

**DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY**

**National Earthquake Information Center
Waveform Catalog
April 1986**

by

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**This report is preliminary and has not been reviewed for conformity with
U.S. Geological Survey editorial standards.**

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Introduction

This report provides a visual catalog of digitally recorded waveform data available from the event tapes produced by the United States Geological Survey's National Earthquake Information Center (NEIC). It is intended to provide the researcher with a quick index both to the availability of data and to the character of the data for each event (e.g., complexity and directionality).

The network-event tapes are a data service initiated by the NEIC in 1984. Currently, these tapes contain data from the Global Digital Seismograph Network (GDSN), the Regional Seismograph Test Network (RSTN), and the Glen Almond, Canada, SRO station. In the future, data from other high-quality stations and arrays, installed and operated by countries around the world, will be added to the event tapes as they are made available to us.

Network-event tapes contain digital data for earthquakes of magnitude 5.5 or greater in the NEIC network-day tape format. For this catalog, all available vertical component recordings in all period bands are shown, including those for stations that were saturated or nonoperational or that had some other difficulty during the event. Horizontal component records were omitted in order to minimize the size of this catalog. In general, one can expect them to be of approximately the same quality as the vertical component records at any particular time. Most of the available stations do not record short-period horizontal components. All stations that have intermediate-period recordings, however, record all three components in this band. Only long-period components are recorded continuously; short- and intermediate-period channels are recorded only when an event is detected. Horizontal components (where available) are recorded whenever the vertical component is, and never otherwise.

This report mainly consists of vertical component waveforms from all reporting stations, organized by event. The section for each event is prefaced by a station coverage map, in which stations and geography within 100° of the source are shown in an azimuthal equidistant projection centered at the epicenter. Following the coverage map, all short-period, vertical component waveforms are shown in order of increasing epicentral distance. Each short-period waveform is two minutes long and is identified by station code, start

time, and epicentral distance, Δ , in degrees. The start time is chosen to be about 15 seconds before the earliest theoretical arrival time of interest (P, Pdiff, or PKP_{df}, depending on distance). The vertical scale is in microns of ground displacement at the dominant period of the instrument response, which is taken to be 1 second. Each page of waveforms is titled with the event origin date-time, the Flinn-Engdahl region name, and the component identifier (SPZ, LPZ or IPZ). Also, the depth of the event (h) in kilometers and its average body (m_b) and vertical surface wave (M_{SZ}) magnitudes are shown for convenience.

Following the short-period waveforms (SPZ), long-period vertical (LPZ) and finally intermediate-period vertical (IPZ) waveforms are shown. In each case, the format is the same as for the short-period waveforms. Fifty minutes of long-period data are shown beginning 1 minute before the theoretical first arrival, and the dominant period is taken to be 25 seconds. Four minutes of intermediate-period data are shown beginning 30 seconds before the theoretical first arrival, and the dominant period is assumed to be 1 second. Because (1) the event detection algorithm is not perfect, (2) only about half of the available stations have intermediate-period channels, and (3) one station (GAC) has no short-period recordings, it is not uncommon for stations with good long-period recordings to have no intermediate-period and perhaps no short-period recordings at all.

With the inclusion of the Network of Autonomously Registering Stations (NARS) in September 1985, it was difficult to list the name of each station in the network on the station coverage map because of their close proximity. Instead, a new symbol (\square) will be used to denote each station of the network, with the name NARS. When other networks are included with stations situated close together, a new symbol will be used to denote each station of each network. The name used will be the network name only.

Table 1. Earthquakes for April 1986 with magnitudes ≥ 5.5

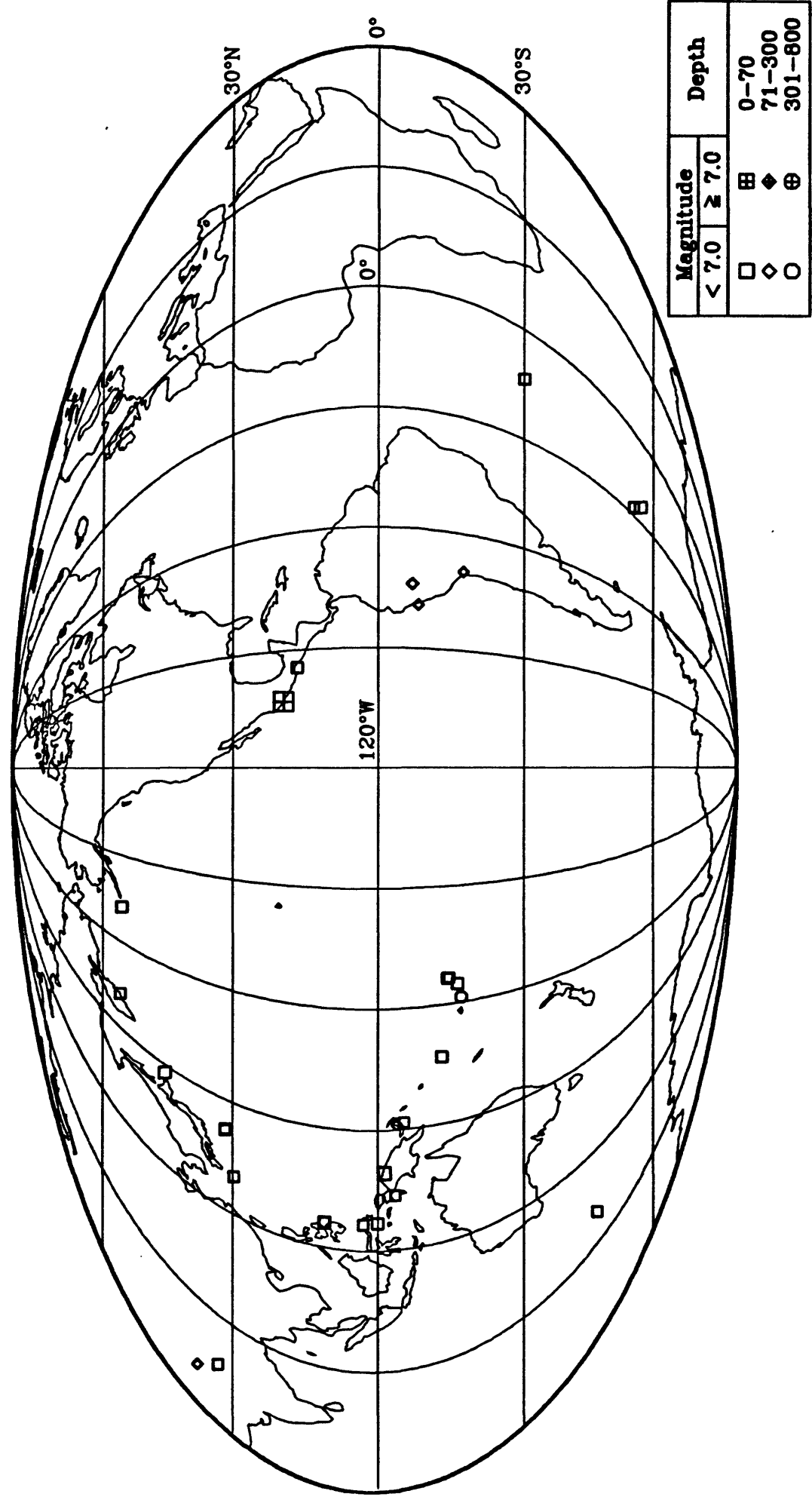
	Origin Time UTC	Latitude	Longitude	Depth (km)	Magnitude m_b	Magnitude M_{sz}	Flinn-Engdahl Region Name
1.	1986 04 01 10:13:41.23	17.909° S	178.629° W	541.0	5.7		Fiji Islands Region
2.	1986 04 01 13:40:45.51	54.582° N	161.559° E	40.5	5.6	5.1	Near East Coast of Kamchatka
3.	1986 04 03 07:39:53.96	6.340° S	151.715° E	29.7	5.5	4.9	New Britain Region
4.	1986 04 07 22:43:31.22	15.551° N	94.385° W	61.4	5.8		Near Coast of Oaxaca, Mexico
5.	1986 04 08 18:02:44.98	7.960° S	73.888° W	176.6	5.8		Peru-Brazil Border Region
6.	1986 04 09 21:56:19.67	9.969° N	126.154° E	55.7	5.3	5.8	Mindanao, Philippine Islands
7.	1986 04 09 22:10:15.52	55.956° S	26.923° W	50.0	5.5	5.2	South Sandwich Islands Region
8.	1986 04 10 02:21:13.32	0.970° S	126.838° E	33.0	5.8	6.0	Molucca Sea
9.	1986 04 11 17:22:20.60	54.109° N	167.798° W	33.0	5.2	5.9	Fox Islands, Aleutian Islands
10.	1986 04 12 04:04:31.57	15.342° S	173.316° W	33.0	5.6	5.1	Tonga Islands
11.	1986 04 12 20:20:45.99	15.051° S	173.453° W	33.0	5.3	5.6	Tonga Islands
12.	1986 04 13 21:52:52.76	9.932° N	126.178° E	33.0	6.2		Mindanao, Philippine Islands
13.	1986 04 14 00:25:12.46	13.946° S	166.977° E	33.0	5.8	6.2	Vanuatu Islands
14.	1986 04 14 10:52:48.69	4.868° S	151.292° E	217.0	5.6		New Britain Region
15.	1986 04 14 14:52:13.75	57.712° S	24.389° W	33.0	5.7	6.2	South Sandwich Islands Region
16.	1986 04 16 01:31:44.51	30.605° N	141.619° E	33.0	5.7	5.6	South of Honshu, Japan
17.	1986 04 16 12:52:19.75	43.883° N	147.566° E	51.7	6.3		Kuril Islands
18.	1986 04 19 23:28:11.39	9.162° S	79.049° W	77.4	5.5		Off Coast of Northern Peru
19.	1986 04 20 07:03:30.84	2.375° S	139.318° E	33.0	6.2	6.7	Near N. Coast of West Irian
20.	1986 04 20 09:32:09.49	17.127° S	175.096° W	33.0	5.7		Tonga Islands
21.	1986 04 21 23:36:17.39	1.962° N	126.488° E	33.8	5.6	5.2	Molucca Passage
22.	1986 04 23 09:11:55.85	30.552° N	141.917° E	33.0	5.6	5.6	South of Honshu, Japan
23.	1986 04 26 07:35:16.08	32.090° N	76.311° E	33.0	5.5	5.3	Kashmir-India Border Region
24.	1986 04 26 14:15:07.66	36.511° N	71.124° E	187.1	5.6		Afghanistan-USSR Border Region
25.	1986 04 27 03:24:06.02	31.158° S	13.460° W	10.0	5.7	5.7	South Atlantic Ridge
26.	1986 04 29 07:28:04.93	4.529° S	133.646° E	25.9	5.5	4.9	West Irian Region
27.	1986 04 30 07:07:18.80	18.405° N	102.979° W	32.3	6.2	7.0	Michoacan, Mexico
28.	1986 04 30 14:09:39.73	18.353° S	69.696° W	116.3	5.5		Northern Chile
29.	1986 04 30 17:47:52.60	47.213° S	100.036° E	10.0	5.3	5.6	Southeast Indian Rise
30.	1986 04 30 23:14:43.71	28.711° N	130.047° E	43.9	5.5	5.4	Ryukyu Islands

Table 2. Network-event tape station list for April 1986.

Code	ID	Station	Latitude	Longitude	Elevation (m)	Type*
ANMO	30	Albuquerque, New Mexico	34.95° N	106.46° W	1740.0	SRO
ANTO	31	Ankara, Turkey	39.87° N	32.79° E	883.0	SRO
BCAO	37	Bangui, Central African Republic	4.43° N	18.54° E	336.0	SRO
CHTO	33	Chiang Mai, Thailand	18.79° N	98.98° E	316.0	SRO
COL	62	College, Alaska	64.90° N	147.79° W	320.0	DWWSSN
CTAO	50	Charters Towers, Australia	20.09° S	146.25° E	357.0	ASRO
GAC	43	Glen Almond, Quebec, Canada	45.70° N	75.48° W	620.0	SRO
GDH	70	Godhavn, Greenland	69.25° N	53.53° W	23.0	DWWSSN
GRA1	302	Haidhof, Germany	49.69° N	11.22° E	500.0	GRF
GRB1	303	Bruennthal, Germany	49.39° N	11.65° E	494.0	GRF
GRC1	304	Eglofsdorf, Germany	48.99° N	11.52° E	512.0	GRF
GRFO	39	Graefenberg, Germany	49.69° N	11.22° E	500.0	SRO
GUMO	35	Guam, Mariana Islands	13.59° N	144.87° E	14.0	SRO
HON	66	Honolulu, Hawaii	21.32° N	158.01° W	2.0	DWWSSN
JAS1	64	Jamestown, California	37.93° N	120.42° W	425.0	DWWSSN
KEV	67	Kevo, Finland	69.76° N	27.01° E	80.0	DWWSSN
KONO	54	Kongsberg, Norway	59.65° N	9.60° E	216.0	ASRO
LON	63	Longmire, Washington	46.75° N	121.81° W	854.0	DWWSSN
MAJO	53	Matsushiro, Japan	36.54° N	138.21° E	422.0	ASRO
NE02	202	Monsted, Denmark	56.459° N	9.170° E	60.0	NARS
NE04	204	Witteveen, Netherlands	52.813° N	6.668° E	17.0	NARS
NE05	205	Utrecht, Netherlands	52.088° N	5.172° E	2.0	NARS
NE06	206	Dourbes, Belgium	50.097° N	4.595° E	225.0	NARS
NE13	213	Puertollano, Spain	38.685° N	4.091° W	700.0	NARS
NE15	215	Valkenburg, Netherlands	50.867° N	5.785° E	100.0	NARS
NE16	216	Clermont-Ferand, France	45.763° N	3.103° E	80.0	NARS
NE17	217	Toledo, Spain	39.881° N	4.049° W	480.0	NARS
NRA0	301	NORESS array site A0	60.735° N	11.541° E	302.0	NRSA
NWAO	38	Mundaring (Narrogin), Australia	32.93° S	117.24° E	265.0	SRO
RSCP	81	Cumberland Plateau, Tennessee,	35.60° N	85.57° W	481.0	RSTN
RSNT	82	Yellowknife, Northwest Territories	62.48° N	114.59° W	90.0	RSTN
RSNY	84	Adirondack, New York	44.55° N	74.53° W	351.0	RSTN
RSO	85	Red Lake, Ontario	50.86° N	93.70° W	302.0	RSTN
RSSD	83	Black Hills, South Dakota	44.12° N	104.04° W	1948.0	RSTN
SCP	61	State College, Pennsylvania	40.79° N	77.87° W	352.0	DWWSSN
SLR	71	Silverton, South Africa	25.73° S	28.28° E	1348.0	DWWSSN
SNZO	42	Wellington (South Karori), New Zealand	41.31° S	174.70° E	-12.0	SRO
TATO	41	Taipei, Taiwan	24.98° N	121.49° E	53.0	SRO
TAU	74	Hobart, Tasmania	42.91° S	147.32° E	132.0	DWWSSN
TOL	73	Toledo, Spain	39.88° N	4.05° W	480.0	DWWSSN
ZOBO	51	La Paz (Zongo), Bolivia	16.27° S	68.13° W	4450.0	ASRO

