EARTHQUAKE ACTIVITY IN THE YELLOWSTONE REGION

Preliminary Epicenters

January 1 – March 31, 2024

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

July 2, 2024

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 10 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, 2024

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During the three-month period January 1 through March 31, 2024, the University of Utah Seismograph Stations (UUSS) located 444 earthquakes within the Yellowstone region (Figure 1). The total includes 2 earthquakes in the magnitude 3 range, and 30 earthquakes in the magnitude 2 range. The largest event to occur during this period was a magnitude 3.3 earthquake on January 4. Two 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 2024). 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*.

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	January 01	07:41 MST	6.5 mi SE of Madison Junction, YNP
M_L 3.3	January 03	17:10 MST	6.9 mi SE of Madison Junction, YNP

Notable Swarm Seismicity

During the report period, there were seven earthquake swarms in the Yellowstone region. For reporting purposes, we use the Mogi definition [Mogi, 1963] of a swarm and require each swarm to have ten or more earthquakes. Note that typically, around 50% of Yellowstone earthquakes occur as part of a seismic swarm [Farrell et al., 2009].

A. A swarm of 112 earthquakes ($-0.2 \leq M \leq 3.3$) occurred about 7.3 mi SE of Madison Junction, YNP from January 1st – 6th.
B. A swarm of 47 earthquakes ($-0.9 \leq M \leq 2.1$) occurred about 10.4 mi NE of West Yellowstone, MT from January 4th – 7th.
C. A swarm of 27 earthquakes ($-0.5 \leq M \leq 2.4$) occurred about 8.2 mi N of West Yellowstone, MT from January 27th – February 5th.
D. A swarm of 49 earthquakes ($-0.3 \leq M \leq 2.1$) occurred about 4.5 mi NW of Norris Geyser Basin, YNP from February 18th – 19th.
E. A swarm of 24 earthquakes ($-0.7 \leq M \leq 1.3$) occurred about 8.1 mi N of Madison Junction, YNP from March 4th – 6th.
F. A swarm of 12 earthquakes ($-0.1 \leq M \leq 1.6$) occurred about 9.8 mi NE of West Yellowstone, MT from March 12th – 15th.
G. A swarm of 12 earthquakes ($0.0 \leq M \leq 1.5$) occurred about 9.0 mi W of Old Faithful, YNP on March 15th.

These swarms are labeled in Figure 1.

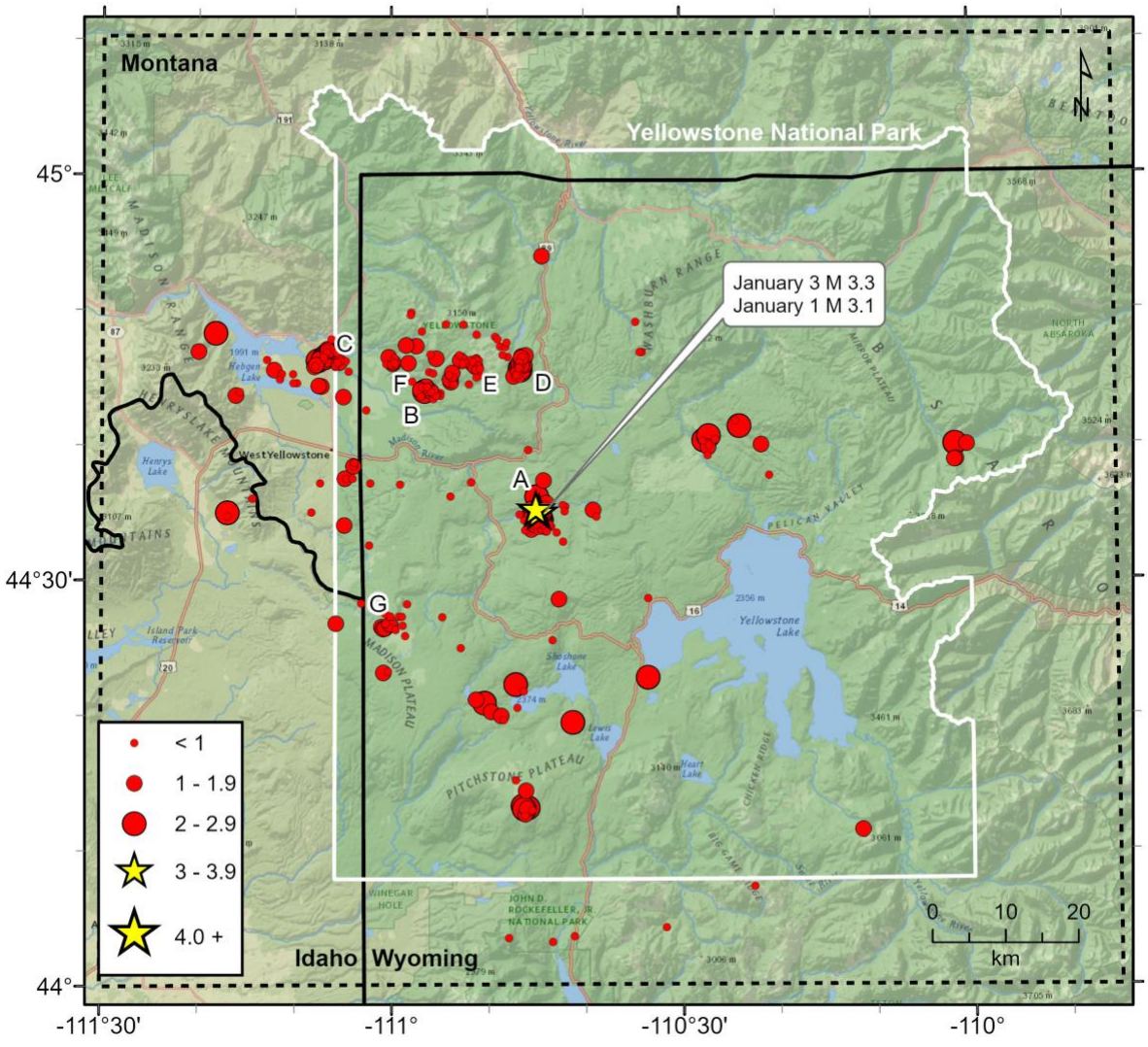

Figure 1. Epicenters of earthquakes located by the University of Utah Seismograph Stations, January 1, 2024, through March 31, 2024. Earthquake swarms (labeled A–G) are discussed in the text.

