	110° 48.60'	M _L 3.9

† 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 December 31, 2022

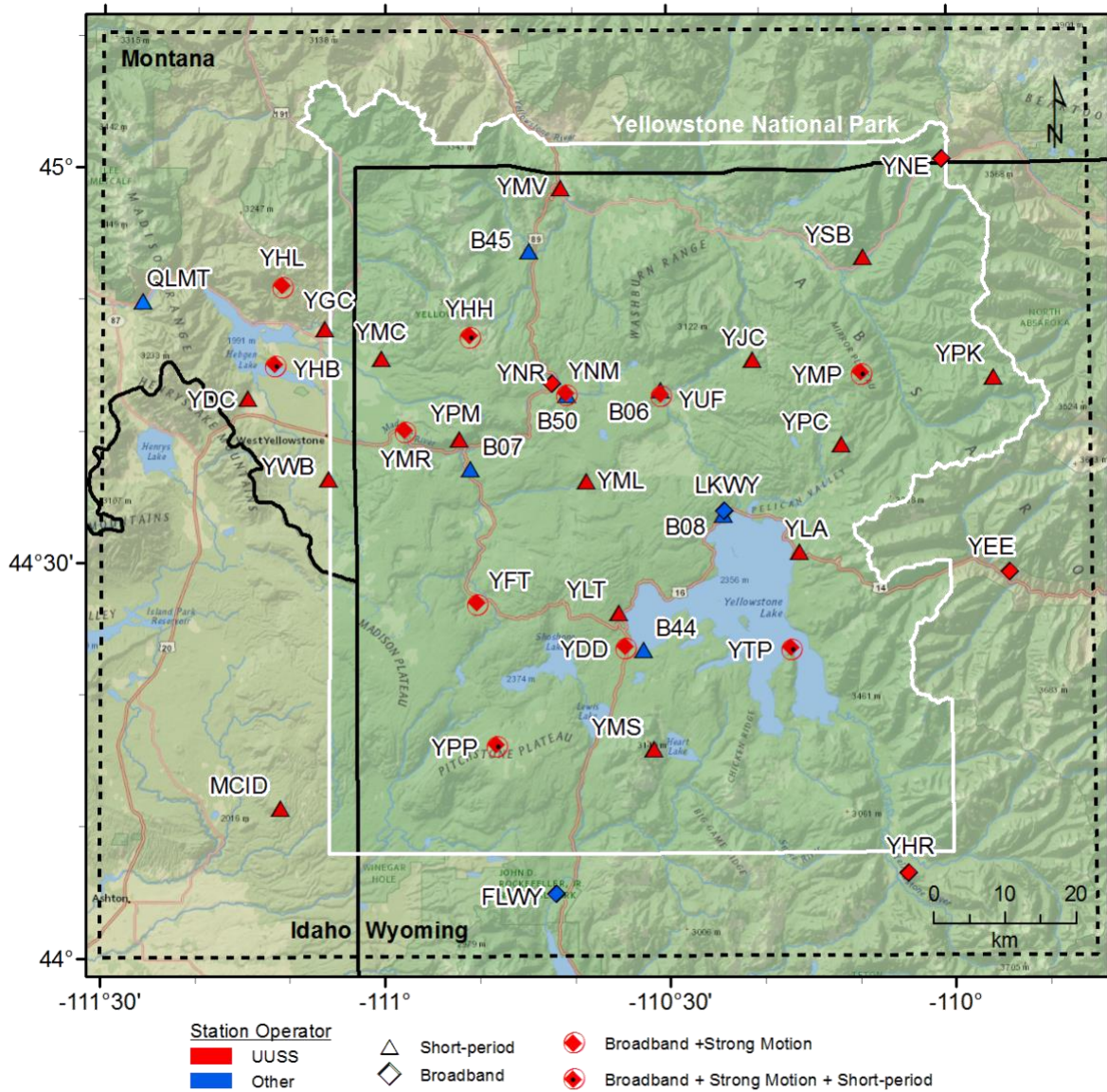


Figure 2. Seismograph stations of the Yellowstone Seismic Network as of December 31, 2022.

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2022

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221001	00:46:51.01	44°48.64'	110°49.01'	6.5	0.6	10	215	4	0.10
221001	11:20:32.95	44°47.10'	110°48.72'	4.6	0.5	18	99	3	0.20
221001	11:51:20.49	44°48.23'	110°48.21'	5.4	0.3	13	191	4	0.14
221001	14:37:58.69	44°48.32'	110°48.03'	7.8	0.5	12	216	4	0.09
221001	14:43:27.34	44°48.20'	110°48.21'	7.5	0.2	10	213	4	0.09
221001	20:39:18.44	44°44.93'	111°06.81'	13.6	2.8W	27	62	5	0.14
221001	20:40:55.67	44°45.24'	111°06.60'	13.5	0.7	15	76	5	0.12
221001	20:41:02.65	44°44.64'	111°06.58'	12.7	1.6W	17	64	6	0.11
221001	21:13:06.35	44°45.00'	111°06.10'	13.3	0.5	16	81	5	0.12
221001	21:22:56.03	44°45.13'	111°06.59'	13.0	0.9W	17	75	5	0.12
221001	22:10:14.79	44°45.20'	111°06.68'	13.8	1.1W	15	75	5	0.12
221001	22:22:35.62	44°45.28'	111°05.73'	12.1	0.2	13	89	5	0.13
221001	22:23:52.78	44°44.77'	111°06.40'	12.7	2.1W	23	63	6	0.16
221001	22:24:42.41	44°45.16'	111°06.53'	12.8	0.8	15	76	5	0.11
221001	22:25:05.79	44°45.18'	111°06.43'	12.7	0.8W	14	78	5	0.10
221001	22:31:21.76	44°44.97'	111°06.06'	11.4	0.7W	18	106	8	0.17
221001	22:34:41.42	44°45.10'	111°05.85'	12.4	0.4	17	86	5	0.18
221001	22:35:44.57	44°45.01'	111°05.77'	11.8	0.6W	16	86	5	0.18
221001	23:05:15.75	44°44.97'	111°05.66'	12.4	1.1W	19	87	5	0.17
221002	01:20:20.79	44°44.70'	111°05.21'	12.1	0.2	14	140	7	0.19
221002	01:50:43.17	44°47.40'	110°47.15'	8.1	1.3W	16	211	5	0.17
221002	05:02:12.73	44°36.88'	110°54.30'	1.0	0.2	8	104	5	0.17
221002	05:02:33.91	44°38.06'	110°51.97'	4.9	0.4W	9	124	2	0.08
221002	09:37:17.62	44°47.05'	110°47.30'	5.5	0.6	12	207	5	0.16
221002	10:24:59.95	44°35.95'	110°22.59'	3.5	0.6	16	93	4	0.17
221002	14:06:11.62	44°41.29'	110°02.00'	12.5	1.6	12	151	11	0.27
221002	16:30:49.96	44°47.45'	110°47.58'	7.7	0.5W	9	209	5	0.14
221002	21:07:44.07	44°47.31'	110°47.83'	1.9	0.6	7	220	4	0.08
221003	01:19:54.32	44°48.42'	110°48.18'	7.9	1.4W	16	193	4	0.21
221003	01:39:54.83	44°47.13'	110°47.86'	2.3	0.2	7	214	4	0.14
221003	02:52:33.76	44°47.45'	110°48.09'	6.0	0.3	9	207	4	0.19
221003	05:45:10.66	44°26.39'	111°05.19'	18.2	0.6W	12	155	18	0.21
221003	06:21:38.84	44°47.44'	110°47.53'	6.5	0.9W	16	145	5	0.22
221003	11:25:18.58	44°46.55'	111°07.36'	4.2	0.0	9	115	6	0.10
221003	11:51:15.41	44°46.15'	110°48.21'	4.0	0.0	8	181	4	0.15
221003	12:11:50.08	44°46.97'	110°48.42'	3.2	0.3	10	205	3	0.16
221003	12:26:21.55	44°45.68'	110°48.43'	1.4	0.1	9	164	5	0.12
221003	22:20:06.13	44°49.16'	110°48.34'	5.8	0.7	10	221	5	0.20
221003	23:12:48.20	44°38.86'	110°26.78'	2.0	1.3W	10	126	9	0.19
221004	01:11:59.21	44°47.32'	110°48.92'	6.5	1.2W	16	144	3	0.18
221004	02:35:15.56	44°45.92'	110°47.38'	0.8	0.6W	7	183	5	0.18
221004	03:11:50.46	44°46.67'	110°47.10'	2.0	0.1	6	206	5	0.22
221004	09:20:48.43	44°46.70'	110°47.78'	2.1	0.6	8	201	4	0.29
221004	10:32:29.28	44°31.14'	110°57.49'	15.0	0.3	13	104	12	0.30
221004	11:08:35.01	44°45.67'	110°47.30'	3.0	0.1	7	178	6	0.28

