

Earthquake DSS PNE datasets

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Four segments of PNE lines recorded earthquake sources (Figure 1). These datasets were digitized by a group of GEON retirees and delivered to us as a part of the present project.

The dataset consists of a total of 2850 records from 143 earthquakes recorded at 239 sites (Figure 1; see lists of events below). Similarly to the controlled-source DSS data, the earthquake records are provided windowed on the corresponding arrivals, generally in about 1400-s time windows at 25-ms sampling intervals.

The data are delivered in the same format as that used with DSS PNE records delivered earlier (Morozov et al., 2007 report DTRA01-01-C-0081). The standard multi-record SEG-Y format is used, with IBM floating point representation of data values. Geographic coordinates of shots and receivers (in degrees), and offsets (in meters) are loaded in data headers. Recording station numbers (numbering starting from the West, Figure 1) are loaded in SEG-Y headers as CHANNEL values. Each data file contains a single component of recordings from one earthquake. File names follow the following convention:

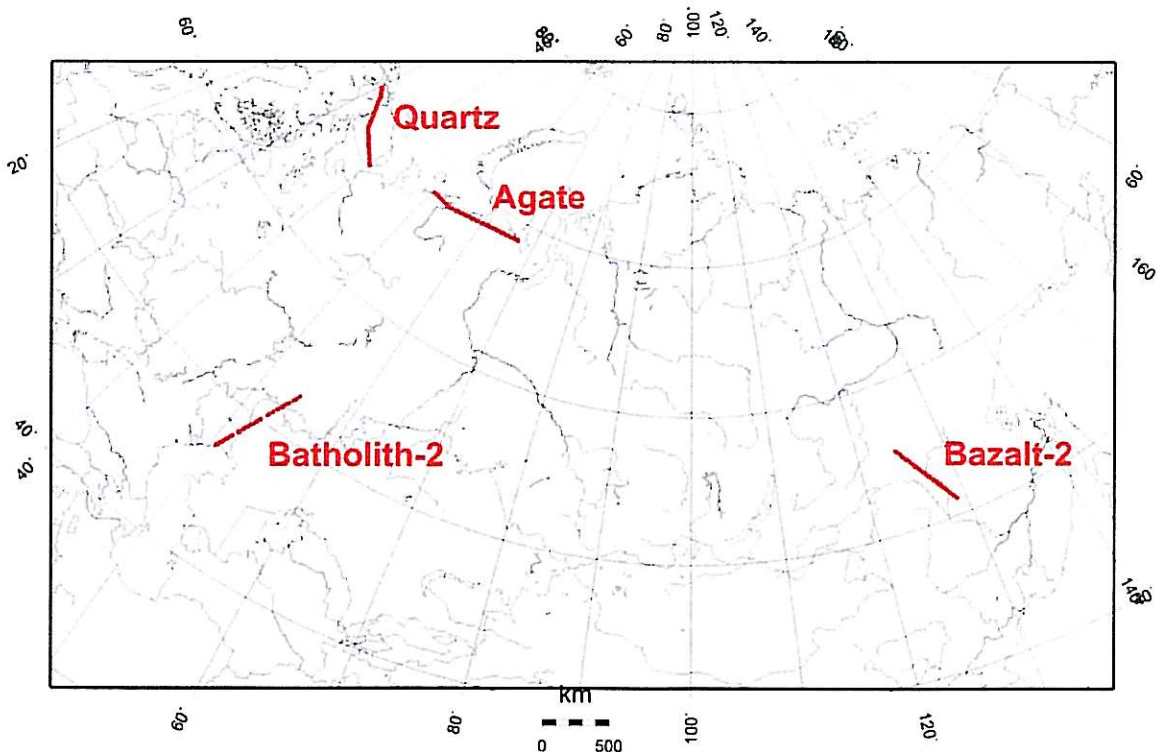


Figure 1. Segments of PNE lines that recorded natural seismicity.

`<line>.<time_gate>-<component_index>.segy`

where `line` is the abbreviated name of the line (`agate`, `bath`, `baz`, or `quartz`). Longer records are split in two parts in order to avoid overflows of the number of samples in SEGY format. These time segments are identified by the token `time_gate`, which equals '1' for the first 750 s of the data (30000 samples) and '2' for the remaining tail of the record. Token `component_number` in file names is 'v' for the vertical (upward), 'i' for radial (in the direction of the line, as in recording of explosions), and 't' for the transverse component (directed to the right when looking along the receiver line). The direction of the line is defined as the direction of increasing station numbers (east or south-east).

In SEGY binary trace headers, the values of `FFID` and external source numbers are set equal to the internal event number from GEON database, as listed in Appendix B. `CHANNEL` values are set equal the DSS line station numbers.

Record time starts in SEGY files can be established from the following relations:

For `time_gate = 1`: `time_start = offset/10.0 (ms);`

For `time_gate = 2`: `time_start = offset/10.0 + 750000 (ms).`

All files in the distribution directory are listed in the following page.