Table 1

EARTHQUAKES FELT IN THE YELLOWSTONE REGION
January 1, 2024, to March 31, 2024

Date	Time†	Felt Information‡	Latitude	Longitude	Magnitude§
January 01	07:41 MST 14:41 UTC	Yellowstone. Felt (II) at Yellowstone National Park.	44º 35.37’	110º 45.07’	M_L 3.1
January 03 January 04	17:10 MST 00:10 UTC	Yellowstone. Felt (III) at Yellowstone National Park.	44º 35.13’	110º 44.76’	M_L 3.3

† 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, 2024

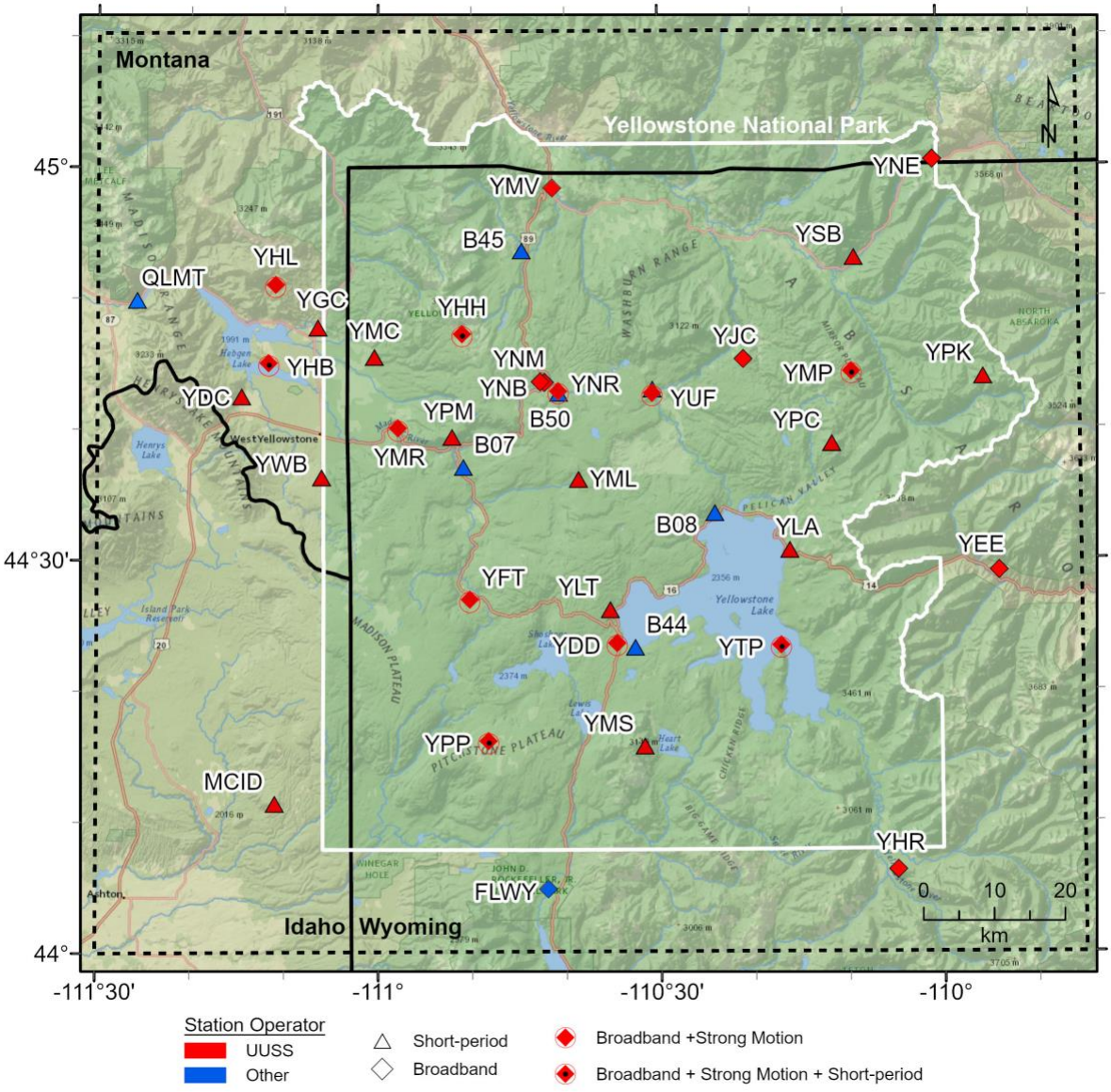

Figure 2. Seismograph stations of the Yellowstone Seismic Network as of March 31, 2024.

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2024

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240101	12:49:31.78	44º22.33’	110º47.20’	3.1	2.0W	13	94	10	0.14
240101	13:31:54.89	44º46.67’	110º48.46’	7.2	0.1	13	178	4	0.10
240101	14:29:48.68	44º34.81’	110º44.58’	11.0	0.4	9	138	8	0.13
240101	14:33:03.28	44º35.23’	110º45.12’	8.7	0.9W	17	95	9	0.14
240101	14:33:15.27	44º35.31’	110º45.56’	8.4	1.0	15	97	9	0.21
240101	14:34:04.68	44º35.32’	110º45.07’	9.5	1.6W	23	80	9	0.18
240101	14:36:09.59	44º35.17’	110º45.03’	10.0	2.5W	28	64	9	0.20
240101	14:38:03.18	44º35.13’	110º44.34’	10.6	1.3W	13	90	8	0.12
240101	14:38:55.43	44º34.13’	110º43.63’	12.9	--	12	90	8	0.12
240101	14:39:01.59	44º35.74’	110º44.00’	6.9	1.3W	8	87	7	0.18
240101	14:40:17.71	44º34.91’	110º44.18’	12.2	0.4	12	90	8	0.11
240101	14:41:35.32	44º35.37’	110º45.07’	8.9	3.1W	32	72	9	0.20
240101	14:46:12.93	44º34.78’	110º45.40’	7.6	1.5W	18	97	9	0.15
240101	14:47:41.76	44º34.96’	110º45.23’	8.5	2.6W	28	79	9	0.18
240101	14:50:28.50	44º35.02’	110º45.00’	9.6	1.3W	17	95	9	0.14
240101	14:52:18.15	44º34.74’	110º44.79’	9.4	0.7	9	137	9	0.15
240101	14:52:31.42	44º34.85’	110º45.13’	2.7	1.0	11	96	9	0.26
240101	14:56:26.54	44º34.67’	110º45.51’	8.0	1.0W	16	98	10	0.14
240101	14:57:31.26	44º34.84’	110º45.02’	9.5	2.1W	25	78	9	0.17
240101	14:58:25.12	44º34.92’	110º44.88’	10.4	2.0W	26	78	9	0.18
240101	15:00:06.33	44º35.24’	110º45.05’	9.0	1.7W	22	93	9	0.17
240101	15:01:19.75	44º35.77’	110º44.73’	9.5	2.1W	26	64	8	0.22
240101	15:05:18.89	44º35.29’	110º45.02’	9.5	1.6W	21	70	9	0.18
240101	15:10:32.34	44º34.66’	110º44.62’	8.5	0.1	17	92	9	0.16
240101	15:12:38.35	44º34.70’	110º45.24’	7.8	0.8W	13	94	9	0.21
240101	15:15:35.26	44º34.95’	110º44.99’	8.9	0.5	12	94	9	0.13
240101	15:19:22.09	44º34.11’	110º44.43’	10.0	0.1	12	92	9	0.23
240101	15:28:43.63	44º34.71’	110º44.71’	10.2	0.6	17	91	9	0.19
240101	15:28:57.85	44º34.65’	110º45.54’	3.9	0.3	13	98	10	0.19
240101	15:41:15.74	44º33.77’	110º44.57’	9.9	0.2	11	93	9	0.09
240101	15:41:35.04	44º34.93’	110º44.25’	11.1	1.4W	19	88	8	0.17
240101	15:43:37.58	44º36.21’	110º44.98’	1.8	2.0W	12	76	8	0.19
240101	15:50:21.35	44º34.37’	110º45.03’	7.8	1.7W	24	77	9	0.15
240101	15:51:29.82	44º34.45’	110º46.27’	2.6*	0.0	11	104	11	0.17
240101	15:51:51.99	44º33.63’	110º44.05’	11.2	0.2	12	90	9	0.26
240101	15:52:16.55	44º34.50’	110º45.66’	4.0	-0.2	10	134	10	0.19
240101	16:18:41.63	44º35.00’	110º45.35’	8.6	-0.1	10	96	9	0.24
240101	16:23:25.67	44º34.45’	110º45.26’	8.1	0.4	9	97	9	0.09
240101	16:27:16.16	44º35.17’	110º44.23’	10.3	0.8W	11	89	8	0.15
240101	16:27:57.42	44º34.51’	110º45.65’	6.9	0.3	10	134	10	0.18
240101	16:30:40.30	44º34.73’	110º44.99’	8.3	1.4W	19	92	9	0.16
240101	16:35:22.09	44º34.41’	110º45.01’	10.0	0.4	12	95	9	0.16
240101	16:41:34.10	44º34.50’	110º45.29’	7.3	0.4	10	97	9	0.08
240101	19:55:04.17	44º35.04’	110º44.52’	11.5	1.3W	20	68	8	0.19
240101	19:58:29.04	44º34.81’	110º44.73’	9.6	0.5	13	69	9	0.14