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221004	11:29:08.01	44°38.73'	110°01.21'	11.4	2.2W	18	150	15	0.20
221004	17:19:40.96	44°48.11'	110°48.25'	7.3	1.2W	14	190	4	0.11
221005	02:05:15.99	44°35.52'	110°38.03'	11.8	1.1W	9	215	2	0.11
221005	02:05:45.06	44°35.19'	110°39.75'	7.7	0.8W	8	187	3	0.19
221005	02:05:59.93	44°34.99'	110°41.07'	6.0	0.1	5	167	4	0.14
221005	02:06:11.31	44°35.20'	110°41.13'	4.9	0.1	7	161	4	0.14
221005	02:09:04.50	44°35.92'	110°41.03'	7.8	2.2W	28	55	3	0.21
221005	02:09:26.73	44°36.02'	110°41.21'	5.7	1.6	19	94	4	0.19
221005	02:11:21.95	44°35.49'	110°40.67'	5.9*	0.3	5	121	13	0.09
221005	02:11:38.79	44°35.31'	110°40.23'	7.7	0.6	11	123	3	0.08
221005	02:11:49.04	44°35.23'	110°37.73'	4.8	1.3W	6	260	2	0.18
221005	02:12:12.63	44°35.50'	110°41.02'	5.3	1.8W	24	55	4	0.19
221005	02:12:36.00	44°35.05'	110°50.75'	5.9*	0.8	6	226	15	0.07
221005	02:13:07.23	44°35.45'	110°41.50'	6.2	1.4W	16	68	4	0.12
221005	02:13:25.66	44°34.87'	110°41.08'	5.0	0.1	5	125	4	0.02
221005	02:13:38.18	44°35.21'	110°40.76'	5.4	0.3	12	123	4	0.12
221005	02:14:06.81	44°35.78'	110°40.96'	7.6	2.5W	31	50	3	0.20
221005	02:15:33.04	44°34.77'	110°39.60'	1.7	--	5	201	3	0.01
221005	02:15:45.77	44°35.54'	110°41.28'	5.5	0.7	12	119	4	0.12
221005	02:15:54.03	44°35.10'	110°41.09'	5.9	0.8	8	123	4	0.08
221005	02:16:21.21	44°34.90'	110°40.58'	7.4	0.8	5	191	4	0.08
221005	02:16:33.39	44°35.36'	110°41.34'	5.9	1.4W	13	121	4	0.10
221005	02:18:41.49	44°35.78'	110°40.69'	7.7	2.3W	27	54	3	0.20
221005	02:35:39.61	44°35.25'	110°40.85'	5.9	1.1W	17	65	4	0.12
221005	02:52:44.08	44°47.42'	110°48.31'	5.0	-0.4	8	206	4	0.13
221005	02:52:58.31	44°47.49'	110°48.53'	5.5	1.0W	17	187	3	0.16
221005	02:54:41.38	44°35.53'	110°41.29'	6.6	1.3W	24	67	4	0.20
221005	05:35:26.89	44°47.65'	110°47.82'	6.2	1.1W	19	189	4	0.18
221005	05:45:07.57	44°47.26'	110°47.76'	5.9	0.8W	12	206	4	0.11
221005	05:45:17.43	44°46.20'	110°48.52'	2.6	0.6	10	178	4	0.16
221005	08:46:55.73	44°47.91'	110°47.95'	6.9	0.6W	11	213	4	0.10
221005	08:53:12.91	44°47.15'	110°48.86'	6.0	0.2	10	210	3	0.08
221005	09:51:13.40	44°47.43'	110°48.72'	6.6	0.8W	14	103	3	0.14
221005	10:39:53.21	44°34.73'	110°41.50'	4.6	1.0	9	110	5	0.11
221005	10:40:30.28	44°35.42'	110°41.05'	5.6	0.5	14	66	4	0.17
221005	10:40:45.44	44°35.51'	110°41.27'	5.1	0.2	13	120	4	0.17
221005	10:44:03.95	44°35.34'	110°41.24'	5.0	0.7	18	67	4	0.16
221005	10:44:31.17	44°35.41'	110°41.13'	6.2	1.0W	12	67	4	0.08
221005	11:03:50.11	44°35.77'	110°41.28'	6.0	0.2	14	65	4	0.17
221005	14:56:09.68	44°47.97'	110°48.97'	7.5	0.6	11	208	3	0.11
221005	17:54:19.99	44°47.18'	110°48.34'	4.5	0.4	6	214	4	0.11
221005	17:54:41.10	44°35.42'	110°43.18'	1.9	0.8	9	117	6	0.29
221005	17:58:47.31	44°36.20'	110°41.70'	4.7	0.6	10	92	4	0.17
221005	18:12:43.22	44°36.90'	110°37.10'	5.7	0.8	7	196	2	0.06
221005	22:00:12.62	44°47.79'	110°47.94'	6.9	0.3	9	211	4	0.08

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221006	02:10:13.17	44°37.58'	110°53.23'	2.9	0.5	10	95	3	0.19
221006	02:46:54.19	44°47.75'	110°48.82'	6.6	0.9W	13	207	3	0.14
221006	03:26:41.14	44°38.11'	110°53.17'	5.7	0.5W	15	54	3	0.18
221006	04:04:25.90	44°46.49'	110°48.92'	5.0	0.2	8	182	3	0.09
221006	04:05:25.70	44°38.07'	110°53.01'	4.9	1.4W	21	89	3	0.17
221006	04:08:34.61	44°38.08'	110°52.86'	5.1	0.7W	14	53	3	0.15
221006	10:19:38.32	44°38.13'	110°40.20'	7.2	1.1W	23	55	4	0.18
221006	11:20:34.91	44°47.19'	110°48.33'	5.3	0.2	8	214	4	0.11
221006	13:00:51.40	44°36.09'	110°53.32'	11.0	0.6	11	107	4	0.15
221006	14:46:59.11	44°48.43'	110°47.33'	5.6	0.3	11	195	5	0.10
221006	15:45:11.47	44°48.39'	110°47.29'	6.2	1.5W	18	115	5	0.15
221006	20:14:20.59	44°48.41'	110°47.67'	6.8	0.6	8	217	5	0.12
221006	22:01:47.00	44°48.05'	110°48.16'	5.6	0.2	7	213	4	0.09
221007	00:30:49.32	44°46.98'	110°49.36'	5.9	1.3W	14	101	2	0.21
221007	01:07:54.73	44°47.31'	110°48.71'	5.3	0.5	8	217	3	0.09
221007	02:27:03.29	44°48.60'	110°46.04'	4.2	1.0W	10	199	7	0.11
221007	03:04:05.53	44°47.27'	110°48.73'	6.6	0.5	10	102	3	0.17
221007	03:04:27.69	44°46.66'	110°48.25'	2.9	-0.3	7	196	4	0.12
221007	04:26:08.35	44°47.63'	110°47.64'	5.9	0.0	8	211	5	0.10
221007	04:29:15.48	44°47.65'	110°47.72'	5.7	0.7W	12	211	4	0.12
221007	05:43:25.28	44°34.49'	110°42.28'	7.9	0.4	8	163	6	0.07
221007	05:44:18.87	44°46.75'	110°48.28'	5.2	0.6W	11	103	4	0.19
221007	11:53:28.62	44°47.92'	110°46.72'	8.8	0.7W	10	218	6	0.16
221007	15:12:17.25	44°47.64'	110°47.45'	4.5	0.8	9	231	5	0.16
221007	15:25:14.06	44°47.63'	110°47.24'	5.0	0.3	5	231	5	0.01
221007	16:28:29.21	44°48.49'	110°48.19'	5.6	0.7	9	216	4	0.12
221007	19:40:46.01	44°47.31'	110°48.10'	3.3	0.4	6	219	4	0.12
221007	19:44:24.79	44°48.43'	110°47.85'	4.5	0.8W	12	217	5	0.14
221007	21:00:34.03	44°47.83'	110°48.13'	4.9	0.1	6	236	4	0.05
221007	23:11:16.88	44°48.26'	110°48.10'	5.2	0.4	6	242	4	0.07
221008	01:31:48.35	44°46.29'	110°47.38'	3.3	0.6	11	193	5	0.15
221008	06:36:53.10	44°27.84'	110°54.33'	7.4	0.2	9	188	6	0.18
221008	06:41:16.92	44°26.67'	110°59.29'	8.8	0.4	12	125	12	0.24
221008	06:54:55.08	44°47.20'	110°47.60'	6.3	0.9W	11	110	5	0.23
221008	10:13:26.25	44°46.57'	110°48.28'	5.3	1.4W	24	91	4	0.24
221008	10:14:52.55	44°47.46'	110°47.28'	5.7	1.4W	18	188	5	0.26
221008	12:19:05.36	44°46.39'	110°47.15'	1.6	0.2	8	198	5	0.15
221008	12:21:45.68	44°48.27'	110°46.52'	8.0	0.2	10	222	6	0.20
221008	12:36:41.98	44°47.47'	110°47.21'	5.3	0.7	11	211	5	0.22
221008	12:39:46.73	44°21.84'	110°22.16'	6.8	0.7	10	156	7	0.12
221008	13:52:34.87	44°38.34'	110°27.57'	6.3	1.6W	19	68	9	0.24
221008	21:35:07.34	44°48.23'	110°46.60'	5.4	0.8W	11	221	6	0.24
221008	22:55:41.72	44°26.96'	110°20.74'	8.2	0.7	10	96	8	0.06
221008	23:11:34.96	44°46.75'	110°47.68'	5.1	0.9W	13	106	5	0.26
221009	02:33:19.39	44°46.70'	110°47.58'	6.2	1.1	18	95	5	0.27