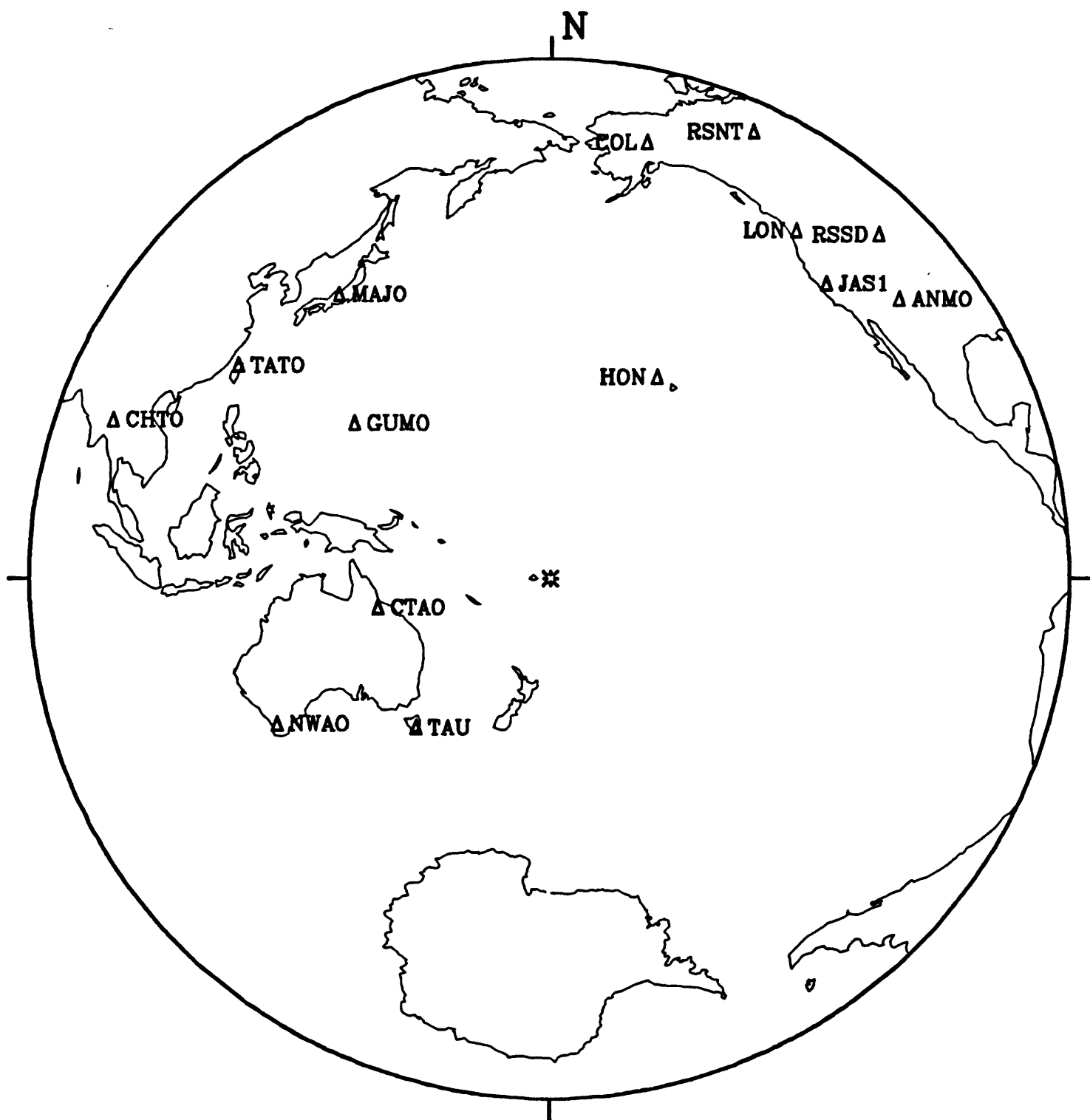
- * ASRO - Abbreviated Seismic Research Observatory
DWWSSN - Digital World Wide Standardized Seismograph Network
GRF - Graefenberg Array
NARS - Network of Autonomously Registering Stations
NRSA - Norwegian Regional Seismic Array
RSTN - Regional Seismic Test Network
SRO - Seismic Research Observatory

EARTHQUAKES - April 1986 - MAGNITUDE ≥ 5.5



01 April 1986 10:13:41.23

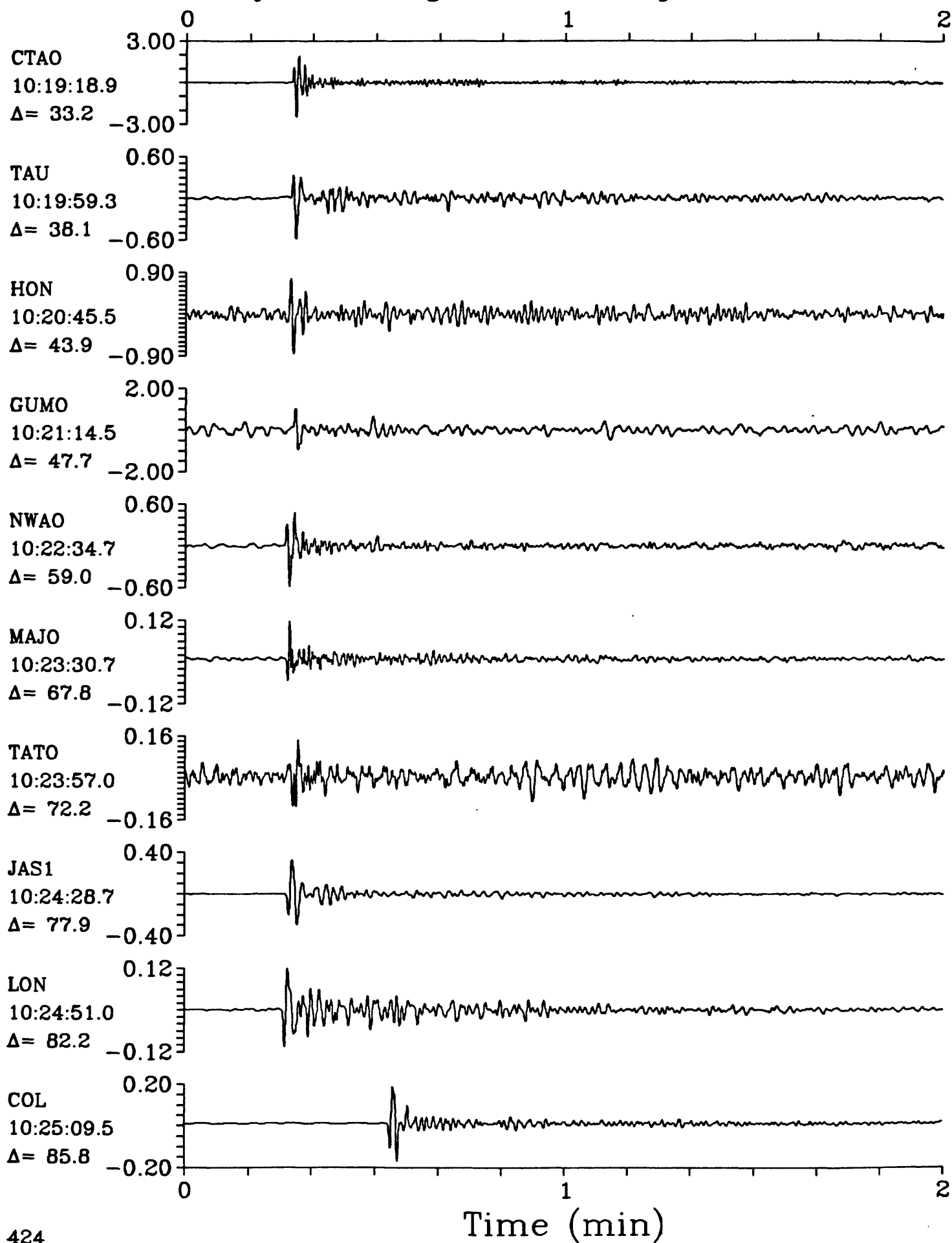
Fiji Islands Region



SPZ

01 April 1986 10:13:41.23
Fiji Islands Region $h=541.0$ $m_b=5.7$

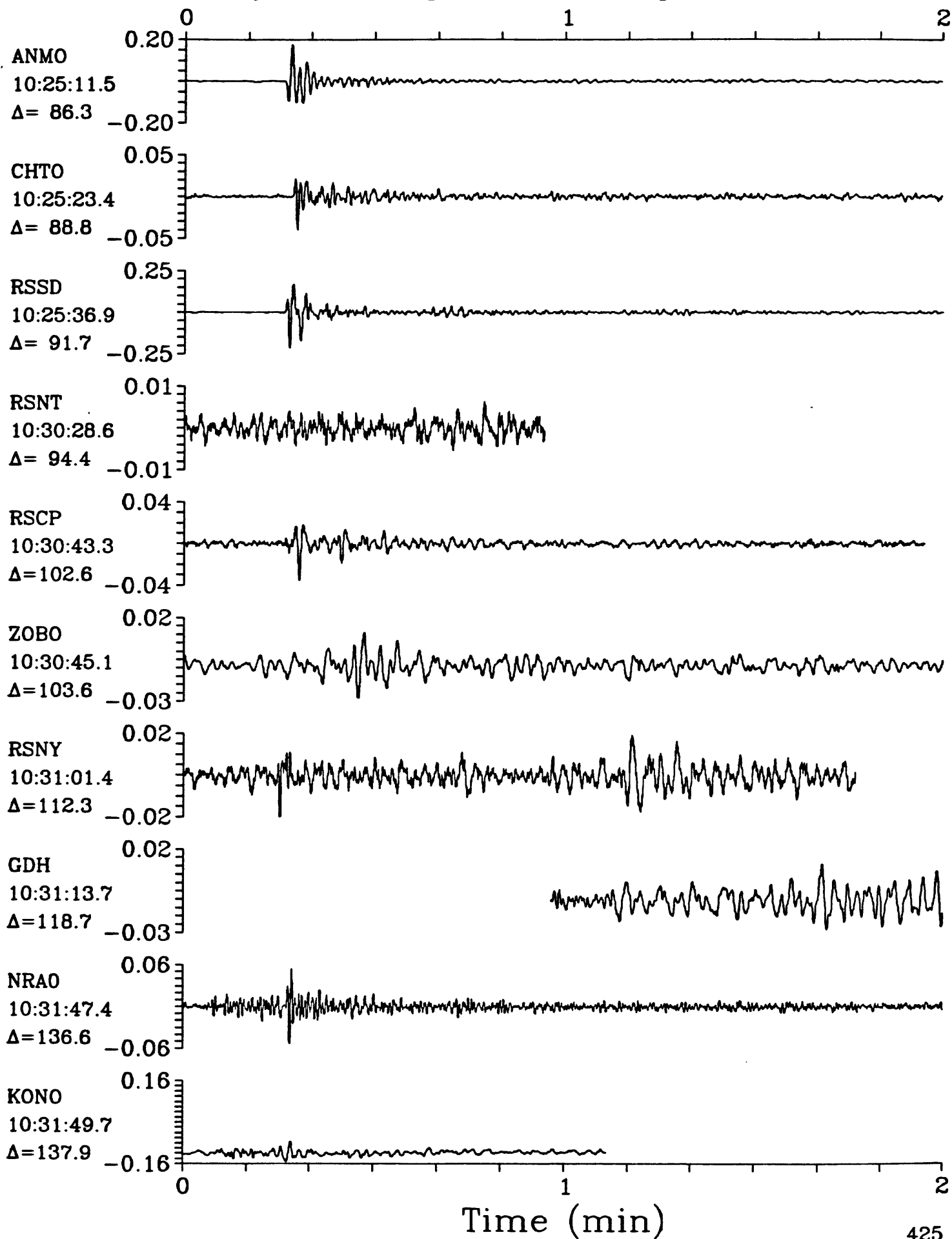
SPZ



SPZ

01 April 1986 10:13:41.23
Fiji Islands Region $h=541.0$ $m_b=5.7$

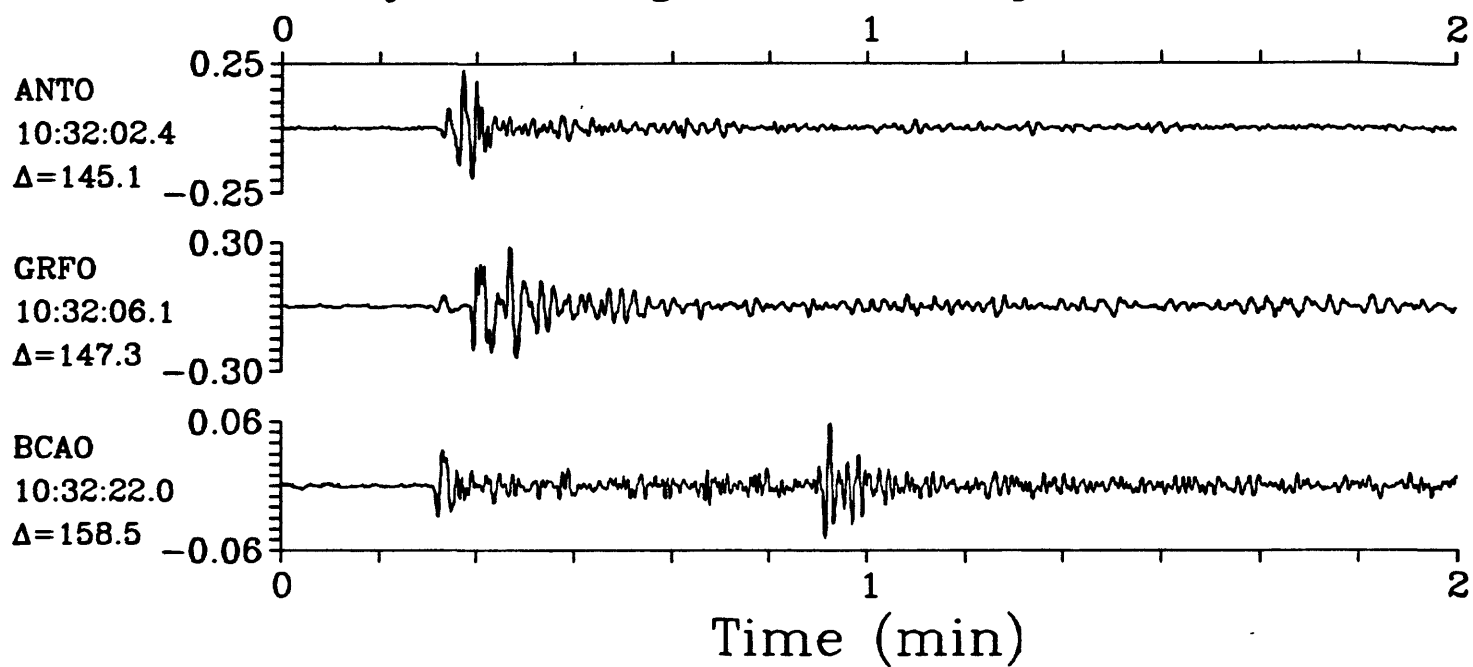
SPZ



SPZ

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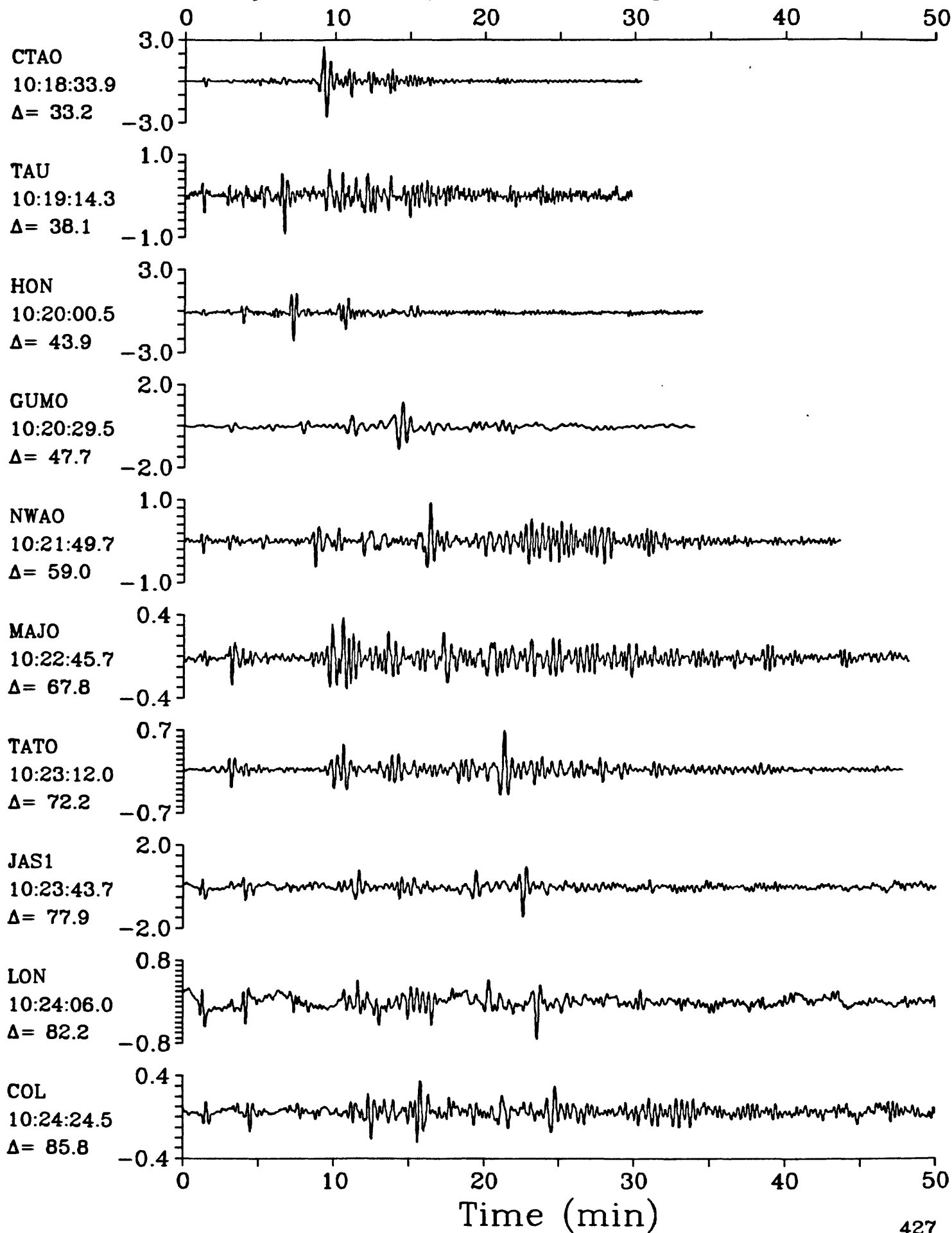
SPZ