Distribution file list

(byte file sizes and file names)

```
22488480 agate.1-i.segy
22488480 agate.1-t.segy
22488480 agate.1-v.segy
22488480 agate.2-i.segy
22488480 agate.2-t.segy
22488480 agate.2-v.segy
 8179920 bath.1-i.segy
 8179920 bath.1-t.segy
 8179920 bath.1-v.segy
 8179920 bath.2-i.segy
 8179920 bath.2-t.segy
 8179920 bath.2-v.segy
40524480 baz.1-i.segy
40524480 baz.1-t.segy
40524480 baz.1-v.segy
40524480 baz.2-i.segy
40524480 baz.2-t.segy
40524480 baz.2-v.segy
43049520 quartz.1-i.segy
43049520 quartz.1-t.segy
43049520 quartz.1-v.segy
43049520 quartz.2-i.segy
43049520 quartz.2-t.segy
43049520 quartz.2-v.segy
```

Earthquake source parameters

The following tables contain coordinates and times of earthquakes recorded by four earthquake lines shown in Figure.

Table B1: Quartz earthquake dataset source parameters

#	event	Latitude	Longitude	Date	Time
1	2	-5.79	111.30	1984-07-19	23:35:43
2	6	10.84	94.77	1984-07-15	21:23:18
3	7	-5.15	111.31	1984-07-19	23:35:42
4	8	1.75	126.18	1984-07-25	19:47:36
5	9	55.76	-160.85	1984-07-25	23:38:05
6	10	36.57	139.71	1984-07-26	05:02:22
7	11	50.75	-177.30	1984-07-27	16:07:36
8	12	36.34	70.90	1984-07-28	04:44:41
9	13	26.52	140.25	1984-08-01	01:14:03
10	14	57.63	-32.92	1984-08-03	21:00:47
11	15	30.84	57.16	1984-08-06	11:22:06
12	16	32.62	131.81	1984-08-06	19:16:51
13	17	30.78	130.89	1984-08-10	19:36:28
14	18	6.03	95.32	1984-08-11	12:07:56
15	19	18.38	120.95	1984-08-12	17:02:33
16	20	30.88	57.09	1984-08-15	02:08:22
17	21	72.57	6.44	1984-08-16	23:51:27
18	22	36.12	70.49	1984-08-22	18:07:52
19	23	-23.50	178.87	1984-08-26	05:18:41
20	24	28.00	128.39	1984-08-28	19:15:08
21	25	24.60	122.91	1984-08-29	14:22:37
22	26	16.08	-93.29	1984-08-31	19:58:17
23	27	7.56	-33.67	1984-08-31	21:07:48
24	28	40.17	143.61	1984-09-05	03:35:56
25	29	37.05	-24.46	1984-09-09	13:13:34
26	30	40.50	-126.83	1984-09-10	03:25:07
27	31	36.01	137.55	1984-09-13	23:58:57
28	32	4.83	125.41	1984-09-16	00:38:02
29	33	34.32	141.16	1984-09-19	01:31:21
30	34	60.47	146.23	1984-09-20	04:26:08
31	35	16.90	147.04	1984-09-20	19:31:31
32	36	34.42	141.47	1984-09-21	09:40:20
33	37	36.43	70.50	1984-09-22	03:26:07
34	38	14.06	145.59	1984-09-22	18:22:48

Table B2: Agate earthquake dataset source parameters

#	event	Latitude	Longitude	Date	Time
1	2	49.86	78.70	1985-06-30	02:43:50
2	8	22.58	141.98	1985-07-07	06:12:00
3	15	36.48	70.78	1985-07-18	05:53:02
4	16	0.22	-15.20	1985-07-18	22:48:05
5	19	49.95	78.83	1985-07-20	00:58:00
6	22	34.38	28.31	1985-07-22	21:39:09
7	24	36.19	70.60	1985-07-29	08:01:02
8	25	4.83	122.77	1985-07-31	01:10:52
9	27	52.40	173.49	1985-07-31	07:46:43
10	31	36.17	70.78	1985-08-02	07:53:09
11	45	37.11	59.31	1985-08-16	10:52:53
12	57	14.82	93.63	1985-09-09	05:37:51
13	62	59.10	-135.58	1985-09-15	01:37:02
14	65	17.97	-96.84	1985-09-15	08:10:36
15	72	43.93	151.37	1985-10-02	03:25:13
16	73	34.78	140.83	1985-10-02	21:37:27
17	74	27.56	139.63	1985-10-04	08:51:00
18	75	35.82	140.09	1985-10-04	12:34:54
19	78	38.39	140.33	1985-10-07	03:14:08