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2022

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221009	02:49:31.17	44°49.02'	110°47.51'	4.8	0.1	9	223	6	0.20
221009	08:59:36.40	44°46.27'	110°47.86'	1.9	0.4W	9	188	5	0.27
221009	11:11:34.45	44°48.53'	110°47.50'	6.4	0.2	10	220	5	0.24
221009	14:58:56.84	44°47.18'	110°47.13'	5.2	1.0W	11	113	5	0.27
221009	21:20:35.69	44°45.61'	110°47.05'	0.8	0.9W	7	179	6	0.13
221009	22:42:38.33	44°48.31'	110°48.17'	6.4	0.8W	11	215	4	0.27
221010	08:08:42.81	44°48.27'	110°48.72'	7.5	0.7W	9	212	4	0.15
221010	09:55:44.36	44°48.15'	110°47.73'	6.2	-0.2	7	215	5	0.17
221010	09:58:43.18	44°47.24'	110°48.85'	6.6	0.9W	16	144	3	0.18
221010	13:40:09.48	44°46.89'	110°56.25'	3.4	0.4	9	151	7	0.12
221011	01:45:52.62	44°46.34'	110°48.50'	2.2	0.2	7	182	4	0.11
221011	03:46:54.83	44°46.81'	110°49.39'	6.0	0.9W	15	173	2	0.14
221011	05:42:07.76	44°45.64'	111°05.80'	2.2	-0.5	10	129	8	0.13
221011	05:42:21.44	44°46.88'	110°49.62'	5.9	0.2	10	188	2	0.17
221011	06:03:18.37	44°47.09'	110°48.22'	7.2	0.1	8	203	4	0.13
221011	07:37:32.03	44°47.19'	110°49.16'	6.1	0.8W	12	200	2	0.16
221011	08:25:25.63	44°48.65'	110°48.02'	7.9	0.8W	10	218	5	0.22
221011	11:40:49.96	44°46.46'	110°46.59'	5.9	1.0W	12	113	6	0.32
221011	12:49:49.11	44°47.66'	110°47.04'	2.0	0.0	6	233	5	0.21
221012	06:09:28.47	44°47.52'	110°48.64'	6.0	1.1W	16	102	3	0.15
221012	07:17:16.87	44°46.96'	110°48.83'	4.5	0.6	14	100	3	0.14
221012	07:44:17.13	44°47.08'	110°48.67'	4.9	0.2	8	208	3	0.05
221012	10:24:53.99	44°45.96'	110°48.97'	4.9	0.8W	8	163	4	0.12
221012	14:58:42.52	44°47.92'	110°48.54'	8.4	0.8W	13	209	3	0.12
221012	20:07:44.90	44°46.94'	110°48.43'	3.9	0.6	10	204	3	0.11
221013	05:21:35.27	44°46.92'	110°48.64'	5.0	0.2	8	202	3	0.06
221013	05:37:53.83	44°47.84'	110°48.64'	6.2	0.7W	16	209	3	0.13
221013	08:56:28.15	44°33.89'	110°21.49'	4.9	0.8	14	75	3	0.09
221013	09:12:24.78	44°32.80'	110°21.62'	2.2	0.1	6	173	4	0.07
221013	09:51:19.18	44°47.16'	110°48.34'	9.0	2.4W	34	99	4	0.19
221013	10:03:55.84	44°47.32'	110°48.12'	5.0	0.6W	7	219	4	0.08
221013	10:19:10.13	44°47.29'	110°48.41'	9.0	2.2W	24	100	3	0.19
221013	10:21:59.14	44°47.77'	110°48.22'	6.3	-0.1	11	210	4	0.11
221013	10:25:13.99	44°48.15'	110°48.17'	6.6	0.7W	13	213	4	0.14
221013	11:00:18.51	44°47.29'	110°48.67'	7.6	1.5W	23	101	3	0.19
221013	11:05:10.44	44°48.46'	110°47.92'	7.8	0.7W	11	217	5	0.09
221013	11:11:03.03	44°47.08'	110°48.32'	11.7	2.8W	34	58	10	0.20
221013	11:16:34.30	44°48.66'	110°47.83'	6.4	0.4	12	219	5	0.09
221013	11:35:06.36	44°48.01'	110°48.03'	6.1	0.4	13	213	4	0.11
221013	13:45:30.80	44°47.23'	110°49.10'	3.5	0.7W	7	212	3	0.13
221013	14:16:27.28	44°47.84'	110°48.17'	5.7	1.3W	13	188	4	0.15
221013	14:24:05.55	44°47.53'	110°48.08'	5.5	0.4	6	227	4	0.09
221013	14:59:04.96	44°48.48'	110°47.76'	7.7	1.1W	16	116	5	0.14
221013	16:27:35.33	44°45.60'	110°48.88'	2.2	0.0	7	156	4	0.04
221013	16:29:56.63	44°47.63'	110°48.25'	5.2	0.9W	6	230	4	0.05