LPZ

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Fiji Islands Region $h=541.0$ $m_b=5.7$

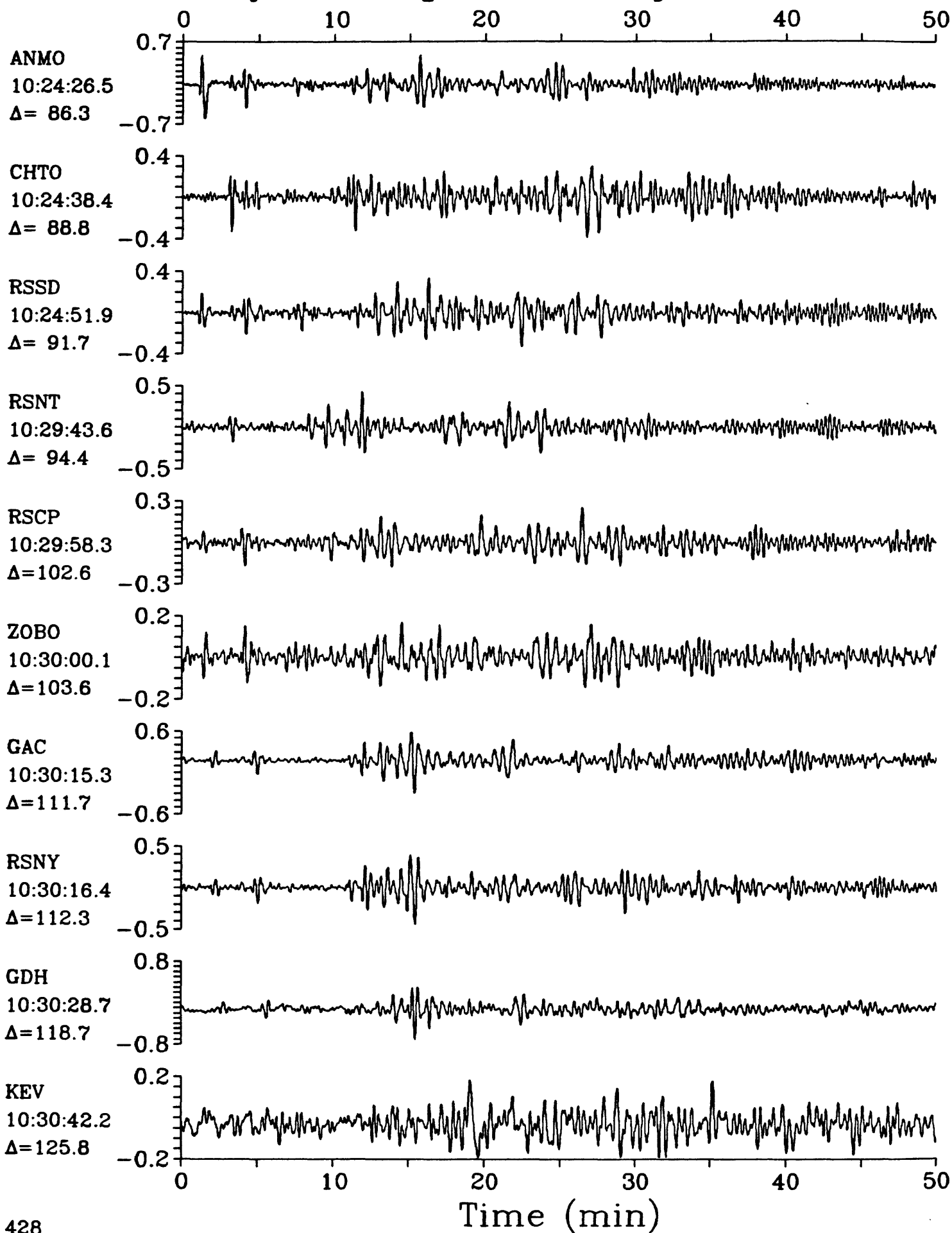
LPZ



LPZ

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Fiji Islands Region $h=541.0$ $m_b=5.7$

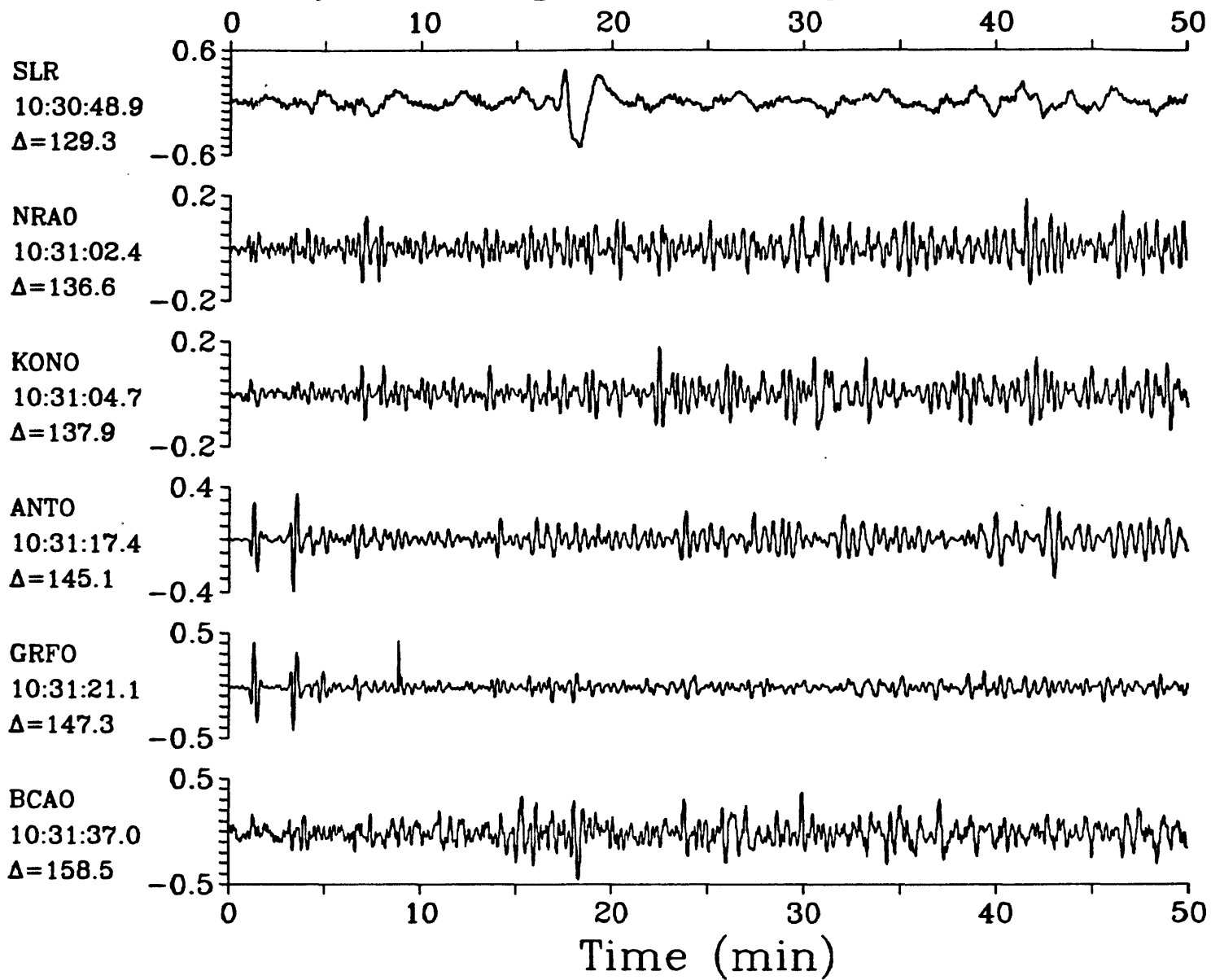
LPZ



LPZ

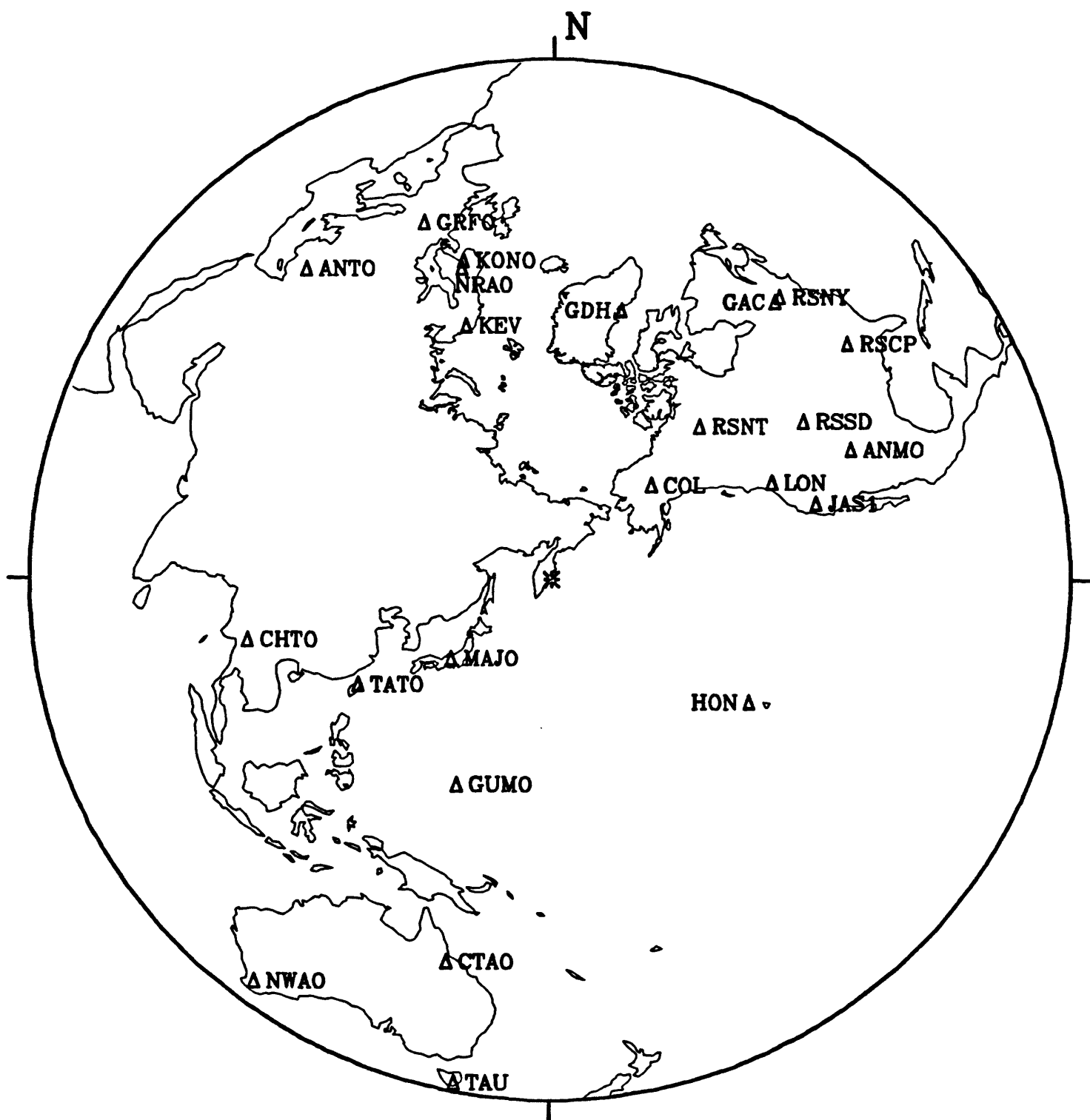
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Fiji Islands Region $h=541.0$ $m_b=5.7$