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240101	20:04:17.71	44º34.52’	110º44.98’	8.6	0.9W	13	77	9	0.13
240102	10:27:16.05	44º34.01’	110º44.95’	6.1	0.4	12	81	9	0.15
240102	10:38:55.22	44º33.79’	110º45.54’	8.9	1.3W	13	99	10	0.18
240102	10:42:58.60	44º34.12’	110º44.95’	8.6	0.4	9	80	9	0.10
240102	15:03:14.26	44º38.52’	111º03.84’	10.8	0.9W	16	104	5	0.14
240102	16:12:50.12	44º03.61’	110º47.95’	2.8*	0.6	10	115	23	0.09
240103	07:15:35.48	44º34.33’	110º44.29’	10.2	0.3	11	90	8	0.10
240103	19:37:10.71	44º34.83’	110º44.44’	9.5	0.1	15	91	8	0.15
240103	19:40:38.91	44º34.90’	110º44.65’	9.1	1.4W	20	69	8	0.19
240103	19:50:49.31	44º34.84’	110º44.35’	9.5	0.0	11	90	8	0.12
240104	00:10:31.22	44º35.13’	110º44.76’	10.0	3.3W	27	56	8	0.20
240104	00:11:25.55	44º34.50’	110º44.50’	2.2	2.2	10	92	9	0.20
240104	00:14:20.58	44º33.90’	110º44.97’	8.1	0.6	7	147	10	0.12
240104	00:15:36.51	44º34.36’	110º44.90’	7.8	0.8W	13	79	9	0.11
240104	00:19:22.17	44º34.30’	110º45.25’	4.1	0.6	8	97	10	0.09
240104	00:20:38.28	44º34.62’	110º44.69’	8.3	2.0W	22	69	9	0.18
240104	00:21:21.12	44º34.80’	110º44.97’	8.9	1.1W	16	95	9	0.14
240104	00:24:05.71	44º34.66’	110º44.85’	7.8	--	8	94	13	0.11
240104	00:28:18.91	44º34.87’	110º44.47’	8.4	0.7	13	91	8	0.17
240104	00:31:16.37	44º34.90’	110º44.63’	9.7	0.8W	15	69	8	0.13
240104	00:33:48.33	44º34.48’	110º45.00’	9.5	0.3	14	95	9	0.13
240104	00:37:21.43	44º34.89’	110º44.30’	10.3	1.2W	15	67	8	0.17
240104	00:42:10.45	44º35.61’	110º44.14’	8.9	-0.2	12	71	7	0.11
240104	00:46:36.58	44º34.68’	110º44.58’	9.6	0.8W	14	69	8	0.13
240104	00:47:07.24	44º34.79’	110º44.22’	9.3	0.4	14	67	8	0.16
240104	00:49:25.84	44º33.56’	110º42.93’	2.2	0.3	7	100	8	0.31
240104	00:49:56.41	44º34.86’	110º44.14’	8.1	0.2	11	79	8	0.11
240104	00:50:22.23	44º33.74’	110º44.54’	8.3	0.2	11	86	9	0.09
240104	00:50:53.32	44º33.87’	110º44.48’	8.6	0.1	10	93	9	0.13
240104	01:03:07.92	44º34.96’	110º45.00’	7.3	0.8W	17	70	9	0.11
240104	01:08:20.83	44º34.35’	110º44.63’	7.1	0.0	8	93	9	0.06
240104	01:09:41.80	44º35.00’	110º44.24’	9.5	1.5W	19	67	8	0.17
240104	01:10:25.65	44º34.60’	110º44.65’	8.1	2.0W	22	69	9	0.16
240104	01:10:54.41	44º34.11’	110º45.11’	6.5	0.9	15	96	10	0.18
240104	01:21:54.77	44º44.50’	110º53.68’	7.8	-0.1	9	110	6	0.13
240104	01:24:20.69	44º34.32’	110º44.79’	7.8	1.4W	16	70	9	0.14
240104	01:27:27.80	44º35.15’	110º44.40’	9.2	1.6W	17	67	8	0.18
240104	01:34:08.72	44º34.95’	110º43.90’	10.1	0.2	11	79	7	0.10
240104	01:35:32.83	44º37.40’	110º44.28’	5.8	1.2W	12	84	8	0.18
240104	01:37:53.99	44º35.20’	110º44.30’	9.0	1.5W	13	67	8	0.13
240104	01:42:34.70	44º34.88’	110º45.01’	9.5	1.3W	18	70	9	0.17
240104	01:47:30.32	44º34.82’	110º44.54’	8.1	1.1W	14	68	8	0.12
240104	01:57:48.97	44º34.03’	110º45.10’	6.8	0.8W	14	71	10	0.10
240104	02:51:20.80	44º34.11’	110º45.16’	7.9	1.0W	12	79	10	0.11
240104	02:51:36.13	44º32.88’	110º42.26’	16.9	0.7	8	111	8	0.12

