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# SEP passive seismic dataset

*Carmen B. Mora*[1]

**ABSTRACT**

This dataset consists of the stacks along four directions (inline, crossline, and two diagonal) of 15 records from a passive seismic experiment (Cole, 1989b). The original raw data was acquired by SEP in September of 1988. The first dimension on each dataset is time, the second correspond to the four stack directions, the third dimension correspond to different time windows.

[1]**email:** cmora@sep.stanford.edu

## SEP PASSIVE SEISMIC PARTIAL STACK

**Raw Data**
**Velocity Model**
**Partial Stack** /data/oldq2/passive/stack.1.H, /data/oldq2/passive/stack.5.H, /data/oldq2/passive/stack.9.H, /data/oldq2/passive/stack.13.H, /data/oldq2/passive/stack.17.H, /data/oldq2/passive/stack.21.H, /data/oldq2/passive/stack.25.H, /data/oldq2/passive/stack.29.H, /data/oldq2/passive/stack.33.H, /data/oldq2/passive/stack.37.H, /data/oldq2/passive/stack.41.H, /data/oldq2/passive/stack.44.H, /data/oldq2/passive/stack.45.H, /data/oldq2/passive/stack.46.H, /data/oldq2/passive/stack.47.H, /data/oldq2/passive/stack.48.H,
**Zero-offset Migration**
**Usage** Passive seismic experiments: (Nichols et al., 1989), (Nichols, 1989), (Zhang, 1989), (Cole, 1989a) (Cole, 1995) Imaging: (Cole, 1989b)
**Geometry**

```
In stack.1.H
stack.1.H:
        in="$Q2/passive/stack.1.B"
        expands to in="/q2/passive/stack.1.B"
        esize=1
        n1=800  n2=79   n3=10                632000 elem             632000 bytes
        d1=0.004        d2=38.1 d3=38.1
        o1=0    o2=0    o3=0
```

**Problem**
**History of Data** Raw two dimensional array data acquired by SEP in September of 1988 in a passive seismic experiment. Partial stacks of 15 records along four directions: inline, crossline, and two diagonal. As presented by Cole in (Cole, 1989b), the equations for stacking associated to the recorded 3-D data $P(it,ix,iy)$ are:

$$P_1(it,ih) = \sum_{ix} P(it,ix,ih+ix)$$

$$P_2(it,ih) = \sum_{ix} P(it,ix,ih-ix+nx)$$

A README file in the data directory stays:

```
"The following lists gives the recording time of each record and some
additional information where relevant
1       7:43 PM         test record, many stations not working
5       3:50 AM
9       3:54 AM
13      3:58 AM
17      4:02 AM
```

```
21      4:06 AM
25      4:10 AM
29      4:14 AM
33      4:18 AM
37      4:22 AM
41      4:26 AM
44      11:00 AM        single 300 lb. charge detonated in quarry
45      11:27 AM
46      11:30 AM        1500 lbs. of explosives (quarry blast) detonated
47      11:45 AM        large plane passes over survey area
48      12:00 NOON      single 100 lb. charge detonated in quarry"
```

**Preprocessing**
**Proprietary Considerations**

## REFERENCES

Cole, S., 1989a, Downward continuation analysis of passive seismic data: SEP–**60**, 97–108.

Cole, S., 1989b, Scattering analysis of passive seismic data: SEP–**61**, 115–132.

Cole, S. P., 1995, Passive seismic and drill-bit experiments using 2-D arrays: Ph.D. thesis, Stanford University.

Nichols, D., Cole, S., and Zhang, L., 1989, An introduction to the SEP passive seismic dataset: SEP–**60**, 67–76.

Nichols, D., 1989, Three dimensional slant stacks and elliptical moveout of passive seismic data: SEP–**60**, 77–84.

Zhang, L., 1989, Reflectivity estimation from passive seismic data: SEP–**60**, 85–96.