LPZ



01 April 1986 13:40:45.51

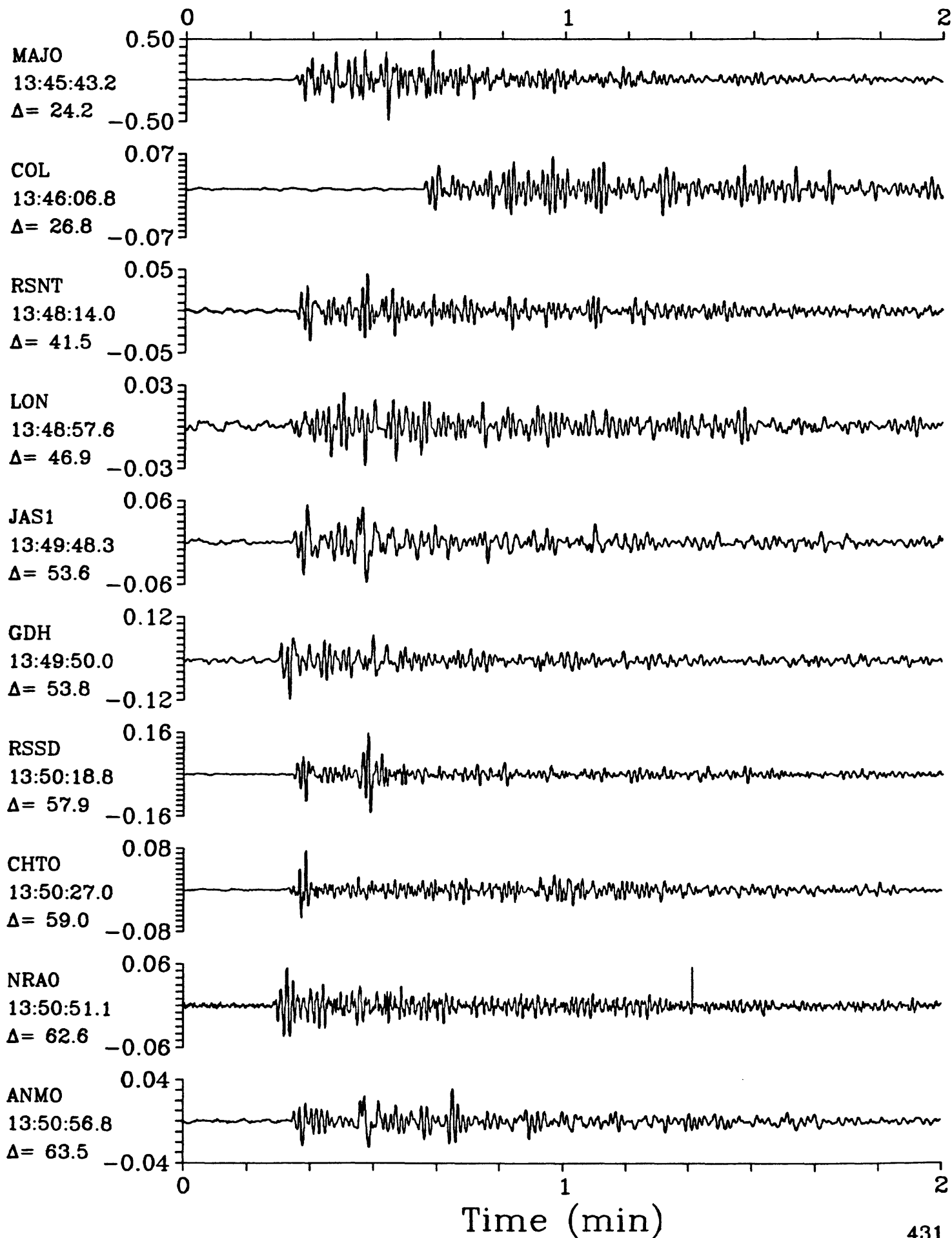
Near East Coast of Kamchatka



SPZ

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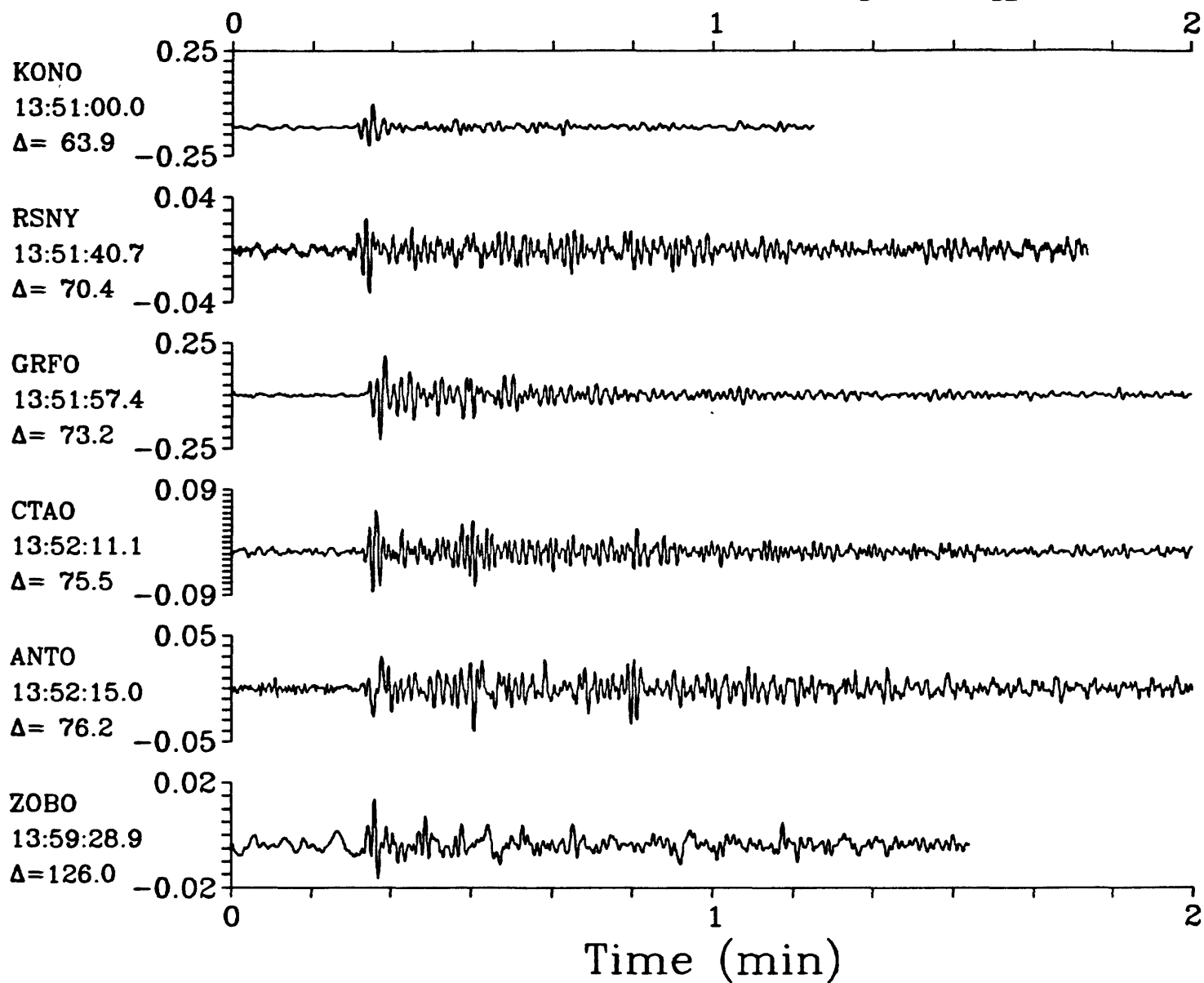
SPZ

Near East Coast of Kamchatka $h=40.5$ $m_b=5.6$ $M_{sz}=5.1$ 

SPZ

01 April 1986 13:40:45.51

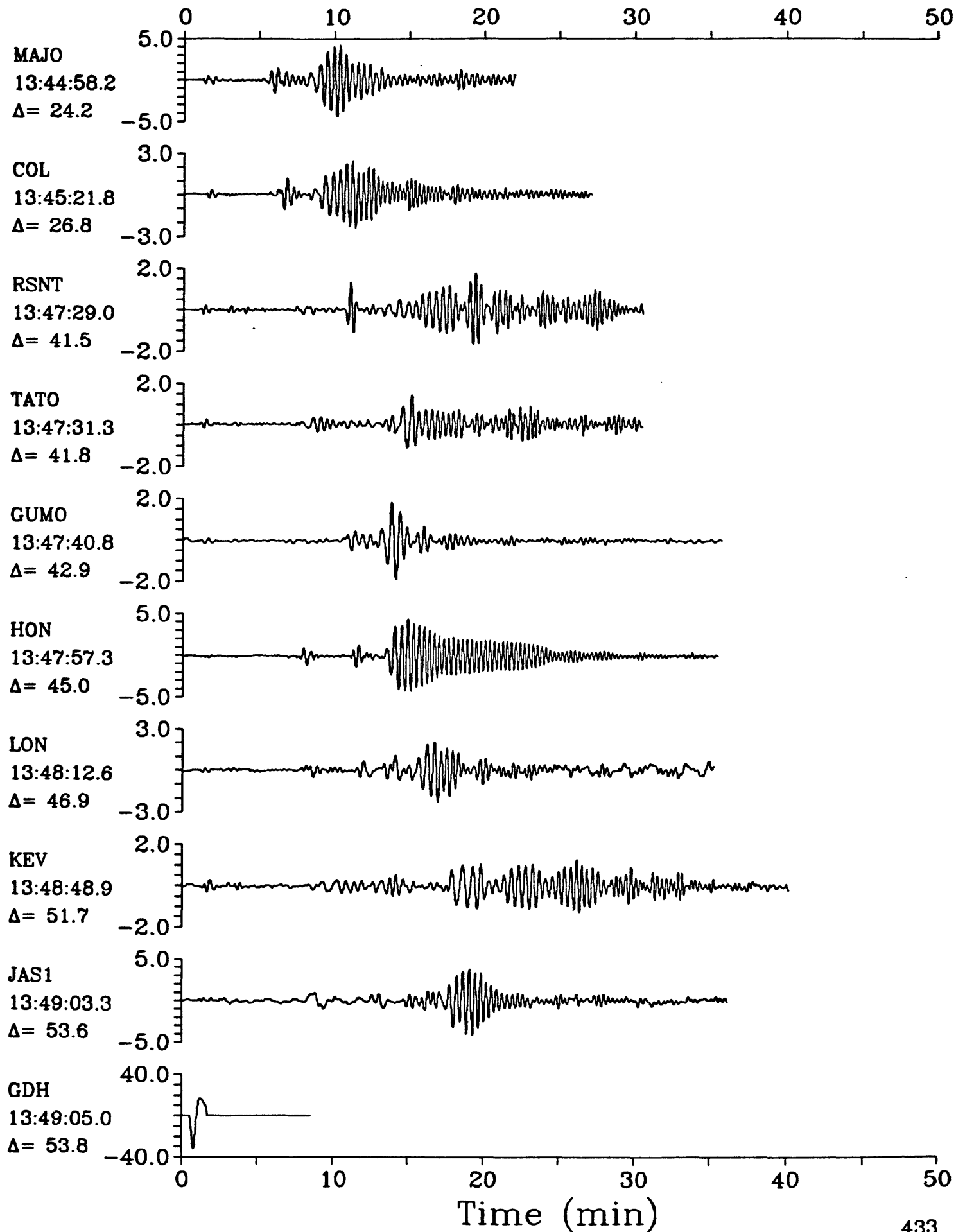
SPZ

Near East Coast of Kamchatka $h=40.5$ $m_b=5.6$ $M_{sz}=5.1$ 

LPZ

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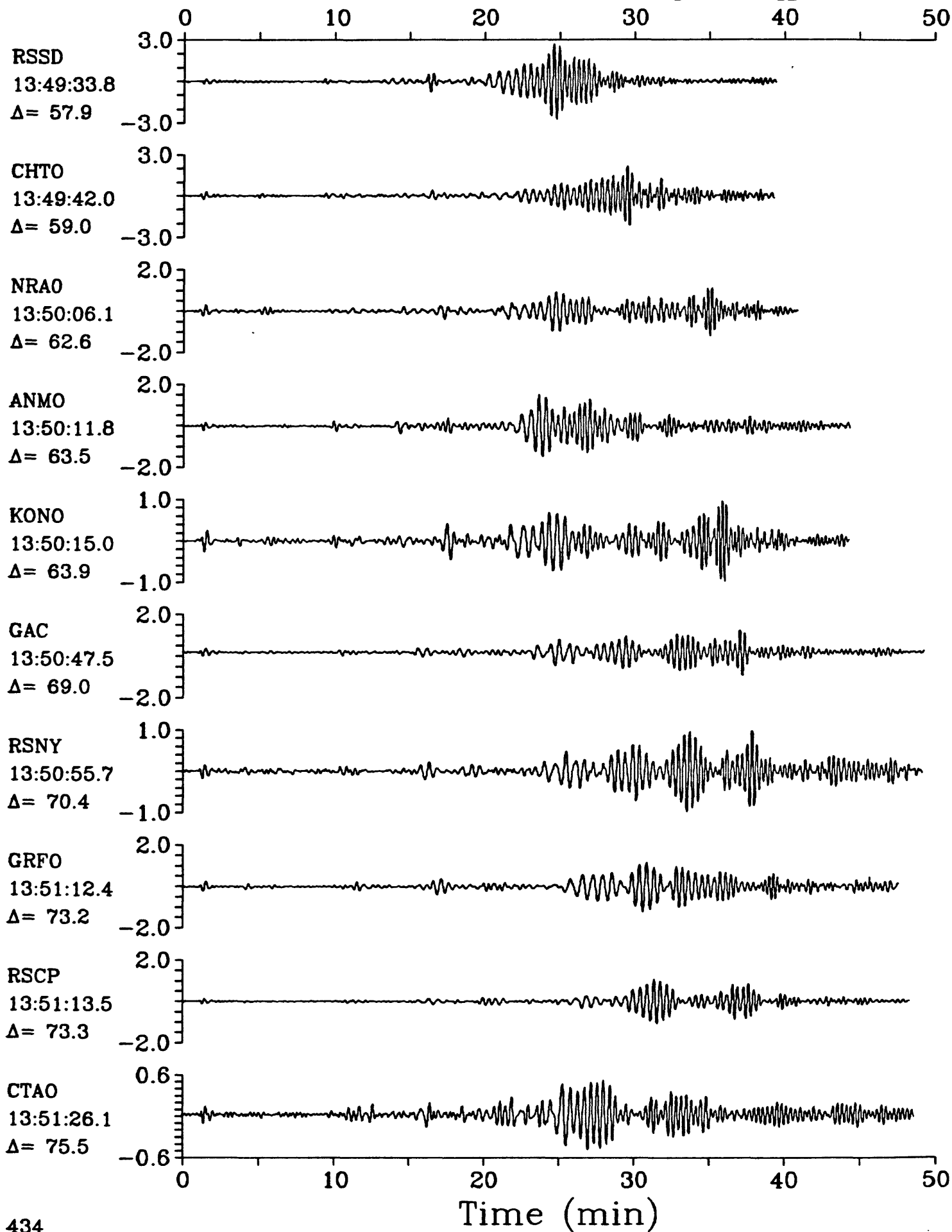
LPZ

Near East Coast of Kamchatka $h=40.5$ $m_b=5.6$ $M_{sz}=5.1$ 

LPZ

01 April 1986 13:40:45.51

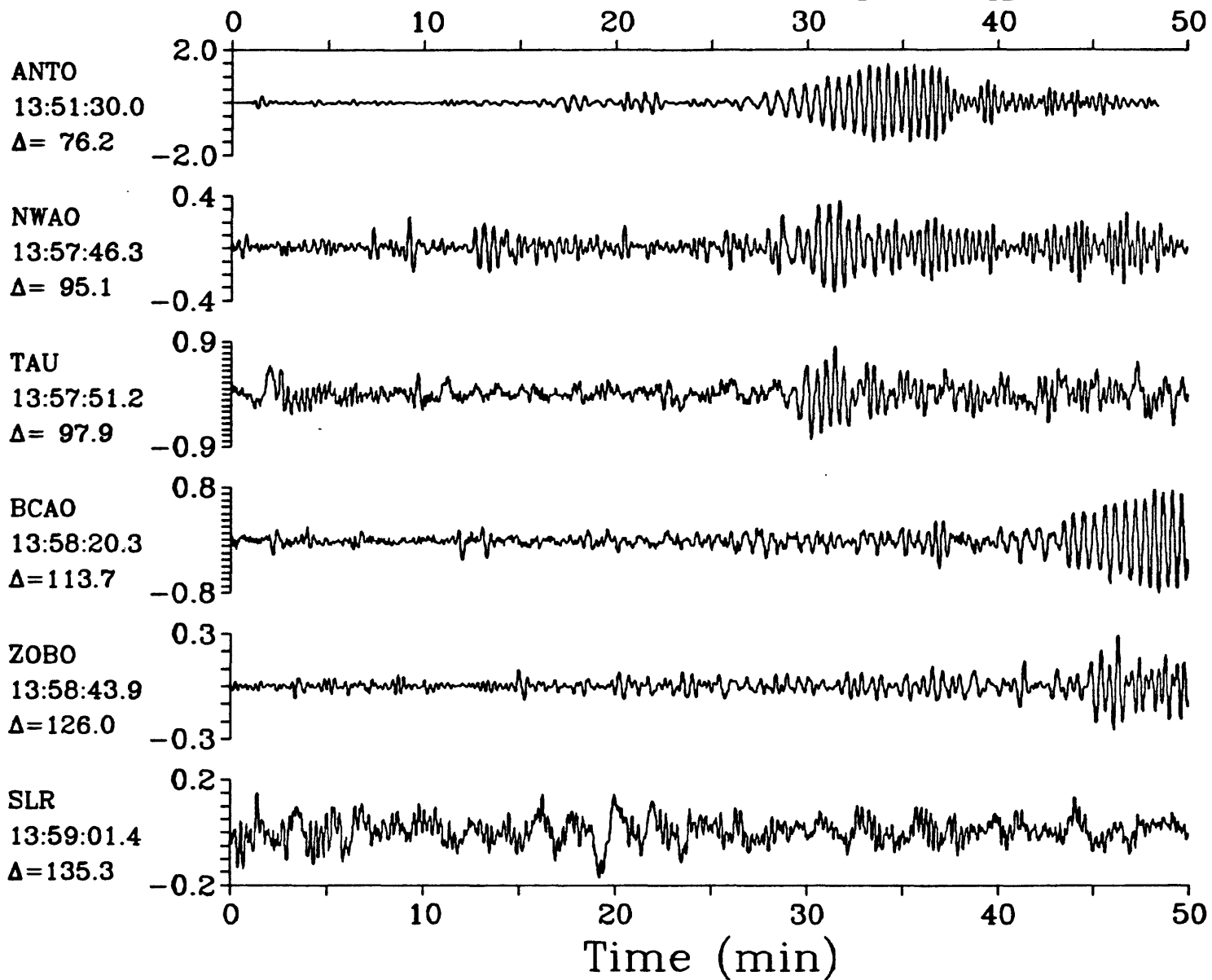
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Near East Coast of Kamchatka $h=40.5$ $m_b=5.6$ $M_{sz}=5.1$ 