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240104	03:17:48.88	44º34.14’	110º45.08’	7.9	0.7W	13	71	9	0.13
240104	03:18:23.09	44º34.15’	110º44.97’	7.7	0.8W	13	71	9	0.14
240104	03:35:39.12	44º35.53’	110º44.50’	9.2	1.7W	25	55	8	0.17
240104	03:49:05.47	44º35.13’	110º43.90’	11.5	0.2	10	87	7	0.12
240104	04:43:37.35	44º04.38’	110º31.76’	6.2*	0.3	10	159	21	0.15
240104	07:20:51.98	44º34.74’	110º45.25’	6.0	0.2	13	74	9	0.20
240104	07:20:58.20	44º34.63’	110º45.33’	6.1	0.5	9	97	9	0.22
240104	07:45:22.29	44º34.78’	110º45.20’	8.1	0.8W	13	96	9	0.15
240104	08:57:51.37	44º35.52’	110º43.89’	10.7	0.8W	17	66	7	0.16
240104	09:03:46.62	44º33.98’	110º43.49’	10.5	0.2	12	92	8	0.13
240104	10:08:56.69	44º34.43’	110º44.70’	8.4	0.8W	14	70	9	0.12
240104	10:17:12.91	44º34.42’	110º45.33’	8.2	0.9W	17	72	10	0.15
240104	11:37:33.96	44º34.67’	110º45.50’	7.8	0.0	11	98	10	0.13
240104	13:52:29.83	44º34.88’	110º44.56’	7.9	0.8W	15	91	8	0.14
240104	13:57:49.29	44º44.90’	110º53.73’	8.0	0.7W	16	101	6	0.12
240104	13:58:49.34	44º44.68’	110º53.87’	8.6	1.5W	17	98	6	0.13
240104	14:14:47.49	44º34.68’	110º45.09’	8.0	2.0W	19	71	9	0.13
240104	14:29:01.04	44º34.81’	110º44.73’	8.6	1.1W	18	69	9	0.19
240104	14:31:43.17	44º34.93’	110º44.23’	10.5	1.3W	15	67	8	0.19
240104	14:32:55.44	44º34.92’	110º44.85’	9.4	1.9W	23	70	9	0.19
240104	14:52:46.84	44º34.62’	110º44.43’	9.2	-0.1	11	80	8	0.12
240104	17:33:22.52	44º47.59’	110º48.08’	3.6	-0.1	10	228	4	0.15
240104	18:23:35.31	44º45.36’	110º53.70’	8.6	1.0W	14	109	5	0.16
240104	19:00:06.36	44º45.01’	110º53.59’	7.2	0.5W	13	101	5	0.14
240104	20:09:07.20	44º44.86’	110º53.94’	8.3	1.4W	23	98	6	0.16
240104	21:31:10.42	44º45.21’	110º54.01’	8.5	0.1	13	109	6	0.11
240104	22:33:38.22	44º44.49’	110º53.49’	5.9	-0.2	8	108	6	0.09
240104	22:39:25.61	44º35.12’	110º44.43’	8.8	0.3	16	68	8	0.17
240104	23:58:25.94	44º35.17’	110º44.36’	8.3	0.5	17	67	8	0.13
240105	02:40:12.56	44º34.58’	110º44.56’	8.9	1.6W	19	68	9	0.17
240105	07:45:39.21	44º34.70’	110º44.63’	8.7	0.2	12	92	9	0.14
240105	10:53:37.77	44º34.02’	110º44.45’	7.3	1.3W	17	68	9	0.17
240105	11:10:37.10	44º33.68’	110º44.89’	4.4	0.2	8	95	10	0.19
240105	11:12:16.45	44º34.28’	110º44.58’	3.6	-0.2	9	92	9	0.21
240105	11:12:25.63	44º34.05’	110º44.28’	7.1	0.5	13	91	9	0.16
240105	17:27:49.78	44º35.01’	111º16.99’	11.9	2.0W	28	103	15	0.17
240106	06:22:32.72	44º34.74’	111º16.97’	12.5	0.5	17	131	15	0.10
240106	13:35:42.01	44º46.69’	111º07.03’	9.2	0.2	12	83	2	0.14
240106	16:55:16.53	44º43.97’	110º55.80’	4.8	-0.6	8	108	7	0.10
240106	18:50:26.15	44º43.62’	110º56.96’	0.9	0.8	9	99	6	0.26
240106	18:51:36.14	44º43.90’	110º55.82’	7.1	0.7	8	107	7	0.18
240106	18:53:15.73	44º44.36’	110º56.42’	7.1	1.5W	16	109	6	0.17
240106	19:02:59.33	44º43.98’	110º56.32’	6.7	0.7	11	109	6	0.19
240106	19:04:27.08	44º44.09’	110º55.78’	6.8	0.1	8	111	7	0.11
240106	19:06:35.06	44º44.12’	110º55.55’	4.8	--	6	112	7	0.09

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240106	19:12:36.37	44º43.42’	110º55.66’	6.3	0.1	10	149	7	0.18
240106	19:12:50.63	44º43.66’	110º54.95’	6.2	0.3	8	100	8	0.21
240106	19:14:38.87	44º43.94’	110º55.64’	5.1	0.5	9	108	7	0.10
240106	19:19:12.30	44º44.05’	110º56.38’	7.7	0.7	14	104	6	0.16
240106	19:22:29.11	44º44.21’	110º56.05’	6.1	0.3	9	115	6	0.12
240106	19:27:15.95	44º28.68’	110º33.51’	4.5	--	10	74	9	0.07
240106	19:36:25.47	44º44.15’	110º55.95’	5.9	0.4	12	111	6	0.13
240106	19:36:44.29	44º44.11’	110º57.02’	6.1	1.0	10	111	5	0.21
240106	19:40:02.50	44º43.95’	110º55.72’	4.9	-0.2	10	108	7	0.14
240106	19:40:14.99	44º45.32’	110º55.68’	5.2	0.1	8	144	6	0.25
240106	19:40:49.11	44º43.89’	110º55.61’	4.6	-0.2	8	106	7	0.07
240106	19:43:43.48	44º43.65’	110º55.37’	2.2	-0.9	8	107	7	0.10
240106	19:43:46.78	44º43.81’	110º55.70’	5.1	-0.2	7	106	7	0.10
240106	19:49:14.30	44º44.00’	110º55.89’	5.0	1.1	8	109	7	0.06
240106	19:50:01.11	44º43.88’	110º56.03’	6.1	0.7	11	107	7	0.16
240106	19:55:44.52	44º43.92’	110º55.64’	3.7	-0.6	6	108	7	0.09
240106	19:59:50.29	44º44.15’	110º56.30’	6.9	0.9	10	114	6	0.16
240106	20:19:05.16	44º43.92’	110º55.48’	3.8	-0.2	7	107	7	0.05
240106	20:19:09.12	44º43.80’	110º55.26’	3.2	0.1	6	104	7	0.06
240106	20:22:57.92	44º44.38’	110º56.03’	7.9	0.7	13	107	6	0.14
240106	20:23:21.81	44º44.17’	110º56.33’	6.0	0.4	14	106	6	0.21
240106	21:25:35.87	44º33.72’	110º46.19’	4.9*	0.4	8	104	11	0.23
240106	21:31:22.93	44º44.34’	110º56.24’	7.8	0.0	10	118	6	0.12
240106	21:48:39.64	44º44.12’	110º55.84’	5.0	0.1	7	112	7	0.11
240106	21:52:35.28	44º44.24’	110º55.97’	4.9	0.5	8	115	6	0.11
240106	21:52:46.78	44º43.75’	110º55.41’	3.0	0.1	6	113	7	0.14
240106	21:53:24.16	44º43.75’	110º55.30’	4.4	-0.4	8	103	7	0.07
240106	21:53:43.71	44º44.29’	110º56.86’	7.4	0.1	9	117	5	0.14
240106	23:24:08.66	44º44.00’	110º56.58’	7.9	2.1W	25	96	6	0.18
240106	23:24:30.98	44º44.13’	110º56.45’	7.1	0.5	17	97	6	0.16
240106	23:27:15.34	44º43.96’	110º55.91’	7.1	--	14	102	7	0.17
240106	23:27:19.07	44º43.86’	110º54.93’	3.5	0.5	6	114	8	0.17
240106	23:34:03.49	44º44.31’	110º56.32’	6.5	--	8	117	6	0.10
240107	03:08:54.23	44º44.11’	110º56.55’	7.8	1.5W	18	96	6	0.10
240107	13:45:42.29	44º39.22’	110º27.26’	5.5	0.6	13	101	8	0.23
240108	00:54:58.14	44º46.28’	110º52.87’	7.5	1.6W	20	107	3	0.12
240108	03:26:45.80	44º46.95’	111º06.71’	9.1	1.7W	17	51	2	0.13
240108	17:31:47.36	44º46.73’	111º06.59’	8.8	2.2W	22	59	2	0.12
240108	17:43:34.42	44º46.87’	111º06.71’	7.9	0.0	10	81	2	0.12
240109	08:35:24.35	44º37.11’	110º59.11’	7.6	0.0	11	105	6	0.14
240109	11:14:40.09	44º33.64’	110º43.94’	9.7	-0.2	8	91	9	0.11
240109	11:48:44.72	44º33.84’	110º45.27’	5.3	0.4	9	97	10	0.14
240109	12:17:27.69	44º34.27’	110º45.14’	7.2	1.6W	13	96	9	0.12
240109	12:59:07.54	44º34.30’	110º45.45’	7.8	0.3	9	98	10	0.07
240109	14:18:50.33	44º34.43’	110º45.28’	6.8	1.5W	21	94	10	0.23