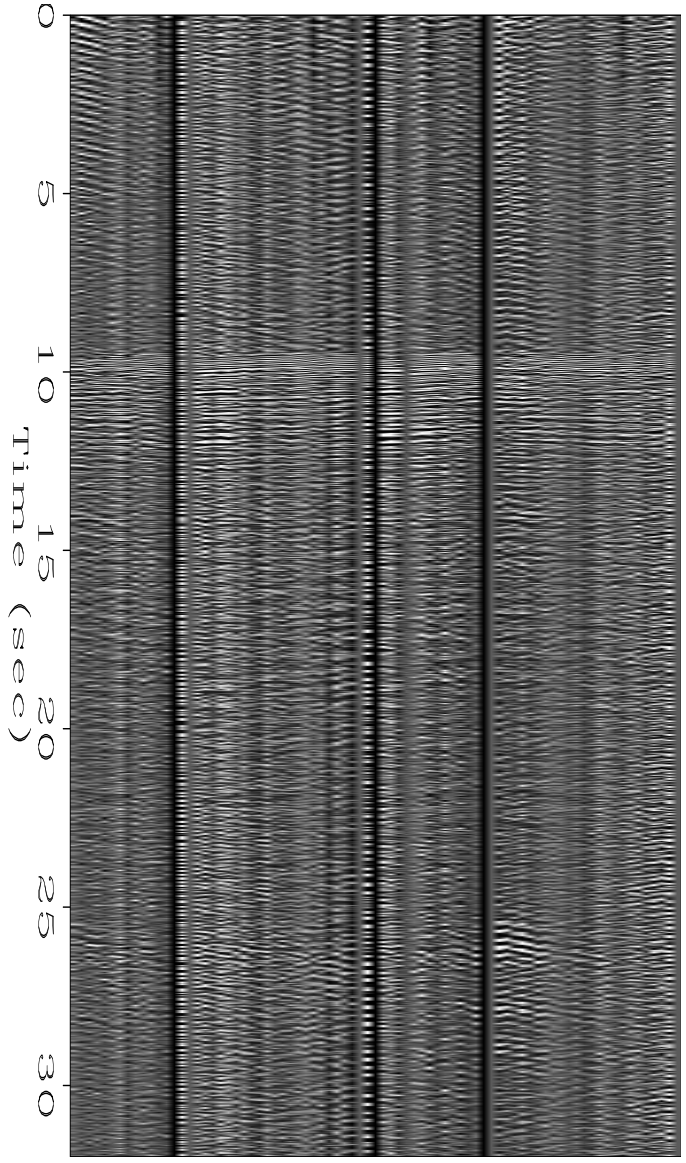


Figure 1: Partial stack data corresponding to record number 46. Note the blast arrival arround 9.7 seconds. sep-passive-pstack46 [ER]

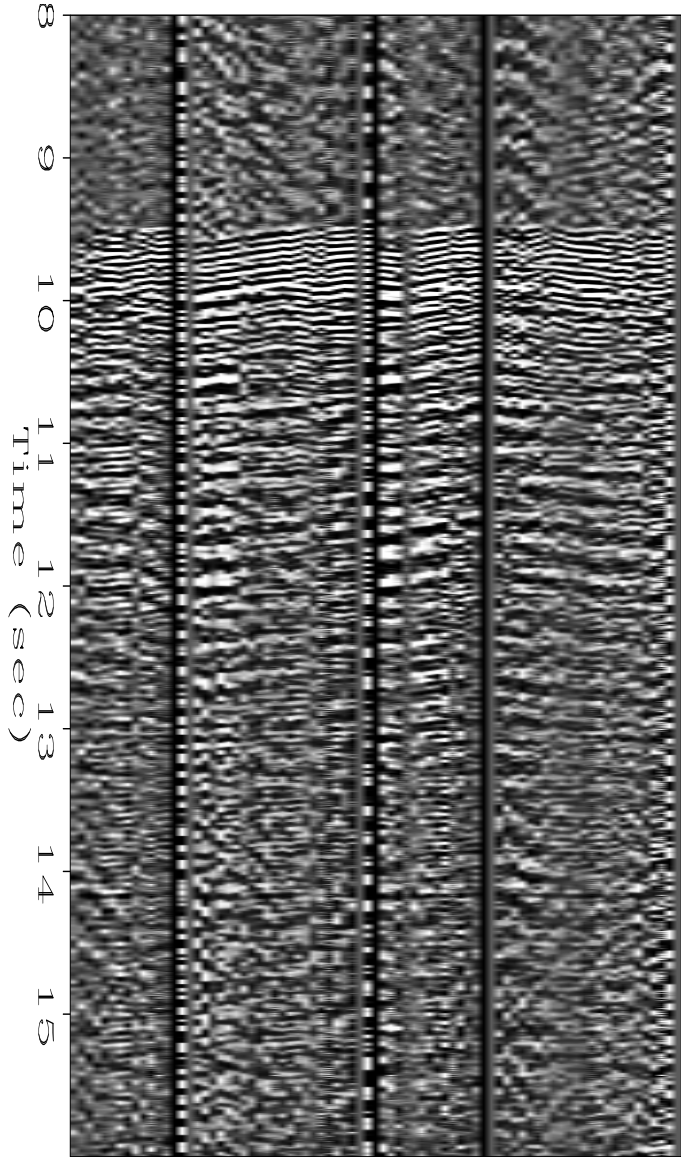


Figure 2: Window (time 8 sec to 16 sec) of partial stack data corresponding to record number 46. sep-passive-pstackw46 [ER]