LPZ

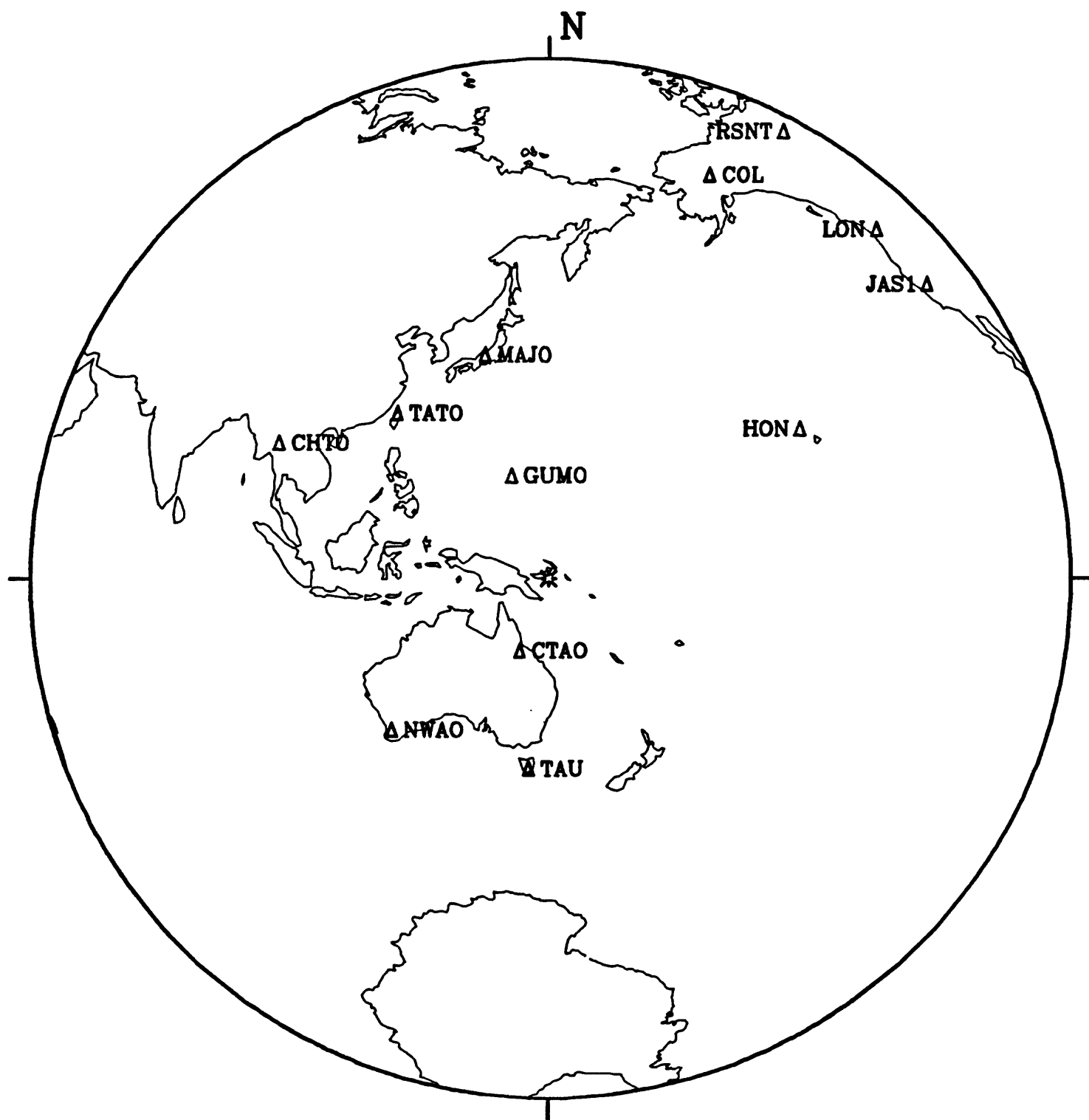
01 April 1986 13:40:45.51

LPZ

Near East Coast of Kamchatka $h=40.5$ $m_b=5.6$ $M_{SZ}=5.1$ 

03 April 1986 07:39:53.96

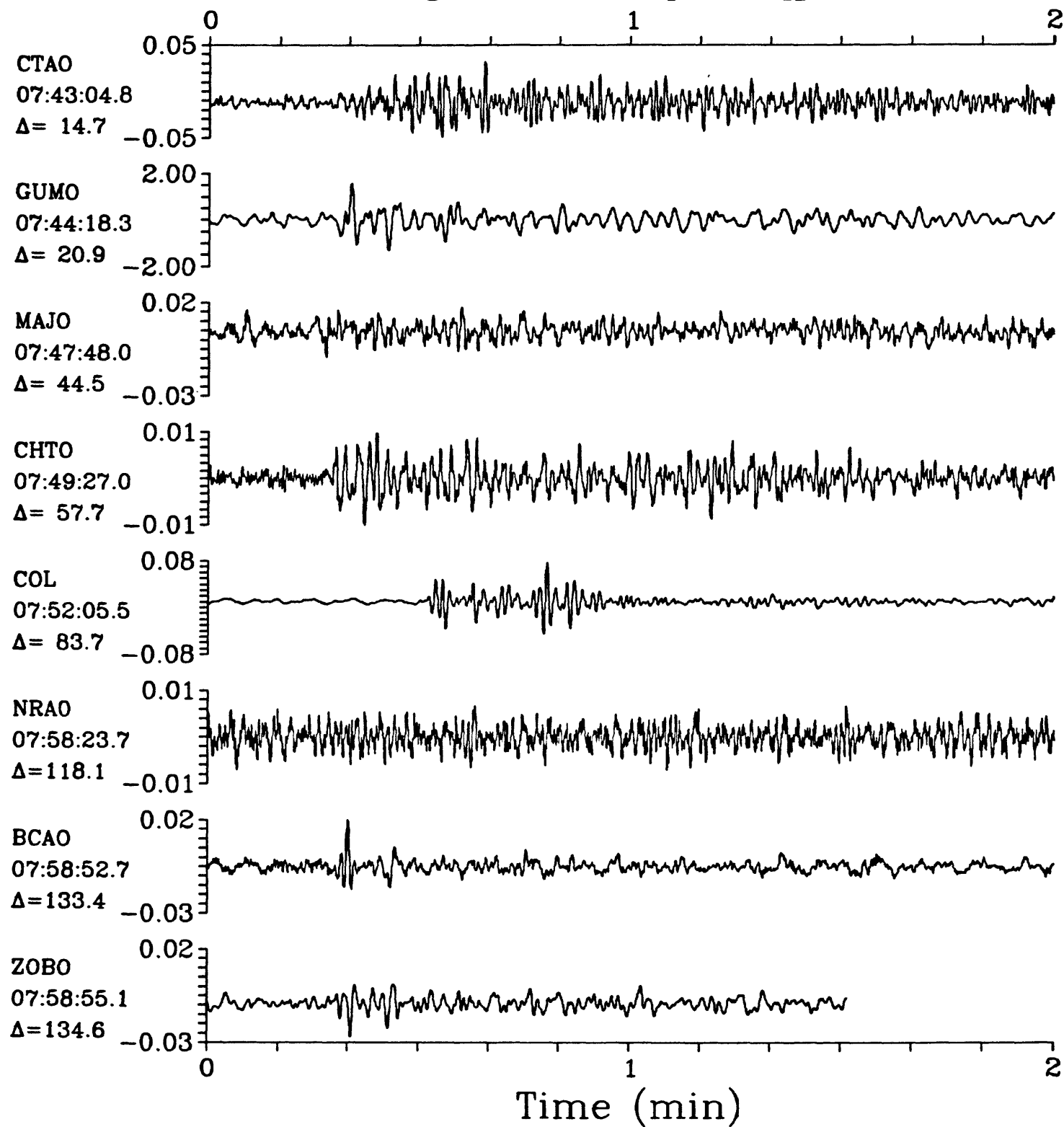
New Britain Region



SPZ

03 April 1986 07:39:53.96

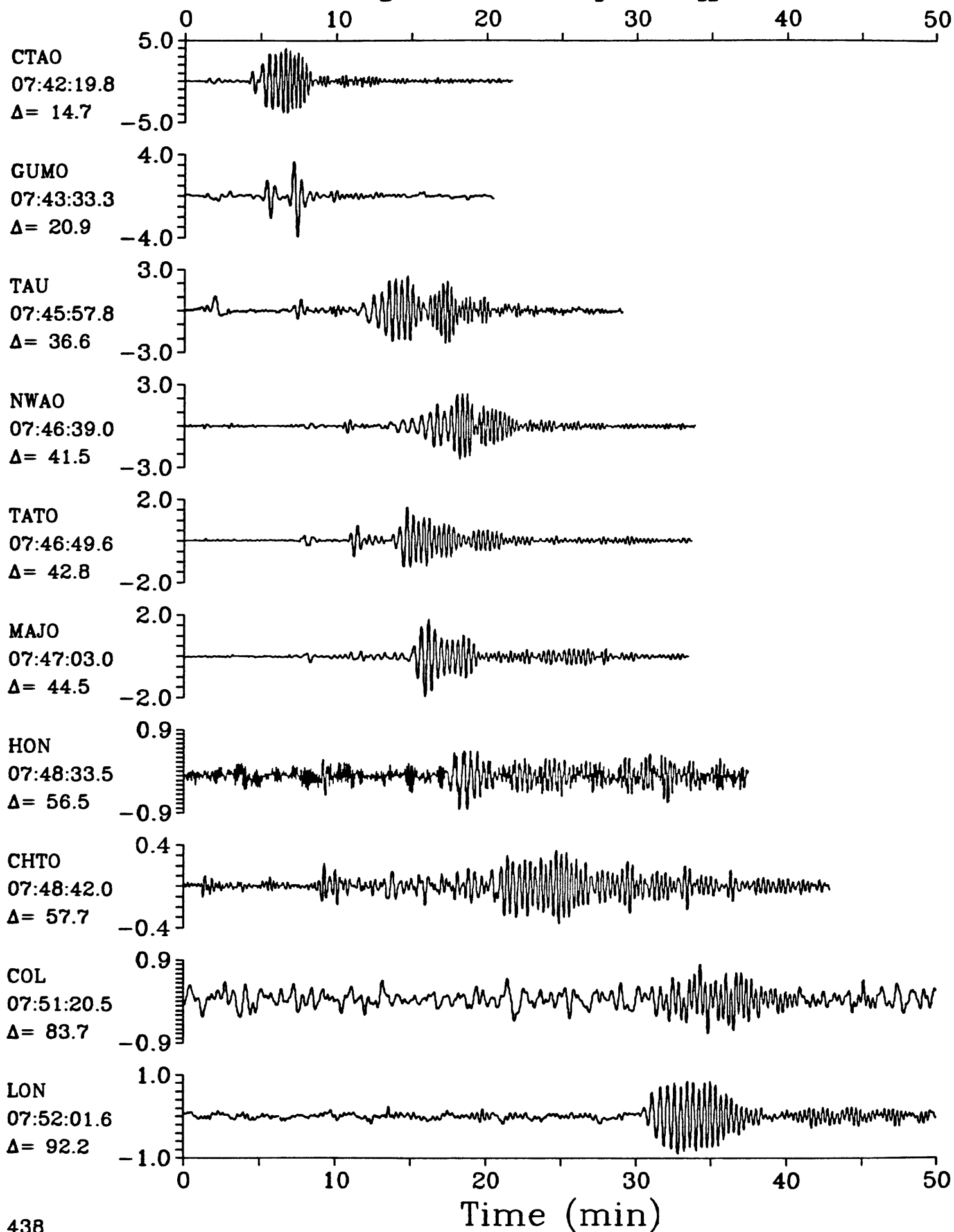
SPZ

New Britain Region $h=29.7$ $m_b=5.5$ $M_{SZ}=4.9$ 

LPZ

03 April 1986 07:39:53.96

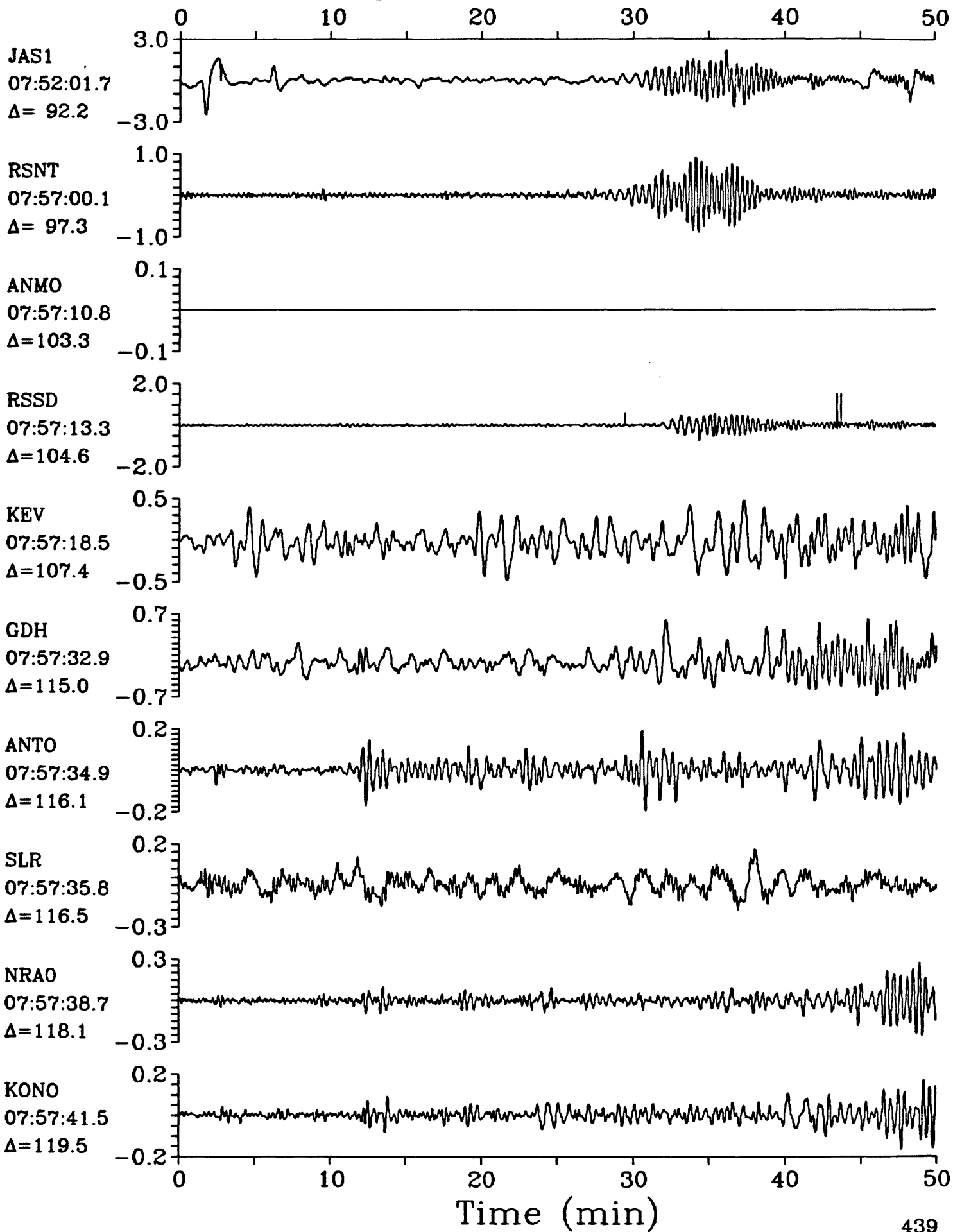
LPZ

New Britain Region $h=29.7$ $m_b=5.5$ $M_{sz}=4.9$ 

LPZ

03 April 1986 07:39:53.96