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DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240109	15:32:56.24	44º34.88’	110º46.76’	4.3*	0.4	7	190	11	0.08
240110	10:22:49.88	44º34.04’	110º45.12’	8.1	0.2	15	96	10	0.12
240111	04:35:16.66	44º46.06’	110º52.57’	6.0	0.1	10	136	3	0.09
240111	10:01:26.97	44º46.03’	110º52.62’	5.5	-0.4	11	135	3	0.10
240111	13:10:02.61	44º47.27’	110º48.20’	5.1	-0.1	9	218	4	0.13
240111	13:12:00.10	44º47.30’	110º48.74’	6.4	0.9W	15	100	3	0.14
240113	22:54:53.94	44º42.60’	111º02.63’	9.5	0.2	11	134	6	0.14
240115	17:36:41.92	44º45.81’	111º08.00’	12.8	1.3W	18	71	4	0.17
240115	22:07:45.73	44º37.20’	111º02.21’	8.3	-0.3	9	142	8	0.14
240116	16:34:18.78	44º37.54’	111º04.69’	12.8	0.7W	14	137	10	0.16
240117	04:07:50.54	44º37.55’	111º04.03’	12.9	0.2	15	133	9	0.18
240117	08:15:50.57	44º19.71’	110º48.44’	11.8	0.7	10	120	20	0.19
240117	08:16:27.12	44º20.33’	110º49.73’	9.0	1.7W	14	94	8	0.26
240117	08:36:48.77	44º20.97’	110º50.43’	6.0	2.5W	16	97	9	0.17
240117	08:47:29.24	44º20.02’	110º48.70’	10.4	1.6W	12	99	7	0.30
240117	10:09:51.41	44º37.55’	111º04.84’	13.4	1.0W	15	137	10	0.14
240117	14:20:43.59	44º21.22’	110º51.29’	2.1	1.0	9	110	10	0.16
240117	22:12:11.77	44º46.66’	110º52.97’	7.4	0.1	9	135	3	0.07
240119	19:32:48.46	44º28.27’	110º58.41’	4.1*	0.2	11	147	11	0.11
240120	14:48:24.32	44º22.84’	110º33.54’	2.9	2.5W	25	83	2	0.18
240121	12:47:12.80	44º07.40’	110º22.66’	6.0*	0.9	13	185	31	0.21
240125	01:40:52.70	44º46.41’	110º55.35’	9.5	1.7W	21	77	6	0.14
240126	12:35:30.00	44º46.53’	110º47.95’	7.9	0.2	9	107	4	0.15
240127	00:10:13.30	44º47.83’	111º06.23’	10.1	0.2	11	138	0	0.12
240127	12:20:14.41	44º46.48’	111º06.97’	8.1	2.4W	21	49	3	0.13
240128	18:53:51.28	44º47.14’	111º06.66’	8.1	0.3	13	94	1	0.13
240129	03:55:14.67	44º48.27’	111º18.22’	14.5	2.0W	20	83	10	0.13
240129	04:46:06.43	44º47.11’	111º06.66’	8.4	1.4W	13	125	8	0.13
240129	04:56:05.79	44º44.36’	111º07.27’	12.7	1.6W	18	66	6	0.12
240129	05:36:53.89	44º46.44’	111º07.50’	7.9	1.5W	14	86	3	0.12
240129	05:55:16.34	44º44.40’	111º07.55’	13.5	1.1W	11	98	6	0.13
240130	01:03:25.46	44º13.23’	110º45.94’	5.4*	2.5W	22	106	25	0.19
240130	01:06:31.47	44º14.49’	110º46.15’	11.5	0.9	10	103	23	0.19
240130	01:42:04.36	44º13.17’	110º46.06’	5.4*	1.4	19	105	25	0.23
240130	01:46:04.28	44º15.26’	110º47.21’	14.2	0.7	8	100	22	0.20
240130	02:01:52.13	44º13.05’	110º45.51’	6.1*	0.6	11	107	25	0.18
240130	12:33:02.30	44º46.35’	111º06.95’	8.6	-0.2	12	117	3	0.15
240130	15:37:01.53	44º13.37’	110º46.48’	9.1*	2.5W	26	104	25	0.24
240130	15:51:28.89	44º12.76’	110º46.23’	2.0	1.5	19	106	7	0.19
240130	16:07:15.97	44º12.64’	110º46.26’	1.9	0.9	10	106	7	0.22
240130	17:29:35.26	44º13.14’	110º46.35’	2.2	2.0W	18	105	6	0.17
240131	06:50:40.87	44º44.60’	111º10.18’	7.7	0.0	11	111	2	0.14
240131	15:20:47.66	44º48.91’	110º52.53’	4.9	0.2	15	152	4	0.19
240131	18:21:11.23	44º46.91’	111º06.69’	5.6	0.5	13	81	2	0.17
240201	03:14:17.79	44º46.04’	110º52.25’	7.6	0.1	8	128	3	0.13