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221013	17:23:56.15	44°47.49'	110°48.17'	5.1	0.2	7	225	4	0.06
221013	19:17:57.51	44°37.47'	111°04.80'	11.4	0.4W	13	108	3	0.15
221013	20:07:26.20	44°47.84'	110°48.19'	6.2	0.8W	13	210	4	0.09
221013	20:42:59.01	44°48.08'	110°48.05'	5.7	0.4	6	239	4	0.04
221013	20:43:50.10	44°46.88'	110°48.49'	5.0	1.4W	18	98	3	0.18
221013	20:47:08.00	44°47.55'	110°48.26'	5.8	1.0W	16	101	4	0.15
221013	21:37:41.41	44°48.29'	110°48.10'	5.7	1.3W	15	192	4	0.12
221013	22:00:59.12	44°48.56'	110°47.92'	5.4	0.4	11	218	5	0.11
221013	22:01:45.17	44°48.16'	110°47.85'	5.8	1.0W	15	192	4	0.12
221013	22:13:53.84	44°47.86'	110°48.40'	6.3	1.4W	14	188	4	0.14
221013	22:59:02.11	44°47.77'	110°48.55'	5.6	0.8W	13	189	3	0.12
221013	23:06:47.94	44°48.01'	110°48.66'	5.6	0.6W	9	210	3	0.11
221013	23:56:44.49	44°48.43'	110°48.09'	7.4	0.9W	12	216	4	0.10
221014	02:46:53.24	44°47.05'	110°59.38'	7.7	1.2W	20	69	3	0.17
221014	03:10:10.96	44°47.31'	110°47.63'	3.6	-0.5	5	221	4	0.02
221014	03:10:25.85	44°47.76'	110°47.78'	8.0	0.3	9	211	4	0.09
221014	03:28:23.54	44°47.92'	110°47.94'	5.6	1.0W	14	213	4	0.16
221014	03:58:18.74	44°47.06'	110°48.65'	5.1	1.2W	17	99	3	0.17
221014	04:08:49.78	44°47.14'	110°48.44'	6.7	1.4W	20	100	3	0.19
221014	05:30:46.55	44°48.38'	110°47.98'	8.1	0.7W	10	216	4	0.08
221014	05:34:03.60	44°46.76'	110°48.91'	5.0	1.3W	22	94	3	0.17
221014	20:24:18.47	44°47.80'	110°48.49'	7.0	0.9W	11	209	3	0.11
221014	21:34:11.20	44°47.34'	110°48.56'	5.0	0.4	6	219	3	0.04
221014	22:01:35.10	44°48.04'	110°48.54'	6.4	1.0W	14	164	4	0.09
221014	22:18:11.74	44°47.89'	110°48.38'	6.1	0.2	10	188	4	0.08
221014	22:18:44.52	44°47.83'	110°48.36'	7.3	0.6W	9	210	4	0.12
221015	00:20:54.44	44°48.33'	110°47.80'	8.1	1.2W	17	98	5	0.13
221015	01:08:04.87	44°48.11'	110°48.55'	7.4	0.6	9	141	4	0.13
221015	03:35:50.94	44°46.91'	110°48.92'	5.2	1.5W	19	100	3	0.16
221015	05:02:36.27	44°47.09'	110°48.71'	11.3	2.2W	31	59	11	0.20
221015	05:06:26.52	44°46.70'	110°48.59'	3.5	--	7	193	3	0.04
221015	05:27:11.01	44°47.82'	110°48.71'	6.2	0.1	9	208	3	0.08
221015	05:33:42.40	44°47.84'	110°48.64'	7.4	0.9W	16	189	3	0.13
221015	07:03:51.90	44°47.07'	110°48.59'	5.0	-0.4	6	208	3	0.03
221015	07:05:03.38	44°47.14'	110°48.80'	6.4	1.5W	19	100	3	0.16
221015	07:33:56.01	44°46.97'	110°48.78'	4.9	1.0W	17	99	3	0.12
221015	07:42:43.00	44°07.72'	110°35.33'	9.5	0.6	12	143	10	0.09
221015	08:16:21.67	44°47.94'	110°48.61'	7.3	0.8W	13	209	3	0.10
221015	09:02:06.76	44°47.86'	110°47.99'	6.5	0.5W	8	211	4	0.08
221015	10:47:15.74	44°47.26'	110°48.54'	4.9	0.4W	7	215	3	0.05
221015	15:58:40.69	44°36.44'	110°26.11'	2.1	0.4	7	175	5	0.18
221015	15:58:58.98	44°37.29'	110°22.84'	3.9	--	5	238	6	0.04
221015	15:58:59.96	44°35.76'	110°28.13'	2.1	1.3W	11	149	6	0.25
221015	15:59:15.38	44°36.41'	110°26.69'	2.1	--	6	165	6	0.24
221015	15:59:16.42	44°35.68'	110°27.67'	3.0	1.6W	15	62	6	0.15

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221015	16:02:46.32	44°17.51'	110°20.32'	9.2	0.5	10	207	12	0.23
221015	16:13:44.36	44°47.43'	110°48.66'	5.2	0.7	15	186	3	0.15
221015	16:24:55.04	44°22.84'	110°47.44'	2.0	1.0	12	99	9	0.30
221015	16:35:19.91	44°46.90'	110°48.59'	3.5	0.5	8	202	3	0.10
221015	20:03:53.93	44°47.30'	110°48.37'	4.8	0.3	9	217	4	0.06
221015	22:50:57.62	44°46.72'	110°48.99'	5.7	1.7W	23	92	3	0.17
221015	22:56:12.73	44°48.03'	110°48.70'	6.8	0.8W	10	210	3	0.06
221015	23:46:41.95	44°46.83'	110°48.99'	6.1	2.0W	27	96	3	0.15
221015	23:56:01.51	44°46.88'	110°49.12'	5.1	1.4W	20	97	3	0.18
221015	23:59:08.89	44°47.28'	110°49.02'	5.8	1.2W	19	102	3	0.14
221016	00:17:43.57	44°47.98'	110°48.60'	6.3	0.7	11	210	3	0.11
221016	01:13:08.53	44°47.05'	110°48.40'	12.9	2.3W	32	58	13	0.23
221016	01:39:30.31	44°46.77'	110°48.87'	4.8	1.4W	23	94	3	0.16
221016	05:29:34.35	44°48.21'	110°48.52'	6.7	0.3	10	212	4	0.09
221016	08:55:07.07	44°47.97'	110°48.61'	6.5	0.5	13	209	3	0.09
221016	09:09:48.84	44°48.33'	110°48.01'	6.0	0.6W	10	216	4	0.07
221016	09:20:44.28	44°47.60'	110°48.18'	5.2	0.2	13	208	4	0.13
221016	18:10:28.12	44°47.93'	110°47.97'	7.2	0.4	10	213	4	0.08
221016	19:27:56.63	44°47.03'	110°48.99'	6.5	1.1W	18	100	3	0.19
221017	03:54:58.62	44°48.14'	110°47.55'	6.2	0.2	11	216	5	0.10
221017	05:38:56.94	44°48.31'	110°48.25'	7.2	0.8W	14	215	4	0.12
221017	12:41:18.90	44°48.12'	110°48.38'	6.6	0.4	9	212	4	0.07
221017	14:29:33.93	44°47.79'	110°48.82'	5.8	0.7	12	208	3	0.15
221017	17:27:51.12	44°46.88'	110°48.94'	4.9	1.5W	14	99	3	0.15
221017	20:12:33.57	44°47.84'	110°48.65'	6.0	0.6	8	209	3	0.09
221017	20:30:51.20	44°44.61'	111°14.77'	13.9	0.8	17	96	4	0.18
221017	21:00:07.42	44°45.10'	111°17.72'	20.3	0.1	8	262	6	0.13
221017	23:53:39.03	44°46.95'	110°48.91'	5.9	1.5W	22	100	3	0.20
221018	04:06:51.65	44°47.44'	110°49.15'	5.8	0.6	14	102	2	0.15
221018	07:05:17.11	44°47.01'	110°48.99'	7.9	1.7W	25	59	3	0.19
221018	08:46:59.73	44°47.96'	110°48.52'	6.9	0.6	12	210	4	0.09
221018	14:43:23.88	44°47.17'	110°48.45'	4.2	0.3	7	212	3	0.12
221018	20:02:02.93	44°48.17'	110°48.32'	5.9	0.8W	13	213	4	0.15
221018	23:16:46.65	44°47.86'	110°48.19'	6.2	0.5	14	210	4	0.17
221019	01:26:36.22	44°46.97'	110°49.14'	5.8	1.2W	17	100	3	0.18
221019	04:06:36.35	44°48.21'	110°48.11'	6.4	1.0W	19	148	4	0.17
221019	04:34:21.94	44°46.89'	110°49.41'	5.0	0.6W	17	96	2	0.19
221019	04:40:11.41	44°47.34'	110°48.94'	7.0	0.2	11	101	3	0.16
221019	07:49:41.17	44°43.94'	111°06.29'	13.2	1.7W	21	100	7	0.15
221019	09:19:16.20	44°47.27'	110°48.71'	4.8	0.1	7	216	3	0.06
221019	10:22:15.86	44°37.87'	110°19.42'	2.4	0.6	10	104	10	0.15
221019	11:17:15.49	44°46.89'	110°49.09'	5.1	1.3W	20	98	3	0.16
221019	16:20:02.26	44°48.01'	110°48.69'	5.5	0.7	16	105	3	0.13
221019	17:24:04.81	44°48.12'	110°48.55'	6.3	0.8	17	191	4	0.16
221019	22:38:10.42	44°47.74'	110°49.06'	6.5	0.5	13	206	3	0.14