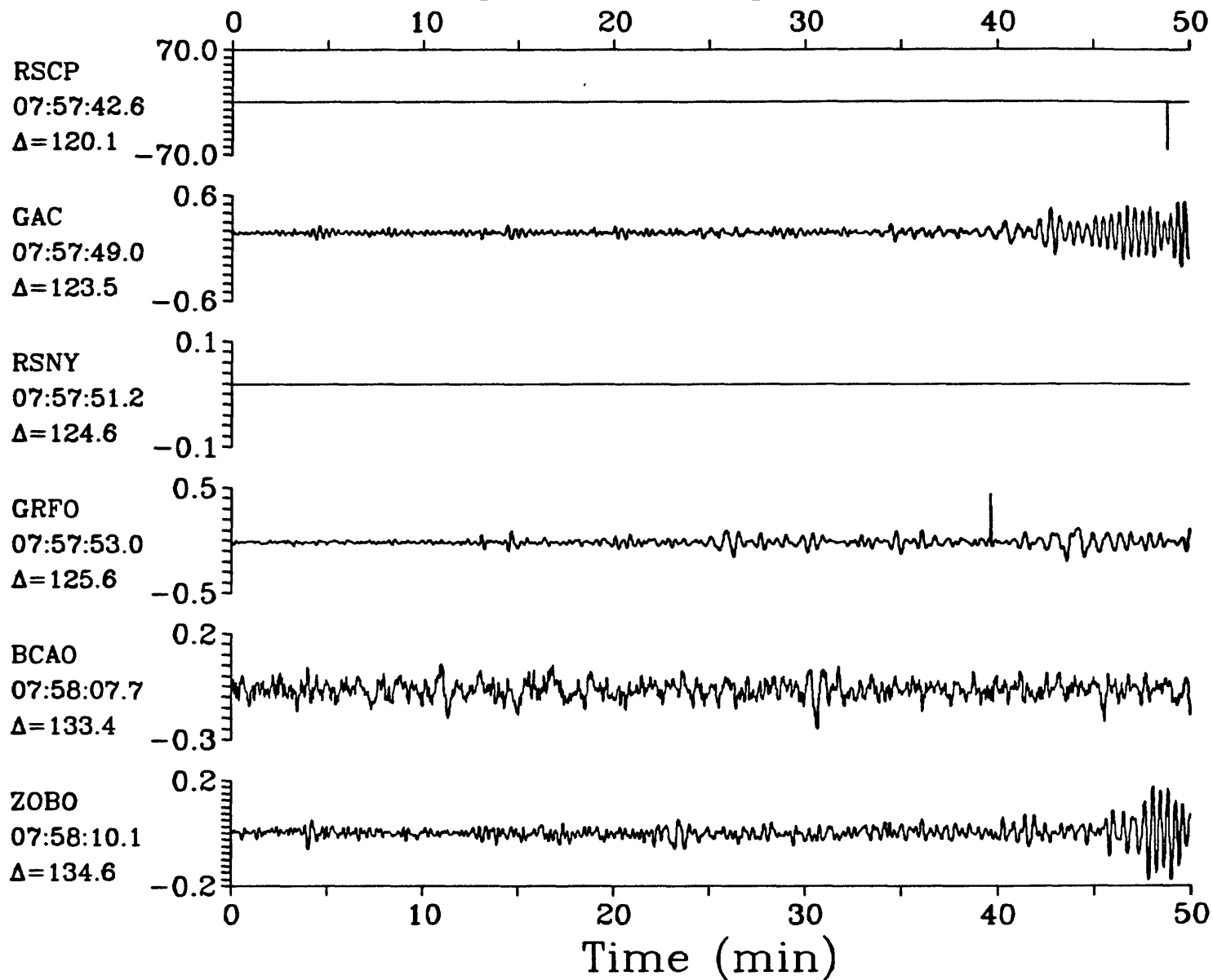
LPZ

New Britain Region $h=29.7$ $m_b=5.5$ $M_{sz}=4.9$ 

LPZ

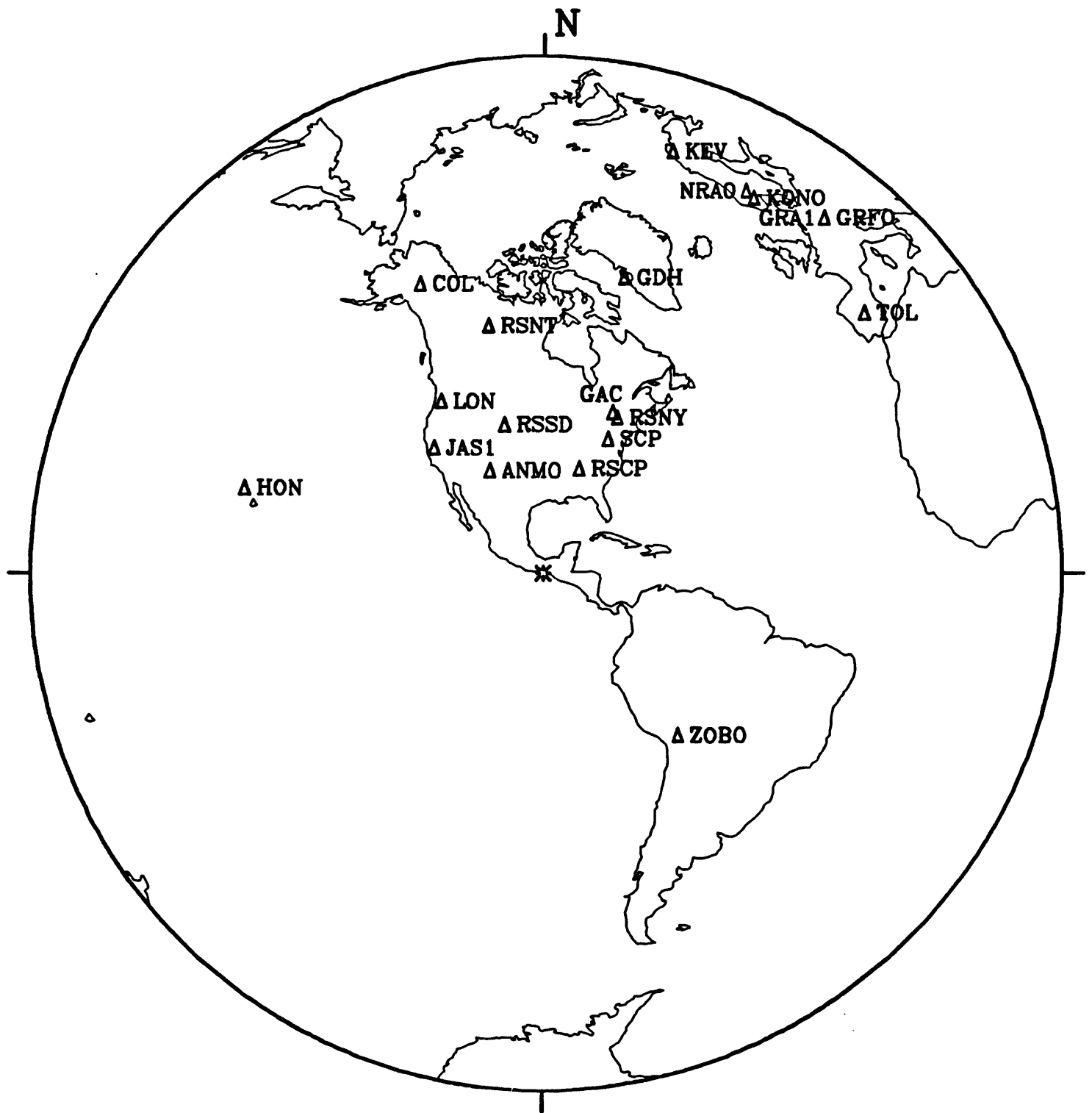
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LPZ

New Britain Region $h=29.7$ $m_b=5.5$ $M_{SZ}=4.9$ 

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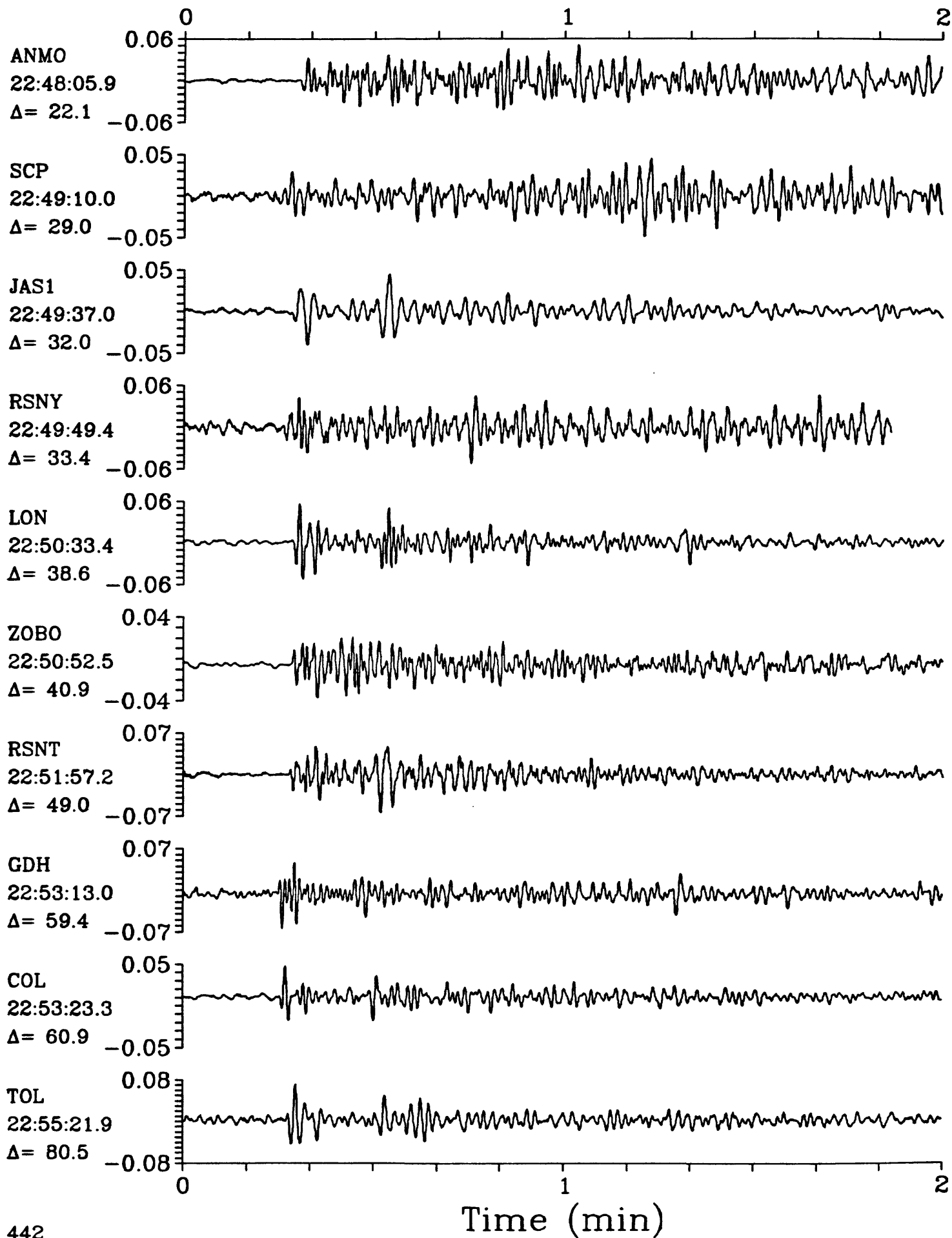
Near Coast of Oaxaca, Mexico



SPZ

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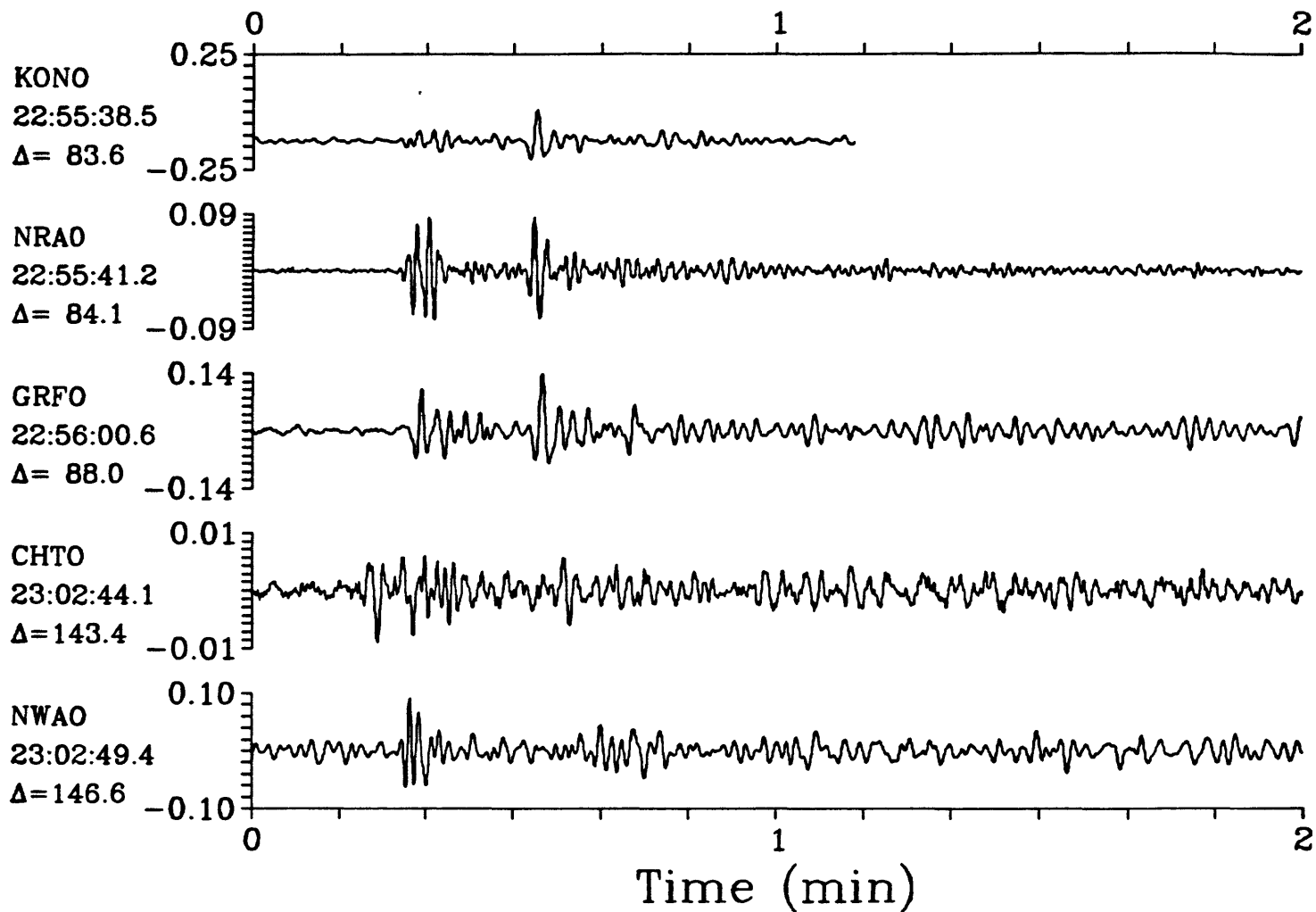
SPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