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240201	03:36:14.59	44º46.11’	110º52.39’	8.4	0.1	15	108	3	0.14
240201	03:36:28.59	44º46.16’	110º51.54’	9.3	0.1	13	95	2	0.12
240201	14:12:28.48	44º45.93’	110º52.60’	8.1	0.5	20	104	3	0.21
240201	17:26:21.41	44º49.82’	110º57.94’	7.7	0.2	18	199	9	0.16
240201	17:26:54.38	44º49.64’	110º58.00’	7.8	-0.1	15	196	8	0.17
240202	01:15:41.15	44º44.60’	111º09.81’	6.8	0.2	16	127	3	0.21
240202	07:58:45.44	44º45.45’	111º04.45’	9.2	0.3	19	108	5	0.17
240202	11:46:30.40	44º46.01’	111º05.79’	9.6	0.3	19	95	3	0.16
240202	12:04:24.08	44º47.00’	111º06.67’	7.7	1.5W	19	74	1	0.14
240202	12:23:16.65	44º46.25’	111º05.31’	8.3	0.1	18	110	3	0.14
240202	14:06:35.02	44º46.65’	111º06.88’	6.6	0.4	18	81	2	0.16
240202	14:13:27.23	44º46.08’	111º05.63’	9.9	0.2	19	100	3	0.16
240202	14:27:23.74	44º45.80’	111º05.84’	9.6	0.4	20	92	4	0.15
240202	15:10:25.63	44º34.25’	110º44.80’	5.5	0.5	11	145	9	0.11
240202	15:18:57.61	44º34.03’	110º44.99’	5.0	0.7	11	95	9	0.08
240202	15:21:04.57	44º34.19’	110º45.05’	6.2	-0.3	12	143	9	0.09
240202	17:32:12.86	44º34.37’	110º44.80’	7.6	0.8W	21	70	9	0.16
240202	17:57:58.37	44º46.30’	111º05.20’	10.6	0.7	22	113	3	0.17
240202	17:58:54.60	44º34.40’	110º44.50’	7.8	1.3W	19	69	9	0.18
240202	18:11:24.55	44º46.11’	111º05.61’	9.0	-0.5	11	120	7	0.18
240202	20:13:23.50	44º46.27’	111º05.38’	9.8	0.3	19	109	3	0.18
240202	22:26:37.55	44º27.36’	110º59.23’	8.1	0.9	20	124	12	0.22
240202	23:27:14.69	44º41.39’	110º23.99’	3.0	2.3W	24	123	9	0.19
240202	23:29:46.42	44º41.78’	110º24.40’	2.9	0.5	16	149	9	0.21
240203	00:36:05.51	44º46.07’	111º05.90’	9.9	0.4	15	94	3	0.10
240203	00:54:41.48	44º45.90’	111º05.84’	9.3	0.2	19	93	4	0.17
240203	17:23:36.06	44º46.97’	111º06.51’	7.9	1.3W	19	80	1	0.13
240203	17:44:44.65	44º38.48’	111º03.93’	10.5	0.1	13	163	5	0.15
240203	17:48:33.21	44º38.46’	111º03.94’	10.6	1.0	14	104	5	0.14
240203	17:48:49.79	44º38.73’	111º03.92’	10.3	0.5	9	106	5	0.11
240203	21:54:25.79	44º46.01’	111º00.54’	8.5	0.8W	15	134	1	0.18
240203	22:11:07.80	44º38.72’	111º03.85’	9.8	0.0	10	124	5	0.16
240203	23:48:03.22	44º47.02’	111º06.60’	8.1	1.2W	17	77	1	0.11
240204	00:26:15.57	44º46.23’	111º04.74’	9.6	0.2	16	120	4	0.13
240204	00:45:10.82	44º46.12’	111º05.41’	9.1	1.3W	19	105	3	0.16
240204	01:28:53.86	44º46.40’	111º05.15’	10.4	0.6W	14	116	3	0.08
240204	07:09:21.25	44º37.20’	111º07.41’	7.7	0.5	11	164	2	0.13
240204	18:14:49.77	44º46.09’	111º05.89’	8.8	0.4	14	119	7	0.14
240205	01:28:04.96	44º46.32’	111º05.48’	9.9	0.2	12	108	3	0.10
240205	03:02:36.51	44º46.42’	111º05.39’	10.2	0.1	12	111	3	0.11
240206	21:12:47.97	44º35.22’	110º39.15’	7.2	1.5W	27	60	2	0.17
240209	06:55:40.69	44º34.72’	110º38.80’	-1.3	0.5	8	129	3	0.05
240211	14:31:59.68	44º47.40’	110º58.48’	10.0	1.1W	18	124	4	0.15
240212	19:49:02.39	44º46.74’	111º06.49’	8.7	2.4W	28	62	2	0.13
240212	20:26:56.95	44º46.38’	111º06.71’	8.1	1.5W	16	76	3	0.13

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240212	20:31:13.52	44º46.47’	111º06.65’	8.0	1.7W	17	63	2	0.13
240213	19:28:06.20	44º45.40’	110º46.77’	9.4	0.9W	14	176	7	0.14
240214	09:59:00.85	44º23.20’	111º00.86’	2.2*	1.2	12	148	16	0.23
240214	12:35:36.19	44º36.06’	111º14.40’	11.4*	0.6	13	232	23	0.17
240214	13:27:42.53	44º47.84’	110º49.01’	5.4	0.2	7	234	3	0.07
240215	00:01:48.87	44º35.05’	111º08.30’	12.8	0.7	12	169	17	0.20
240215	04:56:01.15	44º46.92’	111º20.00’	11.8	1.1	16	248	14	0.14
240215	20:00:53.22	44º46.72’	110º55.95’	8.8	0.2	9	147	6	0.08
240216	07:40:34.83	44º23.30’	111º00.37’	3.5*	0.9	12	147	15	0.14
240216	11:29:25.14	44º48.02’	110º49.26’	3.6	0.3	9	236	3	0.11
240217	03:05:50.76	44º43.94’	110º55.48’	4.3	0.2	12	108	7	0.14
240217	08:14:50.89	44º28.32’	111º03.14’	13.1	0.9W	17	147	15	0.18
240217	21:39:22.92	44º25.03’	110º52.87’	5.3	0.1	12	162	5	0.20
240218	08:54:34.56	44º43.94’	111º15.74’	13.5	0.6	16	212	15	0.13
240218	10:56:56.40	44º21.83’	110º46.37’	2.1*	0.0	7	117	11	0.13
240218	15:07:06.61	44º46.53’	111º00.29’	7.9	1.2W	19	142	2	0.14
240218	21:29:07.26	44º45.47’	110º47.25’	3.0	0.1	10	173	6	0.11
240218	21:38:42.67	44º45.56’	110º46.67’	7.8	2.0W	23	93	7	0.19
240218	21:41:49.31	44º45.50’	110º46.87’	3.7	0.0	10	178	6	0.13
240218	21:51:52.72	44º44.92’	110º46.66’	2.0	0.0	11	167	7	0.21
240218	21:52:18.45	44º45.17’	110º46.88’	2.4	0.5	12	107	7	0.11
240218	21:52:55.83	44º45.47’	110º46.43’	7.1	1.2W	19	113	7	0.22
240218	21:54:10.33	44º45.20’	110º46.79’	2.3	0.0	8	172	7	0.18
240218	21:54:35.93	44º45.47’	110º46.93’	3.3	0.5	10	176	6	0.11
240218	21:55:09.47	44º45.18’	110º47.06’	2.5	-0.2	9	169	7	0.10
240218	21:56:12.98	44º45.40’	110º46.98’	2.2	-0.1	9	175	6	0.18
240218	21:56:20.79	44º45.15’	110º46.98’	2.1	0.4	10	169	7	0.12
240218	22:06:48.84	44º45.31’	110º47.19’	2.0	0.8	11	170	6	0.12
240218	22:10:03.96	44º45.38’	110º46.85’	2.2	0.5	10	176	7	0.13
240218	22:12:34.19	44º45.31’	110º46.91’	2.3	0.3	10	173	7	0.11
240218	22:13:51.61	44º45.72’	110º46.80’	6.0	-0.2	10	184	6	0.13
240218	22:14:48.48	44º44.51’	110º51.98’	-0.7	-0.3	7	93	5	0.04
240218	22:17:21.05	44º45.89’	110º46.70’	5.8	0.6	13	170	6	0.13
240218	22:23:26.13	44º45.93’	110º46.23’	7.3	1.2W	18	173	7	0.17
240218	22:24:14.30	44º45.48’	110º46.95’	2.8	0.1	6	208	9	0.12
240218	22:25:27.44	44º45.44’	110º47.29’	4.4	0.6	14	90	10	0.16
240218	22:26:48.80	44º46.30’	110º46.26’	8.0	1.5W	15	180	7	0.10
240218	22:33:44.11	44º45.86’	110º46.55’	5.8	0.9W	11	170	6	0.08
240218	22:41:12.38	44º45.29’	110º46.89’	2.3	0.3	10	173	7	0.11
240218	22:56:10.40	44º46.65’	110º46.08’	8.8	1.0W	13	184	7	0.10
240218	23:55:33.11	44º45.76’	110º46.82’	4.6	0.0	10	185	6	0.09
240219	00:10:47.10	44º45.37’	110º47.14’	6.3	1.5W	16	90	6	0.16
240219	00:12:05.36	44º45.01’	110º47.17’	2.0	0.2	10	164	7	0.19
240219	00:12:12.05	44º45.10’	110º47.34’	3.4	1.1	13	151	6	0.20
240219	00:12:39.96	44º45.02’	110º47.04’	2.2	0.9	11	165	7	0.19