Table B3: Batholith earthquake dataset source parameters

#	event	Latitude	Longitude	Date	Time
1	1	45.08	150.15	1987-06-13	14:11:02
2	2	44.90	150.22	1987-06-13	15:51:29
3	4	34.10	26.30	1987-06-23	15:22:27
4	5	46.42	149.57	1987-07-08	23:06:02
5	6	82.18	-18.53	1987-07-11	06:23:23
6	7	49.47	148.03	1987-07-14	23:54:59
7	8	37.00	-116.00	1987-08-13	14:12:53
8	9	52.56	152.82	1987-08-15	00:40:31
9	10	34.00	26.50	1987-08-15	09:17:18
10	11	49.77	155.94	1987-09-08	13:45:08
11	12	44.15	147.36	1987-09-10	22:03:10
12	13	37.00	-116.50	1987-09-24	15:12:45

Table B3: Bazalt earthquake dataset source parameters

#	event	Latitude	Longitude	Date	Time
1	5	-6.90	108.20	1990-07-06	01:26:19
2	7	-5.60	149.00	1990-07-07	16:09:57
3	15	-9.10	118.20	1990-07-15	21:23:22
4	17	-6.80	130.60	1990-07-18	18:31:25
5	18	17.30	121.00	1990-07-19	16:51:02
6	19	-23.60	-180.00	1990-07-22	10:38:01
7	21	-15.40	-174.70	1990-07-25	14:48:56
8	22	53.70	-156.70	1990-07-25	15:50:27
9	24	-15.40	167.40	1990-07-28	09:54:15
10	25	-13.80	167.10	1990-07-28	20:19:12
11	26	29.90	130.40	1990-07-30	02:17:53
12	27	4.50	127.60	1990-07-31	14:57:21
13	29	-6.40	105.40	1990-08-02	16:13:33
14	30	46.03	143.00	1990-08-03	17:57:58
15	31	-20.20	168.30	1990-08-10	06:50:01
16	32	-19.80	-177.00	1990-08-10	18:59:35
17	33	6.50	60.20	1990-08-10	22:22:53
18	34	16.50	120.30	1990-08-11	22:16:34
19	35	40.00	30.20	1990-08-12	08:59:32
20	36	-19.40	169.10	1990-08-12	22:37:20
21	37	60.10	-152.00	1990-08-14	00:11:54
22	38	53.10	158.70	1990-08-14	17:03:26
23	39	41.60	88.80	1990-08-16	06:05:38
24	40	45.70	149.80	1990-08-16	13:00:46
25	41	-15.80	-177.00	1990-08-17	10:31:36
26	42	-11.20	162.10	1990-08-17	22:57:15
27	43	46.20	142.30	1990-08-20	01:06:49
28	44	-4.45	144.50	1990-08-24	17:34:27
29	45	32.60	140.40	1990-08-25	07:26:17
30	46	-20.00	-173.00	1990-08-25	15:25:10
31	47	0.50	126.00	1990-08-25	16:57:12
32	48	19.60	-77.90	1990-08-26	09:11:49
33	49	-9.20	110.70	1990-08-27	00:24:02
34	50	-6.90	125.50	1990-08-27	16:26:33
35	51	-19.50	-175.70	1990-08-28	04:29:11
36	52	-19.60	-70.00	1990-08-28	10:17:25
37	53	12.00	140.00	1990-06-30	00:44:00
38	54	26.40	120.00	1990-06-30	07:35:19
39	55	38.07	22.60	1990-09-02	17:25:26
40	56	36.40	70.70	1990-09-03	03:48:13
41	57	42.50	141.00	1990-09-05	19:38:34
42	58	-1.07	124.50	1990-09-07	19:14:47
43	59	-6.80	106.20	1990-09-08	13:21:26
44	60	27.50	66.00	1990-09-08	20:42:04
45	61	-33.60	178.80	1990-09-09	03:55:36
46	62	47.00	152.00	1990-09-09	05:56:58
47	63	-0.50	98.30	1990-09-12	01:49:06
48	64	52.60	157.70	1990-09-12	23:49:18
49	65	52.10	-168.60	1990-09-14	02:25:28
50	66	-60.70	-22.80	1990-09-14	10:40:50
51	67	41.80	139.50	1990-09-16	17:00:54

52	68	-5.90	103.80	1990-09-17	13:07:36
53	69	13.30	123.80	1990-09-21	21:20:47
54	70	33.20	138.60	1990-09-23	23:14:04
55	71	-17.80	167.70	1990-09-24	00:04:35
56	72	33.30	138.50	1990-09-25	08:29:27
57	73	-4.00	102.40	1990-09-26	14:34:20
58	74	51.70	176.30	1990-09-27	22:13:33
59	75	47.90	84.90	1990-09-27	22:17:42
60	76	-13.60	167.00	1990-09-28	20:56:11
61	77	51.30	-176.80	1990-09-28	21:50:13
62	78	51.40	-178.30	1990-09-29	17:17:50
63	79	38.80	70.80	1990-09-30	22:30:10
64	80	-1.50	99.50	1990-10-10	07:54:59
65	81	27.20	140.00	1990-10-10	08:28:21
66	83	32.80	48.30	1990-10-11	14:06:29
67	84	27.70	130.80	1990-10-12	05:39:59
68	85	37.30	-116.50	1990-10-12	17:41:26