SPZ

07 April 1986 22:43:31.22

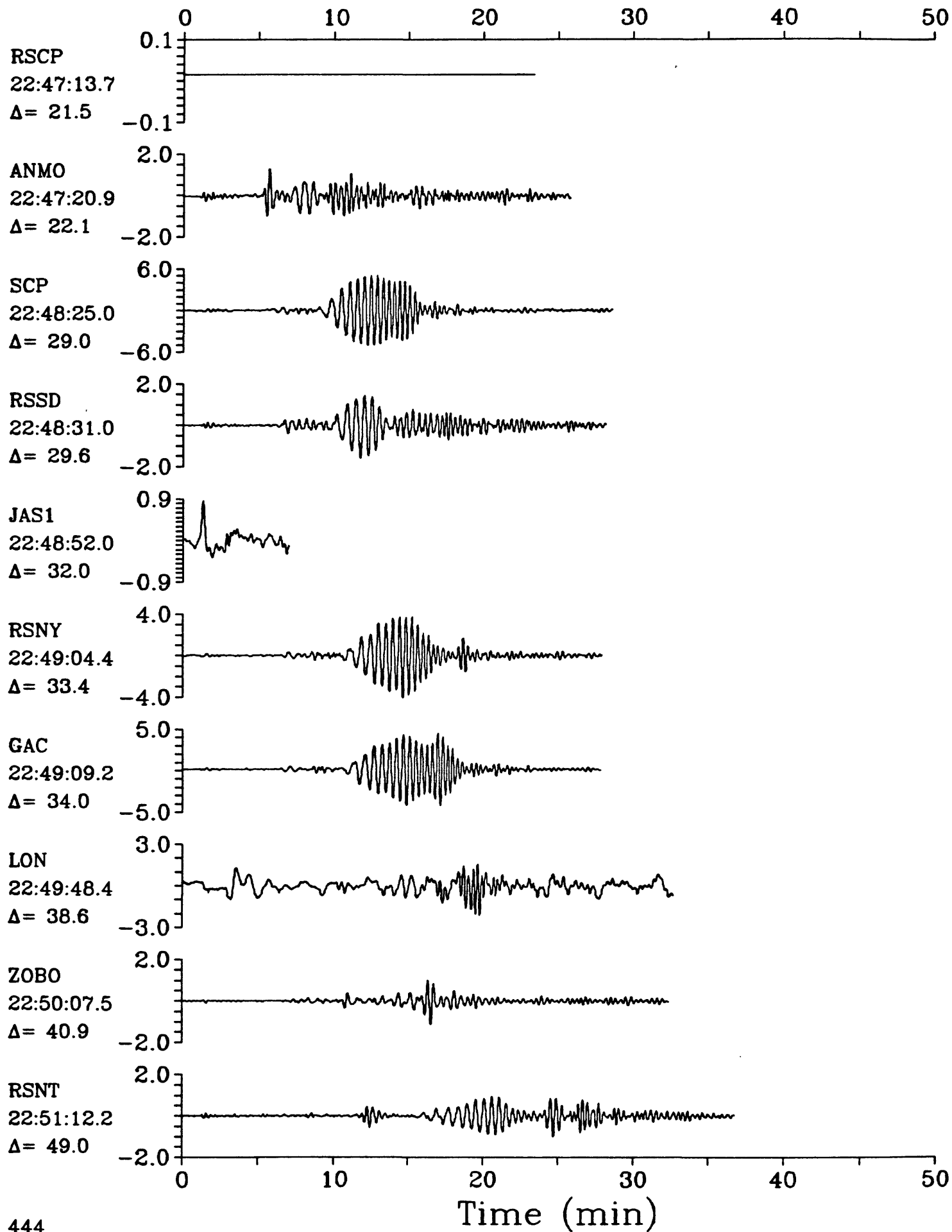
SPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

LPZ

07 April 1986 22:43:31.22

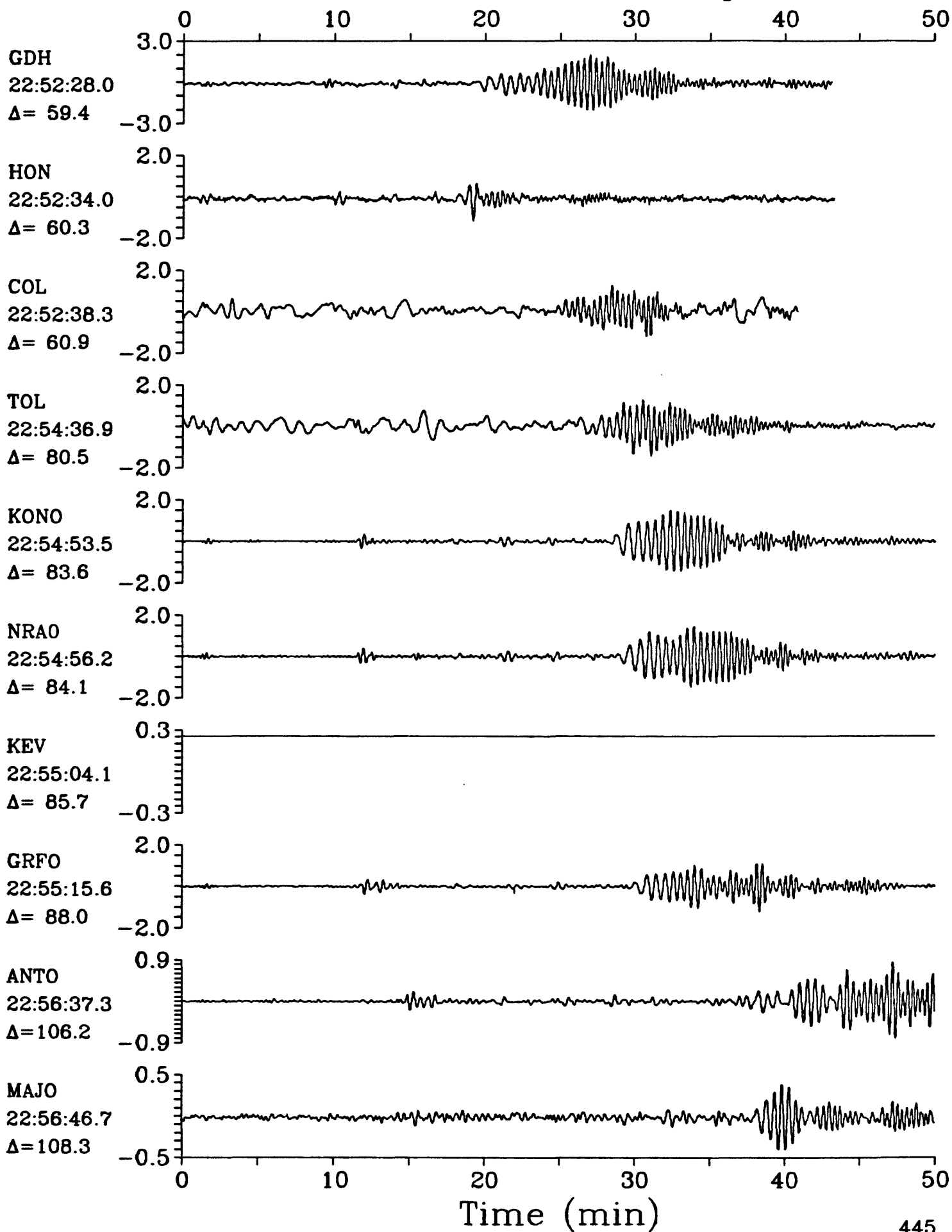
LPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

LPZ

07 April 1986 22:43:31.22

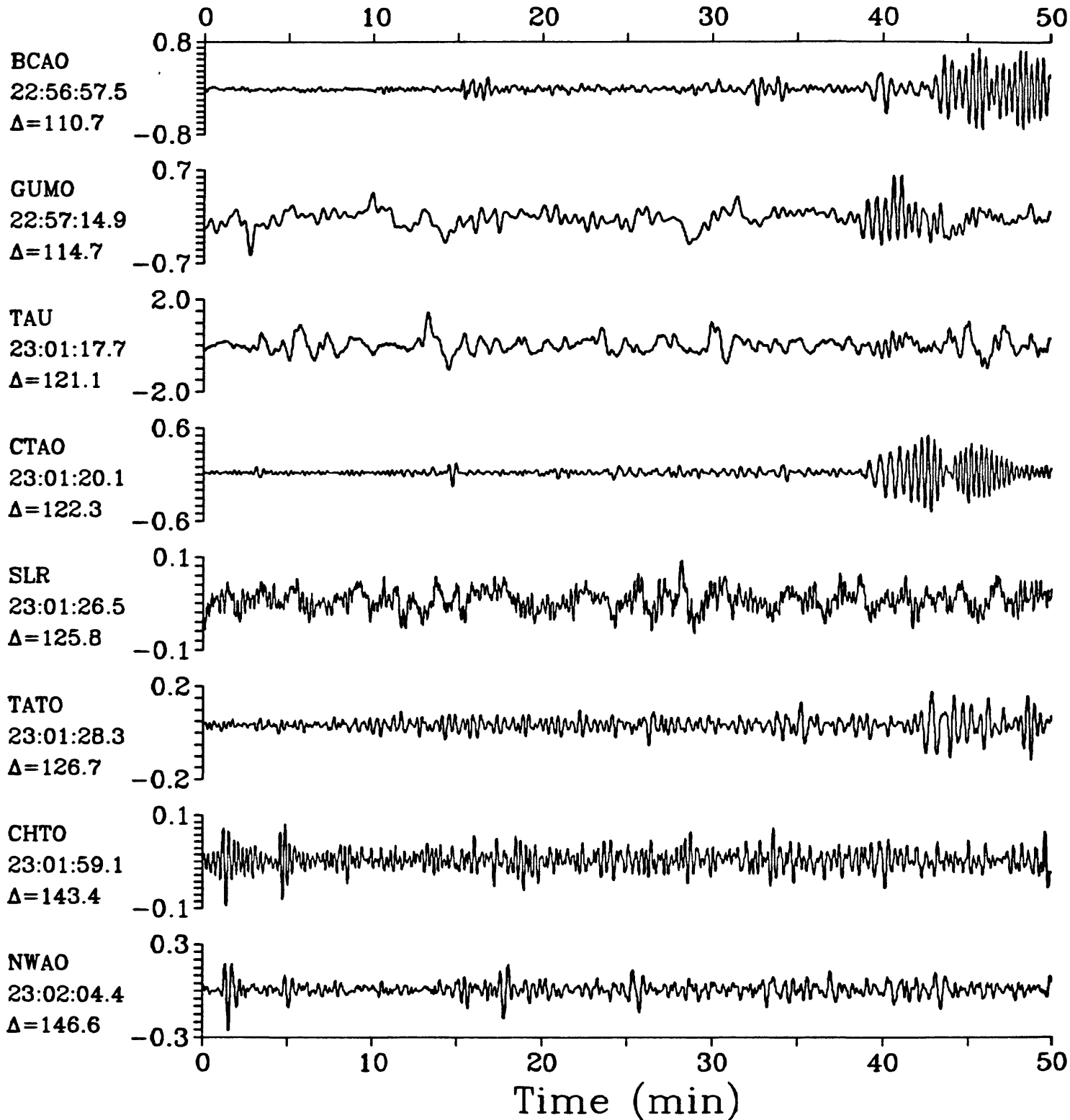
LPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

LPZ

07 April 1986 22:43:31.22

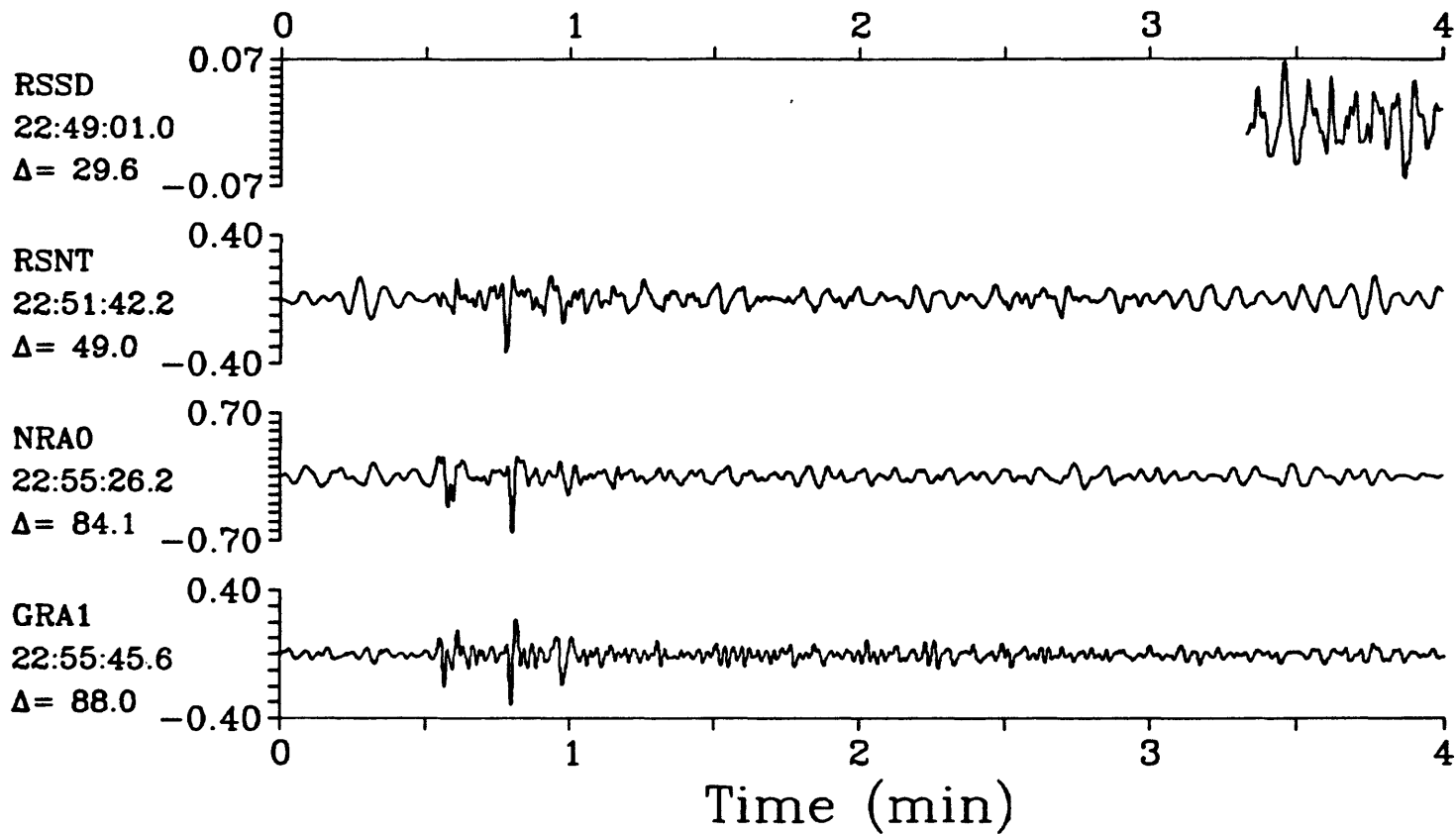
LPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