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2024

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240219	01:04:49.35	44º46.32’	110º46.72’	8.1	0.6	10	179	6	0.07
240219	01:05:18.99	44º45.46’	110º46.70’	7.0	1.9W	20	93	7	0.16
240219	01:12:44.70	44º45.82’	110º46.78’	7.3	1.4W	16	94	6	0.14
240219	03:06:26.93	44º45.90’	110º46.49’	6.3	1.0W	14	171	7	0.12
240219	04:04:48.74	44º46.09’	110º46.79’	6.6	1.3W	15	174	6	0.10
240219	04:06:37.79	44º45.41’	110º46.97’	2.1	0.3	10	175	6	0.16
240219	04:18:39.53	44º46.28’	110º46.54’	7.1	1.2W	14	179	6	0.10
240219	04:22:35.48	44º45.65’	110º46.83’	4.2	0.2	9	183	6	0.07
240219	04:24:49.97	44º46.12’	110º46.74’	6.7	0.5	11	174	6	0.09
240219	04:27:24.61	44º46.58’	110º46.52’	7.9	1.2W	17	183	6	0.13
240219	04:31:22.67	44º45.28’	110º47.17’	2.5	0.5	11	168	6	0.14
240219	04:32:39.63	44º45.35’	110º46.72’	2.7	0.4	9	176	7	0.12
240219	04:34:44.99	44º45.59’	110º46.64’	6.7	1.8W	21	94	7	0.20
240219	04:36:43.48	44º45.60’	110º46.64’	2.3	0.2	9	183	7	0.06
240219	05:05:19.45	44º45.69’	110º46.66’	8.0	2.1W	23	55	6	0.15
240219	05:06:29.74	44º46.55’	110º46.46’	8.1	0.5	12	183	6	0.07
240219	05:08:39.65	44º45.55’	110º46.96’	4.9	0.4	12	92	6	0.12
240219	05:11:28.32	44º45.32’	110º46.74’	2.3	0.2	10	176	7	0.13
240219	05:53:44.93	44º45.19’	110º46.89’	2.5	0.2	12	169	7	0.13
240219	06:31:37.22	44º45.33’	110º47.12’	2.0	0.1	9	171	6	0.12
240219	07:17:54.82	44º45.39’	110º46.83’	2.8	0.2	10	176	7	0.12
240220	01:50:09.41	44º43.58’	111º04.99’	8.6	1.5W	19	83	7	0.13
240220	05:29:08.32	44º53.98’	110º44.40’	7.4	1.1	15	236	1	0.15
240221	14:48:45.95	44º25.60’	110º43.39’	2.5	0.0	11	95	9	0.19
240224	02:59:39.12	44º40.29’	110º27.78’	2.0	0.6	11	194	6	0.22
240224	03:02:42.47	44º40.34’	110º27.66’	5.5	2.6W	25	110	6	0.18
240224	03:08:51.12	44º40.67’	110º27.16’	6.1	2.1W	24	200	6	0.20
240224	16:07:18.76	44º48.18’	110º51.16’	6.2	0.6	14	118	2	0.18
240225	03:26:37.34	44º39.82’	110º27.22’	2.2	1.0	11	197	7	0.20
240225	03:27:00.78	44º39.96’	110º27.14’	2.4	0.9	10	200	7	0.19
240226	11:21:41.41	44º46.87’	111º05.70’	15.4	-0.1	8	187	2	0.18
240227	12:43:52.55	44º37.74’	110º20.91’	2.6	0.8	12	221	9	0.14
240227	22:34:42.99	44º46.48’	110º46.57’	6.0	1.0W	19	181	6	0.16
240229	05:34:09.65	44º45.26’	111º10.21’	4.2	-0.8	9	99	2	0.13
240301	12:43:12.37	44º47.34’	110º57.42’	7.1	1.2W	14	158	5	0.16
240301	13:41:31.56	44º45.28’	111º11.39’	7.7	0.7	10	132	1	0.14
240304	04:08:42.97	44º44.87’	111º11.58’	11.6	-0.3	12	118	0	0.15
240304	11:23:25.35	44º45.58’	110º51.31’	5.9	-0.2	9	103	3	0.06
240304	11:23:34.90	44º45.67’	110º51.19’	6.4	-0.1	9	107	3	0.07
240304	11:24:00.81	44º45.65’	110º50.82’	6.6	-0.7	9	115	3	0.06
240304	12:38:19.06	44º35.56’	110º42.29’	9.0	0.8W	15	71	5	0.15
240304	12:43:53.47	44º35.48’	110º42.03’	9.2	0.9W	16	70	5	0.16
240304	12:50:27.30	44º35.12’	110º42.10’	9.2	0.4	13	90	5	0.12
240305	03:16:26.74	44º45.42’	110º51.26’	5.9	0.1	11	104	4	0.11
240305	03:49:02.06	44º40.01’	110º21.72’	3.9*	1.5W	12	142	12	0.16

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2024

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240305	11:32:51.23	44º40.01’	110º01.65’	8.4	2.3W	20	103	11	0.28
240305	12:17:35.39	44º46.86’	110º34.04’	2.0	0.8	13	236	9	0.14
240305	18:23:49.48	44º46.86’	110º34.26’	2.1	0.6	11	235	9	0.14
240306	00:43:14.28	44º48.94’	110º54.35’	5.9	-0.2	9	249	5	0.10
240306	08:05:38.13	44º45.93’	110º51.16’	7.1	0.2	8	108	3	0.06
240306	09:02:26.53	44º46.40’	110º51.17’	8.8	0.2	9	109	2	0.07
240306	09:03:21.00	44º45.67’	110º51.18’	6.3	0.2	6	107	3	0.03
240306	12:01:47.55	44º46.27’	110º50.95’	8.2	0.2	8	117	2	0.06
240306	15:08:22.46	44º46.41’	110º51.33’	9.2	0.5	15	101	2	0.12
240306	15:52:10.10	44º45.98’	110º51.48’	8.6	1.3W	21	82	3	0.17
240306	16:03:09.41	44º46.28’	110º51.18’	8.0	0.2	13	109	2	0.14
240306	16:03:47.50	44º45.60’	110º51.32’	5.3	0.1	12	103	3	0.10
240306	16:04:24.38	44º45.84’	110º51.06’	6.1	0.3	12	111	3	0.13
240306	16:11:41.64	44º45.01’	110º51.20’	3.8	-0.2	11	102	4	0.15
240306	16:12:19.10	44º46.05’	110º51.13’	7.7	0.4	14	109	2	0.18
240306	16:19:57.43	44º45.42’	110º51.06’	5.4	0.5	14	108	3	0.14
240306	16:20:33.18	44º45.15’	110º50.94’	3.8	0.0	10	107	4	0.10
240306	16:30:33.66	44º46.24’	110º51.28’	7.8	0.5	12	104	2	0.16
240306	16:31:34.97	44º46.44’	110º51.17’	8.4	0.9W	13	109	2	0.16
240306	17:57:29.34	44º45.55’	110º51.28’	5.2	0.0	10	104	3	0.09
240306	18:02:54.64	44º45.86’	110º51.12’	6.0	0.3	12	109	3	0.11
240306	18:50:14.15	44º45.83’	110º51.33’	6.3	1.2	11	100	3	0.09
240306	19:02:43.18	44º45.95’	110º51.17’	6.9	0.8	8	144	3	0.07
240306	19:16:14.08	44º45.88’	110º50.98’	7.2	0.0	6	112	3	0.04
240309	19:20:24.95	44º36.23’	110º53.90’	10.6	0.1	9	182	4	0.10
240309	19:31:06.87	44º46.51’	111º07.05’	9.2	--	13	72	2	0.14
240309	19:31:28.12	44º46.36’	111º07.53’	9.3	1.3	10	86	3	0.15
240310	03:50:28.93	44º46.26’	111º07.64’	9.6	2.7W	25	53	3	0.14
240310	10:28:42.82	44º03.32’	110º43.43’	2.0*	0.7	9	125	25	0.22
240311	05:28:52.35	44º45.94’	111º07.82’	7.8	1.2W	16	69	4	0.12
240312	01:37:40.28	44º45.42’	110º56.10’	10.6	0.5	9	149	6	0.09
240312	08:04:31.42	44º19.53’	110º41.33’	9.9	2.3W	19	109	11	0.20
240312	11:56:28.88	44º45.84’	111º07.92’	7.8	0.2	11	84	4	0.10
240313	04:51:17.29	44º11.55’	110º11.49’	10.1*	1.2	19	173	23	0.13
240313	21:16:27.96	44º46.21’	110º59.97’	7.9	0.1	15	138	1	0.20
240313	21:30:55.73	44º46.20’	110º59.71’	7.8	0.7	20	137	1	0.16
240313	21:33:51.20	44º46.46’	110º59.70’	7.7	0.4	17	142	2	0.13
240313	21:58:26.70	44º46.04’	110º59.88’	8.4	1.6W	21	111	1	0.18
240313	21:59:56.90	44º46.20’	110º59.82’	7.3	0.9	17	137	1	0.15
240313	22:04:34.47	44º49.09’	110º34.69’	2.1*	0.1	9	253	13	0.16
240313	22:04:43.37	44º46.13’	110º59.83’	7.9	0.6	16	137	1	0.15
240313	23:02:44.69	44º46.21’	110º59.77’	7.8	0.6	17	138	1	0.15
240314	00:12:45.19	44º46.08’	110º59.68’	6.5	-0.1	12	136	1	0.15
240314	00:12:58.71	44º45.95’	110º59.63’	7.5	0.3	14	134	1	0.17
240314	01:31:45.58	44º46.17’	110º59.91’	8.2	0.6	21	137	1	0.16