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221020	01:51:27.63	44°47.89'	110°48.61'	7.5	1.2W	17	188	3	0.12
221020	01:52:23.37	44°47.93'	110°48.75'	6.4	0.8W	15	189	3	0.11
221020	02:41:23.50	44°48.08'	110°48.55'	7.3	0.8W	13	211	4	0.10
221020	02:45:40.13	44°47.55'	110°48.87'	6.1	0.2	10	146	3	0.11
221020	03:13:46.14	44°50.32'	110°58.44'	7.6	0.6	17	204	9	0.15
221020	04:05:21.72	44°47.90'	110°48.52'	5.8	0.8W	17	209	3	0.16
221020	04:46:07.32	44°46.94'	110°48.91'	7.7	2.3W	26	100	3	0.18
221020	07:34:28.58	44°48.04'	110°48.61'	6.7	0.1	9	211	3	0.09
221020	08:49:45.55	44°47.95'	110°48.60'	6.8	0.1	9	209	3	0.09
221020	10:11:41.68	44°48.00'	110°48.59'	6.8	0.3	10	211	3	0.09
221020	11:47:02.65	44°47.44'	110°48.77'	6.8	0.8	14	102	3	0.15
221020	11:48:59.61	44°47.80'	110°48.36'	5.5	1.4W	23	147	4	0.16
221020	13:13:57.54	44°11.16'	110°18.18'	6.0*	0.9	12	248	23	0.17
221020	13:14:02.07	44°46.53'	110°48.20'	5.1	1.7W	23	90	4	0.19
221020	17:47:37.08	44°47.80'	110°48.40'	5.1	0.1	6	209	4	0.16
221021	03:42:16.75	44°47.65'	110°47.45'	7.1	0.1	9	212	5	0.08
221021	03:50:12.02	44°47.65'	110°47.21'	7.9	0.4	11	213	5	0.09
221021	04:47:40.32	44°24.62'	110°18.32'	6.8	0.4	8	127	3	0.04
221021	12:02:50.75	44°47.58'	110°48.72'	5.9	0.5W	9	206	3	0.09
221022	10:40:24.47	44°47.13'	110°48.90'	4.8	0.9W	13	200	3	0.20
221023	03:55:10.38	44°47.49'	110°47.89'	6.6	0.6	10	208	4	0.13
221023	10:17:50.79	44°10.28'	110°13.33'	11.4*	0.8	17	172	25	0.12
221023	14:14:43.64	44°47.78'	110°47.60'	5.2	0.3	10	212	5	0.17
221023	19:21:41.34	44°04.64'	110°44.44'	8.6	1.0	16	88	3	0.12
221023	21:53:21.20	44°47.87'	110°48.69'	7.9	1.3W	15	189	3	0.11
221024	06:48:04.64	44°46.32'	110°47.79'	3.3	0.0	11	190	5	0.11
221024	09:42:08.01	44°48.19'	110°48.75'	6.0	0.9W	14	191	3	0.10
221024	18:13:35.73	44°47.32'	110°49.25'	5.3	1.5W	20	183	2	0.20
221024	18:22:57.90	44°45.67'	110°48.41'	3.5	0.6	9	164	5	0.10
221025	01:12:54.38	44°47.41'	110°48.82'	5.0	0.9W	10	203	3	0.12
221025	04:11:49.85	44°47.44'	110°49.13'	6.4	1.0W	19	185	3	0.19
221025	04:54:34.80	44°27.68'	110°45.47'	2.6	0.9W	21	65	6	0.13
221025	11:45:33.29	44°47.31'	110°47.58'	4.9	0.4	11	208	5	0.10
221025	12:55:05.68	44°47.96'	110°48.38'	8.3	1.7W	16	191	4	0.14
221025	14:21:03.66	44°47.68'	110°47.89'	6.4	0.9W	12	189	4	0.19
221025	14:21:37.28	44°48.51'	110°47.35'	6.0	0.3W	6	220	5	0.07
221025	14:21:38.84	44°47.72'	110°47.58'	6.2	0.8W	11	212	5	0.14
221026	04:30:58.73	44°14.03'	110°46.63'	7.8	1.1	19	94	5	0.29
221026	12:33:11.53	44°47.85'	110°47.69'	7.8	0.8	17	212	5	0.17
221026	14:38:40.15	44°48.48'	110°47.86'	8.0	0.8W	10	217	5	0.11
221026	17:46:09.38	44°47.86'	110°48.44'	8.0	1.3W	19	113	4	0.18
221026	20:23:38.75	44°47.56'	110°48.72'	7.6	1.0W	21	187	3	0.26
221027	06:16:50.88	44°47.70'	110°47.01'	8.4	0.9W	15	214	5	0.19
221028	09:51:57.43	44°19.62'	110°20.55'	11.7	0.7	15	163	9	0.13
221028	14:29:08.12	44°31.56'	111°00.93'	17.1	0.0	10	149	11	0.11

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2022

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221028	18:54:14.61	44°47.57'	110°48.05'	6.4	0.6	10	208	4	0.15
221029	16:56:56.72	44°45.32'	111°11.07'	10.1	0.1	8	118	1	0.20
221030	00:06:40.78	44°48.28'	110°48.67'	5.9	0.3	9	212	4	0.06
221030	00:07:29.06	44°48.04'	110°48.50'	5.9	1.7W	21	148	4	0.12
221030	08:36:17.83	44°47.28'	110°49.02'	6.1	0.5	14	102	3	0.16
221030	12:40:21.80	44°46.75'	110°49.11'	6.8	2.0W	25	93	3	0.21
221030	21:27:10.59	44°46.68'	110°49.15'	4.9	1.1W	19	90	3	0.18
221030	22:41:29.07	44°47.91'	110°47.89'	6.8	0.6	9	213	4	0.12
221031	00:45:18.88	44°47.01'	110°48.41'	5.6	--	12	103	4	0.16
221031	00:45:19.90	44°46.88'	110°48.67'	6.0	1.6W	14	99	3	0.16
221031	03:20:43.01	44°48.27'	110°48.80'	6.5	0.3	8	211	3	0.08
221031	07:02:46.86	44°47.29'	110°47.49'	6.9	0.1	10	209	5	0.10
221031	12:02:36.28	44°46.42'	110°47.98'	4.9	1.1W	13	103	4	0.12
221031	12:03:38.38	44°46.53'	110°48.17'	5.5	1.1W	18	91	4	0.17
221031	12:04:04.18	44°46.35'	110°47.67'	3.9	0.7	10	192	5	0.13
221031	12:04:29.56	44°46.97'	110°48.16'	5.7	0.7	14	105	4	0.15
221031	12:05:00.65	44°46.37'	110°47.51'	3.4	0.2	10	194	5	0.14
221031	12:24:40.31	44°47.45'	110°47.34'	7.0	0.5	11	210	5	0.07
221031	15:04:51.01	44°48.07'	110°48.86'	6.0	0.6	11	191	3	0.10
221101	04:47:30.63	44°47.49'	110°49.18'	5.5	1.2W	24	103	2	0.18
221101	05:09:29.98	44°47.67'	110°48.83'	5.8	0.7	17	206	3	0.17
221101	07:03:52.00	44°36.47'	110°22.34'	4.6	0.9	15	70	6	0.12
221101	10:47:54.98	44°48.07'	110°48.73'	5.9	0.1	9	211	3	0.07
221101	16:23:34.96	44°48.26'	110°48.53'	5.5	0.1	7	212	4	0.05
221102	01:08:21.80	44°46.33'	110°48.56'	3.3	-0.1	8	182	4	0.04
221102	01:25:27.40	44°47.13'	110°49.09'	3.9	1.3W	19	107	3	0.15
221102	11:04:24.78	44°26.95'	110°57.23'	3.8	1.4W	16	174	9	0.10
221102	17:03:43.58	44°47.09'	110°47.83'	5.4	1.2W	8	213	4	0.09
221102	17:09:54.16	44°46.73'	110°47.85'	4.1	1.0W	12	182	4	0.11
221102	17:17:17.74	44°46.51'	110°48.39'	6.2	1.9W	20	89	4	0.19
221102	17:59:28.23	44°47.53'	110°47.60'	5.8	1.2W	12	210	5	0.15
221102	18:52:48.76	44°46.66'	110°48.25'	8.0	2.4W	25	94	4	0.18
221102	18:54:42.84	44°47.26'	110°47.41'	5.1	0.2	8	209	5	0.14
221102	18:55:05.87	44°47.64'	110°47.65'	6.3	1.1W	13	211	5	0.17
221102	19:27:13.62	44°47.13'	110°47.84'	5.6	1.1W	16	205	4	0.11
221102	19:27:29.49	44°47.37'	110°47.74'	5.9	0.9	11	208	4	0.09
221102	19:33:07.31	44°46.73'	110°48.24'	5.5	1.8W	18	95	4	0.16
221102	20:54:00.97	44°48.74'	110°47.30'	6.8	0.6	8	223	6	0.05
221102	21:12:01.45	44°47.10'	110°49.11'	2.3	0.4	6	205	3	0.12
221102	21:36:38.15	44°47.39'	110°47.70'	5.0	0.9W	8	223	4	0.12
221102	22:58:09.61	44°47.18'	110°47.62'	5.0	0.6	12	206	4	0.15
221103	05:01:47.75	44°47.52'	110°47.54'	7.3	1.2W	17	188	5	0.17
221103	05:32:51.67	44°46.56'	110°47.98'	8.0	2.0W	26	92	4	0.22
221103	05:33:06.02	44°46.46'	110°48.32'	5.5	2.5W	21	88	4	0.19
221103	05:37:09.10	44°46.63'	110°48.35'	5.1	1.3W	23	92	4	0.20

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221103	05:50:13.31	44°47.93'	110°47.79'	6.5	0.9W	11	213	4	0.12
221103	08:13:56.76	44°47.80'	110°47.55'	6.5	0.0	8	213	5	0.07
221103	12:51:04.64	44°49.31'	110°47.12'	11.0	0.4	9	255	6	0.16
221103	13:14:22.70	44°47.27'	110°47.56'	5.4	0.1	8	220	5	0.05
221103	14:58:57.11	44°48.65'	110°49.05'	5.4	0.6	14	180	4	0.12
221104	02:39:05.81	44°48.21'	110°49.15'	5.3	0.5	13	190	3	0.10
221104	05:59:59.61	44°13.14'	110°46.04'	2.5	1.6	18	93	6	0.16
221104	07:58:09.92	44°14.17'	110°46.40'	3.8	2.2W	19	80	5	0.21
221104	16:52:54.22	44°14.08'	110°47.08'	4.4	1.5	10	115	4	0.28
221104	19:13:31.06	44°14.27'	110°47.66'	3.2	0.9	8	107	4	0.16
221104	19:13:58.56	44°14.46'	110°47.69'	3.5	1.0	9	106	3	0.18
221104	22:28:42.45	44°47.18'	110°49.00'	4.9	0.3	9	210	3	0.06
221105	00:46:47.53	44°14.09'	110°47.18'	5.8	1.0	14	109	4	0.31
221105	08:59:02.37	44°47.68'	110°47.07'	9.0	1.0W	10	214	5	0.08
221105	09:16:14.84	44°46.88'	110°47.48'	5.2	0.3	7	209	5	0.07
221105	12:08:31.63	44°46.83'	110°47.55'	5.0	0.8W	8	207	5	0.07
221105	16:38:34.79	44°50.05'	111°05.32'	16.3	0.1	6	181	4	0.07
221107	00:44:08.68	44°47.77'	110°48.51'	6.0	0.7W	14	209	3	0.13
221107	03:22:10.34	44°40.51'	110°00.90'	11.8	0.7	9	148	10	0.11
221107	07:07:15.74	44°43.87'	111°01.59'	7.7	0.5	13	77	4	0.13
221107	16:00:39.49	44°44.10'	111°12.05'	10.3	0.1	7	255	2	0.15
221107	20:29:22.78	44°43.89'	111°01.94'	7.5	0.6	13	78	4	0.15
221108	09:43:52.69	44°26.43'	110°13.89'	6.6	0.8	8	182	7	0.06
221108	10:27:12.05	44°43.89'	111°01.75'	8.4	0.0	12	77	4	0.11
221108	15:38:53.78	44°43.62'	111°01.45'	7.6	0.1	10	113	4	0.11
221108	16:45:36.79	44°43.96'	111°01.77'	8.4	0.5	11	77	3	0.07
221109	00:09:08.66	44°46.40'	111°08.22'	7.8	0.2	16	96	3	0.20
221109	06:26:24.41	44°46.81'	110°48.83'	3.7	0.2	11	195	3	0.11
221109	10:25:35.77	44°49.31'	110°48.18'	3.5	0.4	14	112	5	0.14
221109	15:08:34.31	44°46.57'	110°59.89'	8.2	0.3	9	143	2	0.09
221110	04:35:44.96	44°41.88'	110°01.69'	11.5	1.8	13	91	9	0.23
221110	09:14:27.05	44°46.83'	110°49.38'	5.3	1.0W	15	96	2	0.16
221110	09:54:24.33	44°38.10'	110°40.46'	6.2	1.6W	19	56	4	0.19
221110	10:05:53.00	44°38.06'	110°39.02'	8.3	0.2	9	181	3	0.11
221110	10:06:08.07	44°39.56'	110°42.50'	2.2	-0.1	6	119	7	0.07
221111	01:52:53.31	44°48.27'	110°47.56'	6.2	0.1	8	217	5	0.11
221111	09:08:26.21	44°47.14'	111°13.90'	11.9	1.1W	19	157	5	0.15
221111	19:21:08.29	44°47.56'	110°48.96'	5.1	0.2	9	205	3	0.17
221112	02:27:09.73	44°46.41'	111°00.52'	9.1	0.2	12	240	2	0.15
221112	11:39:47.04	44°48.50'	110°48.71'	6.7	0.6	11	215	4	0.11
221112	11:59:54.00	44°48.66'	110°48.69'	6.1	0.5	12	195	4	0.12
221112	13:04:19.68	44°51.21'	110°44.34'	8.0	0.4	8	306	11	0.05
221112	17:32:44.09	44°48.31'	110°49.18'	6.0	1.1W	12	191	3	0.12
221112	17:33:21.98	44°48.37'	110°49.29'	5.7	0.4	9	192	3	0.10
221112	22:02:53.43	44°46.86'	110°49.76'	3.7	0.4	9	205	2	0.11

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221112	22:42:38.78	44°47.04'	110°50.10'	3.7	0.5	7	189	1	0.06
221113	01:34:23.56	44°47.35'	110°49.52'	4.8	0.7	17	103	2	0.14
221113	02:17:36.45	44°45.22'	110°52.85'	-0.2	0.3	8	117	5	0.13
221113	21:36:33.13	44°40.63'	110°03.01'	12.2	0.9	9	91	11	0.12
221114	04:11:05.59	44°47.98'	110°48.99'	5.3	0.4	7	294	3	0.06
221114	14:39:21.94	44°40.38'	110°01.11'	13.9	1.1	10	106	10	0.08
221114	15:45:04.89	44°47.43'	110°49.31'	7.6	2.6W	29	103	2	0.21
221114	15:48:15.47	44°48.29'	110°49.11'	6.4	1.1	18	191	3	0.12
221114	15:49:02.15	44°46.83'	110°50.34'	3.1	0.8	6	187	1	0.03
221114	16:02:02.07	44°46.76'	110°50.79'	2.3	0.0	6	205	1	0.06
221114	16:02:11.79	44°46.09'	110°51.64'	1.5	0.4	6	164	2	0.04
221114	16:54:54.98	44°48.25'	110°49.06'	6.6	0.8	13	191	3	0.12
221114	17:48:33.59	44°48.63'	110°49.06'	5.9	0.6	9	215	4	0.09
221114	22:54:55.25	44°48.25'	110°49.13'	5.8	1.7W	22	149	3	0.11
221114	23:10:27.47	44°48.19'	110°48.45'	5.3	0.7	11	192	4	0.07
221114	23:11:23.02	44°47.66'	110°48.54'	5.2	1.0W	15	187	3	0.12
221114	23:15:30.68	44°48.13'	110°48.44'	5.4	0.7	11	191	4	0.08
221114	23:20:27.77	44°47.90'	110°48.52'	5.3	0.5	9	210	3	0.07
221114	23:21:29.90	44°47.24'	110°48.57'	3.2	-0.3	6	215	3	0.10
221114	23:24:03.25	44°46.17'	110°51.08'	1.8	0.4	9	136	2	0.07
221115	00:02:59.08	44°48.17'	110°49.00'	6.8	0.9	14	191	3	0.12
221115	00:16:27.58	44°48.46'	110°48.85'	6.8	0.5	10	214	4	0.08
221115	01:31:26.14	44°47.19'	110°49.50'	5.9	1.5W	23	102	2	0.16
221115	02:26:53.80	44°48.82'	110°47.83'	7.1	0.6	8	262	5	0.09
221115	10:13:32.62	44°47.01'	110°49.90'	4.9	0.7	9	191	2	0.15
221115	13:19:44.71	44°47.36'	110°48.59'	6.6	0.6	12	105	3	0.18
221115	13:20:26.28	44°46.40'	110°48.62'	4.9	0.7	10	98	4	0.18
221115	13:23:10.44	44°47.08'	110°48.93'	6.8	1.0	14	100	3	0.19
221115	14:12:57.38	44°47.38'	110°48.73'	7.6	1.0	12	103	3	0.17
221115	14:18:08.58	44°47.14'	110°48.52'	6.2	0.7	11	104	3	0.14
221115	14:18:35.96	44°47.72'	110°48.23'	7.1	0.5	9	108	4	0.12
221115	14:38:44.81	44°47.83'	110°48.19'	7.6	0.1	10	211	4	0.09
221115	14:40:08.65	44°47.69'	110°47.25'	2.4	-0.1	7	236	5	0.06
221115	14:40:23.12	44°50.29'	110°43.79'	10.4	0.1	9	158	11	0.04
221115	14:47:44.50	44°47.79'	110°48.27'	8.1	1.0	13	210	4	0.14
221115	14:48:50.28	44°46.75'	110°48.97'	5.3	0.4	9	192	3	0.10
221115	16:09:01.40	44°48.41'	110°48.01'	7.3	0.0	7	217	4	0.11
221115	18:15:58.17	44°48.18'	110°47.78'	8.4	0.2	7	215	5	0.11
221115	18:16:16.64	44°48.22'	110°47.95'	8.1	-0.2	6	216	4	0.06
221115	18:29:37.47	44°48.33'	110°47.71'	9.0	0.5	8	218	5	0.08
221115	18:29:59.60	44°47.89'	110°47.43'	10.3	0.8	13	215	5	0.16
221115	18:30:43.83	44°48.57'	110°47.59'	8.9	0.6	9	220	5	0.09
221115	18:32:56.59	44°47.14'	110°48.76'	6.3	0.5	6	230	3	0.07
221115	18:45:29.50	44°47.33'	110°48.45'	6.7	0.7	11	220	3	0.11
221115	19:16:17.63	44°47.45'	110°48.15'	7.8	1.0	15	100	4	0.20