Table 2. Earthquakes in the Yellowstone Region: January 1–March 31, 2024

DATE	ORIGIN TIME	LATITUDE	LONGITUDE	DEPTH	MAG	NO	GAP	DMN	RMS
240314	04:09:46.76	44º46.14’	110º59.87’	9.5	1.5W	21	98	1	0.11
240315	01:41:03.78	44º45.99’	111º00.04’	7.0	0.0	12	134	1	0.15
240315	03:34:25.73	44º27.37’	111º00.14’	5.3*	0.4	14	128	13	0.24
240315	03:34:37.64	44º27.55’	111º00.64’	3.4*	0.8	18	132	14	0.32
240315	03:35:06.82	44º26.49’	111º00.70’	8.9	1.2W	20	130	14	0.20
240315	03:35:30.93	44º26.50’	111º00.68’	9.2	1.5W	23	130	14	0.22
240315	03:37:34.28	44º26.77’	111º00.13’	9.2	1.2W	14	130	13	0.21
240315	03:40:42.01	44º26.58’	111º01.06’	10.3	1.4W	23	117	15	0.23
240315	03:56:16.81	44º26.84’	111º00.62’	3.9*	0.0	14	198	14	0.23
240315	04:03:55.89	44º26.83’	110º59.88’	7.3	0.5	12	195	13	0.21
240315	04:09:13.29	44º26.94’	111º00.57’	8.2	0.9	16	132	14	0.24
240315	04:09:41.04	44º37.27’	110º51.77’	1.8	0.4	8	202	1	0.18
240315	04:21:48.42	44º26.52’	111º00.05’	4.1*	0.3	13	239	13	0.18
240315	10:06:31.99	44º26.81’	111º00.68’	8.0	0.3	15	133	14	0.24
240315	10:07:22.58	44º32.61’	111º02.32’	9.1	-0.3	10	169	15	0.09
240315	17:39:39.05	44º26.45’	111º00.88’	8.7	1.2W	17	132	14	0.23
240315	17:41:24.19	44º26.84’	111º05.76’	6.0*	1.1	10	158	27	0.31
240319	01:56:46.58	44º48.42’	110º56.84’	7.6	0.9W	16	180	7	0.09
240320	22:59:32.60	44º39.96’	110º00.44’	14.5	1.1	7	108	10	0.06
240320	23:45:19.03	44º46.00’	110º51.54’	7.2	1.3W	21	84	2	0.17
240321	08:05:53.55	44º40.39’	110º26.45’	3.0	0.5	19	206	7	0.19
240322	02:24:30.26	44º27.32’	110º54.77’	2.8	0.7	10	162	6	0.09
240324	16:13:33.73	44º38.87’	110º01.55’	14.7	1.1	8	102	12	0.06
240324	17:43:02.83	44º38.83’	110º01.72’	14.7	1.0	8	101	13	0.07
240325	03:59:58.21	44º27.34’	110º58.94’	4.7*	0.1	9	122	12	0.13
240325	19:20:57.01	44º46.32’	110º51.83’	7.1	0.7	16	100	2	0.13
240326	15:28:24.09	44º28.63’	110º42.71’	4.8	1.6W	19	68	10	0.15
240327	09:40:15.57	44º43.68’	111º16.14’	12.3	1.5W	19	171	6	0.12
240327	19:24:02.36	44º26.69’	110º58.86’	7.8	0.5	13	123	12	0.17
240327	19:26:08.35	44º25.92’	110º58.60’	10.8	0.6	11	191	11	0.19
240327	19:26:33.35	44º26.37’	110º59.59’	4.3*	0.0	10	195	13	0.29
240328	13:48:40.46	44º39.65’	110º45.85’	4.9	0.1	11	114	8	0.13
240329	06:46:49.22	44º44.72’	110º57.87’	6.7	0.1	11	162	4	0.28
240329	09:44:48.86	44º46.08’	110º58.25’	10.6	1.3W	22	112	3	0.14
240329	13:44:19.38	44º46.30’	111º12.92’	11.0	0.9	20	115	3	0.17
240329	13:44:24.90	44º45.57’	111º12.17’	9.6	1.2	13	160	1	0.22
240329	22:03:58.80	44º34.09’	111º04.90’	6.4	1.6W	19	150	4	0.20
240329	23:59:14.10	44º03.74’	110º41.19’	5.2*	0.6	14	131	25	0.15
240331	15:13:25.79	44º20.62’	110º47.04’	3.5	0.7	11	122	8	0.10

number of earthquakes = 444

* 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, 2024

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	HH[ZEN]	3	WY	44° 45.33′	110° 20.95′	2684	Trillium 120	Centaur	Digital	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	HH[ZEN]	3	WY	44° 58.42′	110° 41.33′	1829	Trillium 120	Centaur	Digital	USGS
YNB	Norris Basin (YNP), WY	HH[ZEN]	6	WY	44° 43.64′	110° 42.67′	2307	Trillium 120	Centaur	Digital	USGS
		HDF[1,2,3]						InfraBSU			
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	Centaur	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

SEED Station	Location	SEED Channel	No. of Channels	Network Code	Latitude	Longitude	Elevation (meters)	Sensor	Digitizer	Telemetry	Sponsor
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: 160 data channels from 47 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, 2024

None