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221115	19:16:24.94	44°47.14'	110°48.50'	8.2	0.9	11	104	3	0.18
221115	19:19:07.56	44°46.92'	110°48.61'	7.7	1.4W	17	99	3	0.19
221115	19:29:43.93	44°47.39'	110°48.36'	6.6	0.6	7	222	4	0.12
221115	19:51:02.01	44°48.41'	110°48.96'	6.5	--	8	213	3	0.09
221115	20:34:40.98	44°48.42'	110°47.79'	9.0	0.3	8	218	5	0.08
221115	21:22:41.26	44°47.85'	110°48.90'	6.4	0.8	12	189	3	0.10
221115	23:27:07.29	44°48.53'	110°47.68'	8.6	0.8	10	220	5	0.08
221116	00:18:31.35	44°48.94'	110°46.53'	9.2	0.1	8	228	7	0.05
221116	03:51:38.13	44°48.43'	110°47.53'	8.9	0.3	12	195	5	0.08
221116	07:48:56.12	44°14.61'	110°55.80'	9.5	0.5	15	88	10	0.12
221116	07:59:43.68	44°27.29'	111°02.13'	15.8	0.6	13	141	18	0.13
221116	21:23:32.84	44°48.35'	110°47.45'	8.1	0.0	8	219	5	0.07
221116	21:24:27.50	44°44.00'	110°01.64'	2.6	0.8	7	144	8	0.11
221116	21:29:04.68	44°39.43'	110°01.24'	13.6	0.7	6	183	11	0.06
221117	06:56:07.92	44°47.64'	110°49.55'	5.5	0.4	12	105	2	0.14
221117	10:41:47.85	44°47.38'	110°47.87'	6.8	0.6	8	241	4	0.06
221117	11:38:29.20	44°48.09'	110°48.89'	5.9	0.1	8	211	3	0.07
221117	16:51:54.58	44°47.27'	110°49.97'	4.4	0.5	5	211	1	0.02
221118	01:41:25.38	44°46.84'	111°00.71'	10.0	0.5	14	146	2	0.12
221118	04:01:29.08	44°48.06'	110°49.04'	5.7	0.4	12	210	3	0.10
221118	13:40:11.18	44°43.74'	111°01.33'	7.9	0.4	8	114	4	0.07
221119	17:12:40.84	44°47.96'	110°48.30'	5.6	0.7	15	191	4	0.14
221120	05:28:19.33	44°46.84'	110°48.52'	5.1	0.9	14	102	3	0.13
221120	11:29:57.75	44°45.54'	110°51.06'	1.4	0.4	8	107	3	0.12
221120	17:58:22.25	44°44.07'	111°02.28'	9.1	0.2	10	202	4	0.14
221121	00:00:53.88	44°46.91'	110°49.35'	3.8	0.6	9	194	2	0.07
221121	01:47:12.80	44°48.84'	110°48.98'	6.0	0.4	10	216	4	0.08
221121	03:26:07.00	44°47.97'	110°47.65'	7.0	0.5	9	242	5	0.13
221121	06:36:46.92	44°46.53'	110°47.91'	5.2	2.0W	27	91	4	0.23
221121	06:50:43.68	44°46.66'	110°48.09'	4.6	1.0W	19	95	4	0.18
221121	07:02:44.61	44°47.58'	110°47.47'	6.0	0.8	16	189	5	0.13
221121	10:07:04.17	44°47.89'	110°48.18'	5.3	0.0	8	211	4	0.07
221121	11:10:55.80	44°46.68'	110°49.20'	4.3	0.6	8	207	3	0.15
221121	13:32:24.80	44°47.97'	110°48.35'	5.6	0.6	12	191	4	0.10
221121	13:42:56.04	44°47.90'	110°48.32'	5.6	0.7	15	190	4	0.11
221121	13:43:13.83	44°26.38'	110°16.16'	2.0	0.0	8	194	5	0.09
221121	15:45:46.13	44°26.19'	110°14.51'	5.5	--	10	92	6	0.07
221121	16:33:36.67	44°45.67'	110°38.39'	5.7*	0.6	5	260	17	0.05
221121	17:42:13.82	44°47.57'	110°47.40'	4.4	0.6	12	189	5	0.17
221121	22:55:48.28	44°46.71'	110°48.38'	2.5	0.5	9	197	4	0.10
221122	02:40:29.70	44°47.67'	110°49.68'	4.3	0.6	11	232	2	0.13
221122	07:41:08.33	44°47.58'	110°51.91'	1.7	0.5	9	221	1	0.07
221122	11:57:20.23	44°47.03'	110°48.63'	6.5	0.6	17	99	3	0.18
221123	14:47:32.27	44°47.75'	110°47.70'	4.8	0.5	12	190	4	0.08
221124	00:37:10.99	44°46.85'	110°48.78'	4.4	0.6	9	198	3	0.11

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2022

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221124	10:06:58.29	44°17.76'	110°59.06'	10.2	0.9	9	134	15	0.06
221124	19:54:52.44	44°36.11'	110°19.52'	4.2	0.8	12	91	8	0.15
221124	23:03:18.72	44°39.36'	111°00.36'	8.2	0.0	7	165	4	0.10
221126	00:39:40.18	44°31.02'	110°27.28'	4.8	0.8	13	72	6	0.13
221126	15:38:37.46	44°34.56'	110°56.05'	10.9	0.9W	15	124	8	0.13
221126	16:16:47.19	44°34.34'	110°56.33'	10.9	0.4	9	141	9	0.08
221127	00:57:50.33	44°04.97'	110°19.41'	6.8*	0.8	11	122	20	0.09
221127	07:29:28.66	44°48.06'	110°47.93'	6.7	0.4	9	214	4	0.08
221128	02:38:03.21	44°43.61'	111°01.49'	8.0	0.6	8	139	4	0.10
221128	06:15:37.11	44°03.29'	110°22.12'	4.0*	0.9	12	192	27	0.13
221128	11:00:32.65	44°45.59'	110°55.63'	10.2	0.8	15	125	6	0.12
221129	07:51:07.06	44°05.46'	110°18.25'	11.8	1.5	29	121	18	0.15
221129	14:22:37.26	44°05.15'	110°18.09'	12.8	1.3	19	123	18	0.12
221130	22:07:43.37	44°46.83'	110°48.88'	3.0	0.3	7	197	3	0.07
221130	22:07:51.04	44°46.31'	110°48.96'	2.0	0.6	7	175	3	0.16
221201	10:04:07.13	44°27.40'	110°34.14'	2.5	0.5	17	57	3	0.14
221201	10:04:15.24	44°27.57'	110°34.46'	3.8	1.3	7	142	3	0.03
221201	23:39:39.70	44°27.69'	111°04.05'	5.9*	0.3	9	275	18	0.10
221202	00:41:37.67	44°47.05'	110°47.69'	7.4	2.5W	25	129	4	0.14
221202	02:02:23.99	44°47.75'	110°31.78'	2.8*	1.2	10	198	15	0.11
221202	08:38:39.47	44°47.13'	110°47.58'	6.2	0.9	17	185	5	0.14
221202	11:27:06.36	44°40.54'	110°02.44'	13.1	1.9	14	95	11	0.16
221202	18:22:26.92	44°40.68'	110°02.65'	13.7	1.2	9	93	11	0.08
221203	23:52:41.44	44°47.24'	110°48.57'	5.0	0.7	8	216	3	0.06
221204	09:22:14.33	44°48.46'	110°48.95'	5.0	0.4	11	215	3	0.11
221204	11:21:05.41	44°45.75'	110°47.11'	8.3	0.1	7	258	6	0.06
221204	12:24:37.10	44°46.92'	110°48.03'	5.1	0.5	10	203	4	0.10
221204	13:21:17.16	44°36.81'	110°24.55'	1.9	1.8	14	61	6	0.19
221204	13:21:37.62	44°36.89'	110°25.06'	4.5	2.0	10	111	6	0.11
221204	23:57:18.40	44°27.70'	111°03.75'	6.0*	0.3	9	152	16	0.25
221206	11:51:41.03	44°48.47'	111°29.38'	11.8	0.8	14	120	16	0.18
221206	16:09:28.39	44°49.81'	110°41.33'	7.7	0.6	9	272	12	0.10
221207	07:27:45.09	44°48.42'	110°45.39'	7.1	0.6	8	235	8	0.08
221207	08:13:51.61	44°44.44'	111°12.27'	10.9	1.0W	14	148	1	0.17
221207	15:42:37.94	44°38.44'	110°59.19'	8.4	0.7	10	100	4	0.13
221207	21:32:36.83	44°38.56'	110°59.61'	8.3	0.9	15	62	4	0.15
221207	23:45:08.03	44°38.32'	110°59.28'	8.1	0.5	11	60	4	0.16
221208	03:55:40.88	44°38.38'	110°59.12'	7.1	0.3	9	151	4	0.11
221208	04:01:11.72	44°38.30'	110°59.32'	8.1	0.3	9	101	4	0.13
221208	07:31:36.61	44°41.12'	110°02.63'	11.5	1.8	12	91	11	0.16
221208	07:35:27.38	44°40.81'	110°02.86'	13.3	1.8	11	91	11	0.16
221208	14:35:45.49	44°29.99'	111°03.81'	14.5	0.8	16	150	12	0.17
221208	14:36:11.28	44°46.00'	110°51.27'	2.0	0.7	6	179	2	0.21
221208	15:18:25.20	44°29.92'	111°03.00'	14.7	0.6	12	144	13	0.16
221208	15:31:37.71	44°47.59'	110°48.13'	6.2	0.7	7	230	4	0.05

Table 2. Earthquakes in the Yellowstone Region: October 1–December 31, 2022

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
221209	00:46:34.56	44°48.03'	110°49.58'	4.8	0.6	10	211	2	0.13
221209	01:44:27.73	44°48.38'	110°49.27'	4.8	1.3W	15	192	3	0.14
221210	16:29:10.24	44°48.53'	110°48.68'	5.6	0.7	10	216	4	0.14
221210	23:50:33.87	44°47.61'	110°49.32'	5.9	0.8	14	104	2	0.18
221211	00:20:08.00	44°46.66'	110°49.18'	6.9	2.1W	23	89	3	0.22
221211	02:10:35.67	44°47.61'	110°49.38'	4.7	0.9	12	104	2	0.15
221211	04:18:55.00	44°45.85'	110°52.42'	0.8	0.1	6	126	3	0.06
221211	18:44:32.10	44°47.00'	110°48.40'	5.3	0.7	11	104	4	0.10
221212	04:00:54.12	44°46.63'	110°47.59'	2.0	0.4	11	202	5	0.15
221212	04:16:12.87	44°47.88'	110°50.44'	4.3	1.3W	19	108	1	0.20
221212	05:42:10.76	44°46.26'	110°59.79'	9.9	0.5	12	138	2	0.15
221212	17:54:46.48	44°47.69'	110°49.43'	5.4	1.4W	15	105	2	0.14
221212	18:05:28.66	44°48.12'	110°48.73'	6.4	0.6	8	241	3	0.09
221212	18:05:44.51	44°47.63'	110°49.18'	5.1	0.4	5	233	3	0.02
221212	18:08:07.96	44°47.58'	110°49.38'	4.9	1.4W	17	104	2	0.16
221212	18:10:12.86	44°47.46'	110°49.50'	4.9	0.4	7	224	2	0.06
221212	18:22:55.98	44°46.22'	110°51.23'	1.8	0.3	7	179	2	0.02
221212	21:05:43.42	44°47.91'	110°50.41'	3.9	1.4W	18	108	1	0.23
221213	00:00:27.56	44°35.07'	110°57.25'	14.5	0.6	10	119	9	0.09
221214	05:35:42.73	44°44.87'	111°08.17'	13.7	0.3	10	90	5	0.14
221215	00:01:02.52	44°36.38'	110°23.44'	2.3*	1.2	8	87	15	0.26
221215	09:02:27.53	44°46.44'	111°01.66'	9.2	0.1	9	138	2	0.11
221217	12:15:14.96	44°47.58'	110°51.18'	2.2	0.2	6	265	1	0.07
221217	19:03:21.63	44°23.18'	111°00.44'	8.9*	1.0	7	132	21	0.18
221217	19:03:40.57	44°23.84'	110°57.43'	6.0*	0.9	6	136	19	0.12
221218	05:50:11.59	44°43.53'	111°06.58'	14.4	1.0W	11	75	7	0.11
221218	22:47:09.16	44°48.04'	110°48.90'	6.1	0.8	12	191	3	0.14
221218	23:36:33.72	44°48.50'	110°48.79'	7.1	2.2W	10	153	4	0.08
221220	16:44:14.60	44°07.47'	110°19.51'	10.9*	1.3	11	162	30	0.18
221221	04:20:25.28	44°03.70'	110°29.89'	6.1*	2.0W	23	106	23	0.24
221221	04:48:53.62	44°03.32'	110°29.79'	6.4*	2.1	19	159	23	0.20
221222	21:22:01.02	44°48.32'	110°57.68'	7.9	1.1W	12	175	6	0.11
221223	16:25:21.87	44°37.51'	111°04.70'	2.2	0.4	7	137	10	0.10
221224	21:48:32.09	44°03.66'	110°30.41'	9.3*	1.5	17	144	23	0.12
221224	23:28:48.98	44°03.63'	110°30.93'	5.0*	0.4	11	163	23	0.25
221227	18:12:25.41	44°47.28'	110°48.48'	4.9	0.0	7	218	3	0.11
221228	03:39:08.46	44°36.88'	110°07.84'	1.1	1.5	7	156	6	0.10
221228	03:41:39.01	44°38.03'	110°07.80'	5.0	1.9	8	149	5	0.19
221228	03:43:20.49	44°38.34'	110°09.01'	4.4	2.2W	11	142	4	0.12
221230	02:22:59.07	44°26.38'	110°58.96'	5.2*	0.9	11	146	12	0.24
221230	11:22:34.68	44°08.63'	110°38.18'	10.2	1.2	9	121	16	0.05
221230	11:23:14.07	44°08.51'	110°37.75'	10.3	2.2W	18	122	16	0.17
221230	11:23:42.77	44°08.66'	110°38.17'	10.6	2.4W	16	120	16	0.14
221230	16:36:52.55	44°47.05'	111°02.66'	6.6	1.0W	10	143	4	0.12

number of earthquakes = 584
* indicates poor depth control
W indicates Wood-Anderson data used for magnitude calculation

Table 3
UNIVERSITY OF UTAH YELLOWSTONE SEISMIC NETWORK
Operating Seismograph Stations
December 31, 2022

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*	Teepee 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	Centaur	Digital	USGS
		HH[ZEN]	3					Compact			
		EN[ZEN]	3					Titan			
YHH	Holmes Hill (YNP), WY	EHZ	1	WY	44° 47.30'	110° 51.03'	2717	S13	Q330	Digital	USGS
		HH[ZEN]	3					Trillium 120			
		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			
		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			
		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			
		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	Kinometrics 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	Kinometrics FBA-23 accelerometer
EpiSensor	Kinometrics 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	Kinometrics Altus Series K2 (19-bit resolution field digitizer)
Etna	Kinometrics 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	Kinometrics 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 October 1–December 31, 2022

None