IPZ

07 April 1986 22:43:31.22

IPZ

Near Coast of Oaxaca, Mexico $h=61.4$ $m_b=5.8$ 

08 April 1986 18:02:44.98

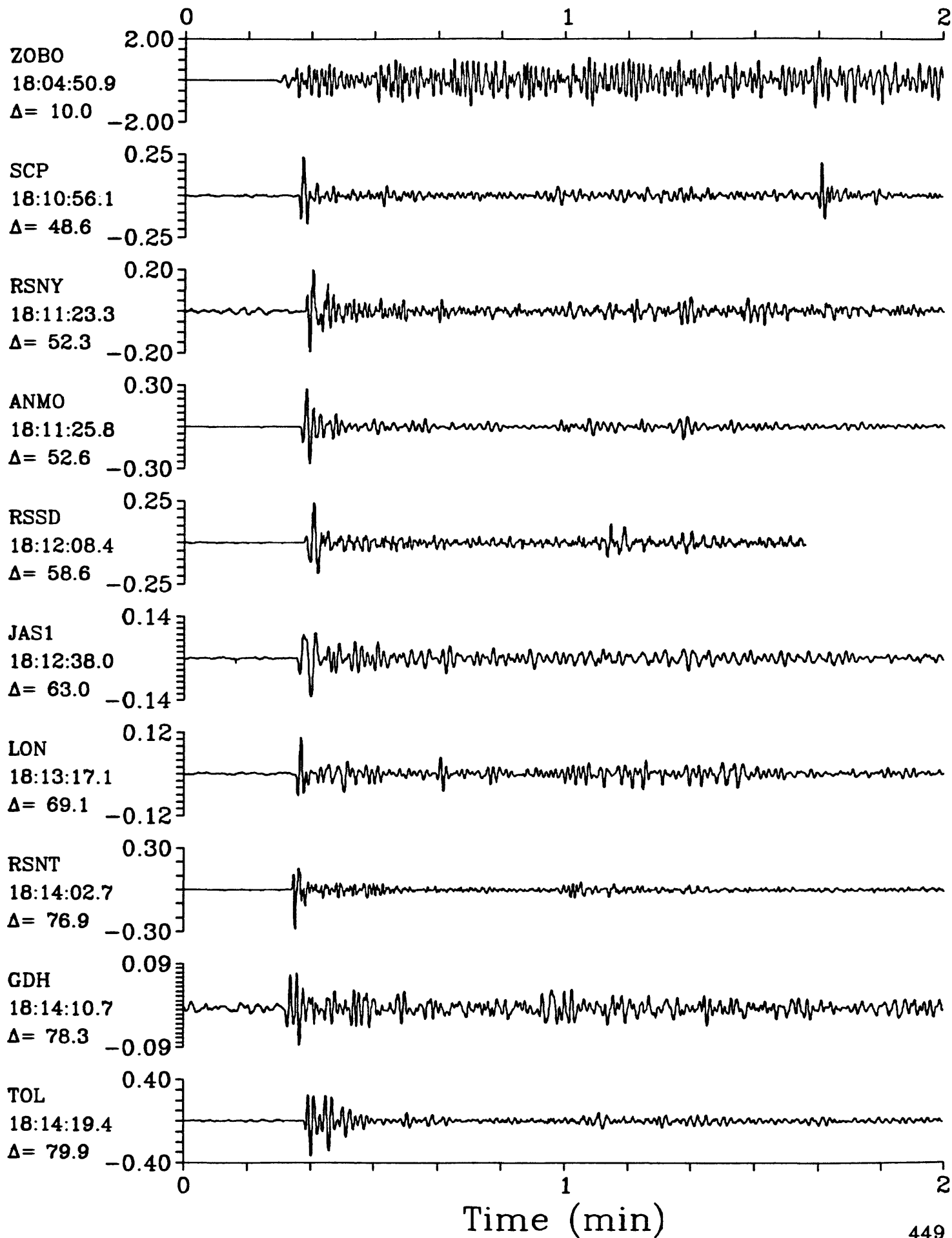
Peru–Brazil Border Region



SPZ

08 April 1986 18:02:44.98

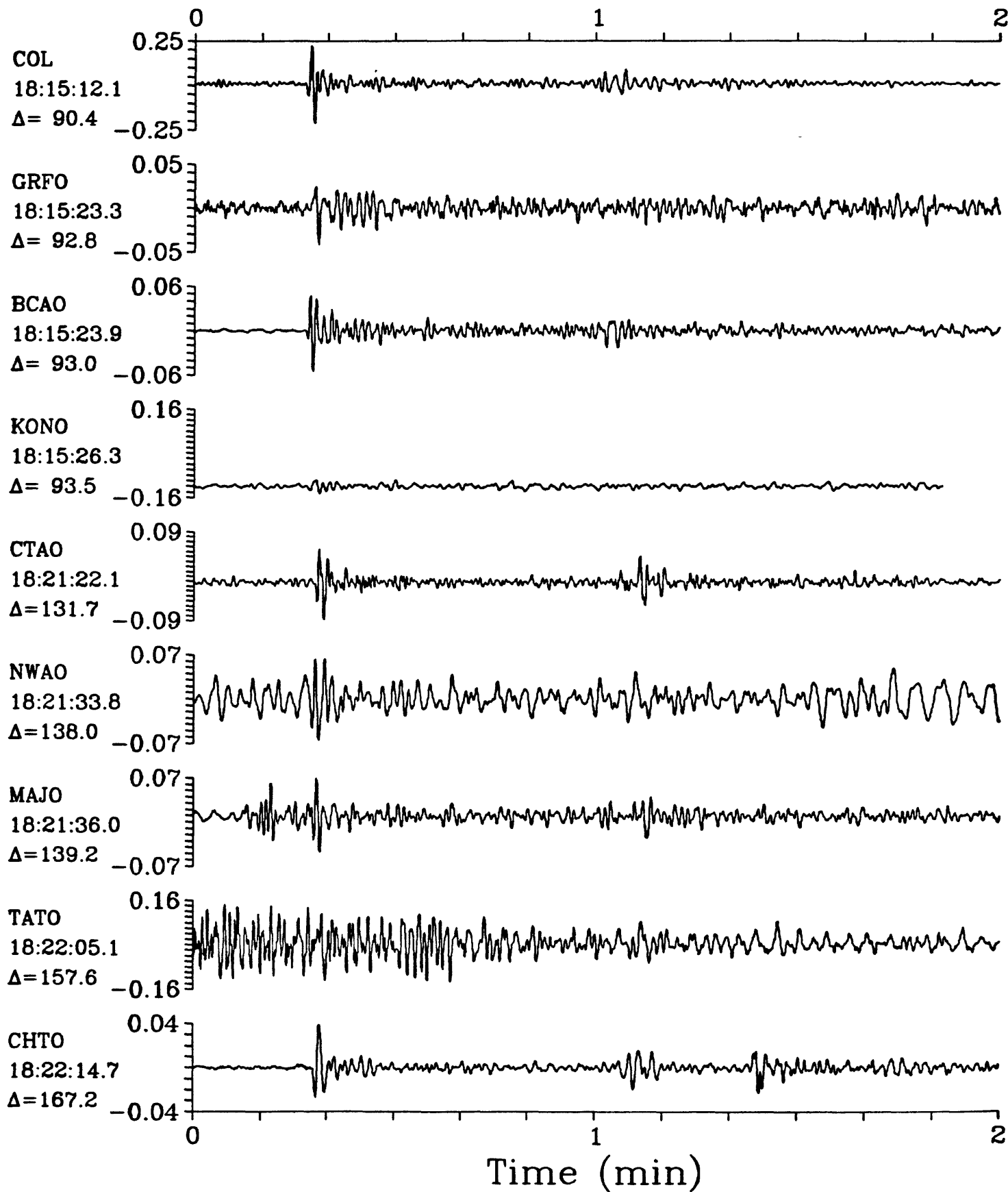
SPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$ 

SPZ

08 April 1986 18:02:44.98

SPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$ 

LPZ

08 April 1986 18:02:44.98

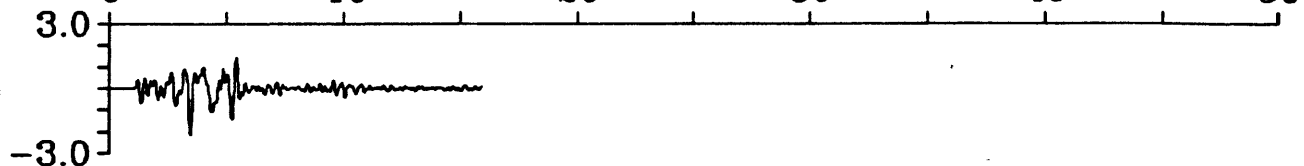
LPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$

0 10 20 30 40 50

ZOBO

18:04:05.9

 $\Delta = 10.0$ 

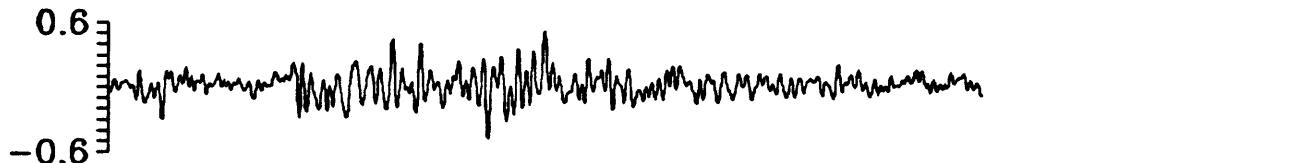
RSCP

18:09:40.4

 $\Delta = 44.7$ 

SCP

18:10:11.1

 $\Delta = 48.6$ 

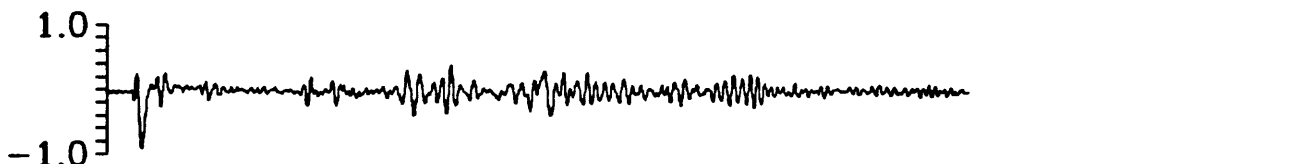
RSNY

18:10:38.3

 $\Delta = 52.3$ 

ANMO

18:10:40.8

 $\Delta = 52.6$ 

GAC

18:10:46.9

 $\Delta = 53.4$ 

RSSD

18:11:23.4

 $\Delta = 58.6$ 

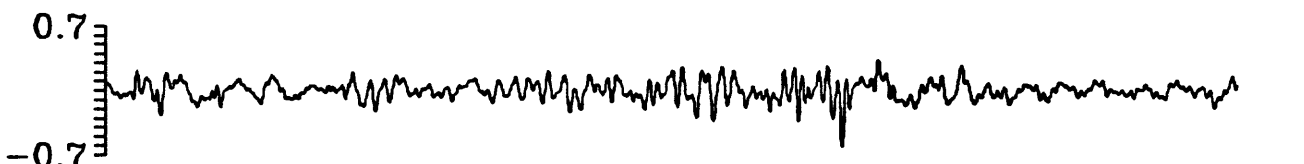
JAS1

18:11:53.0

 $\Delta = 63.0$ 

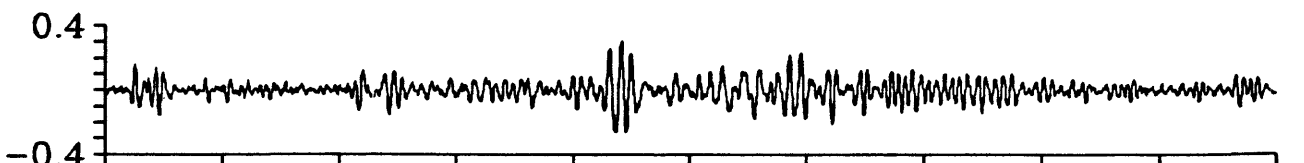
LON

18:12:32.1

 $\Delta = 69.1$ 

RSNT

18:13:17.7

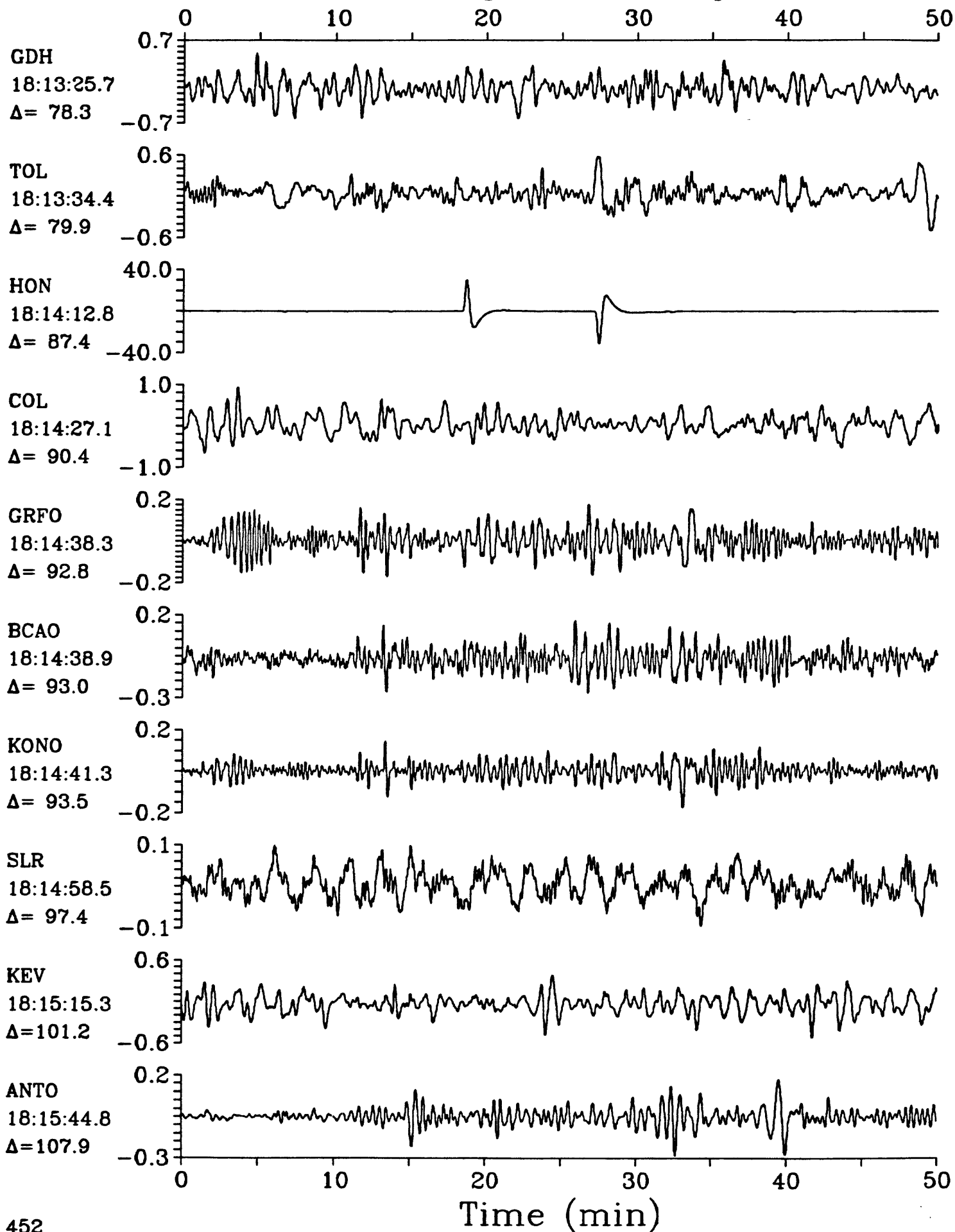
 $\Delta = 76.9$ 

Time (min)

LPZ

08 April 1986 18:02:44.98

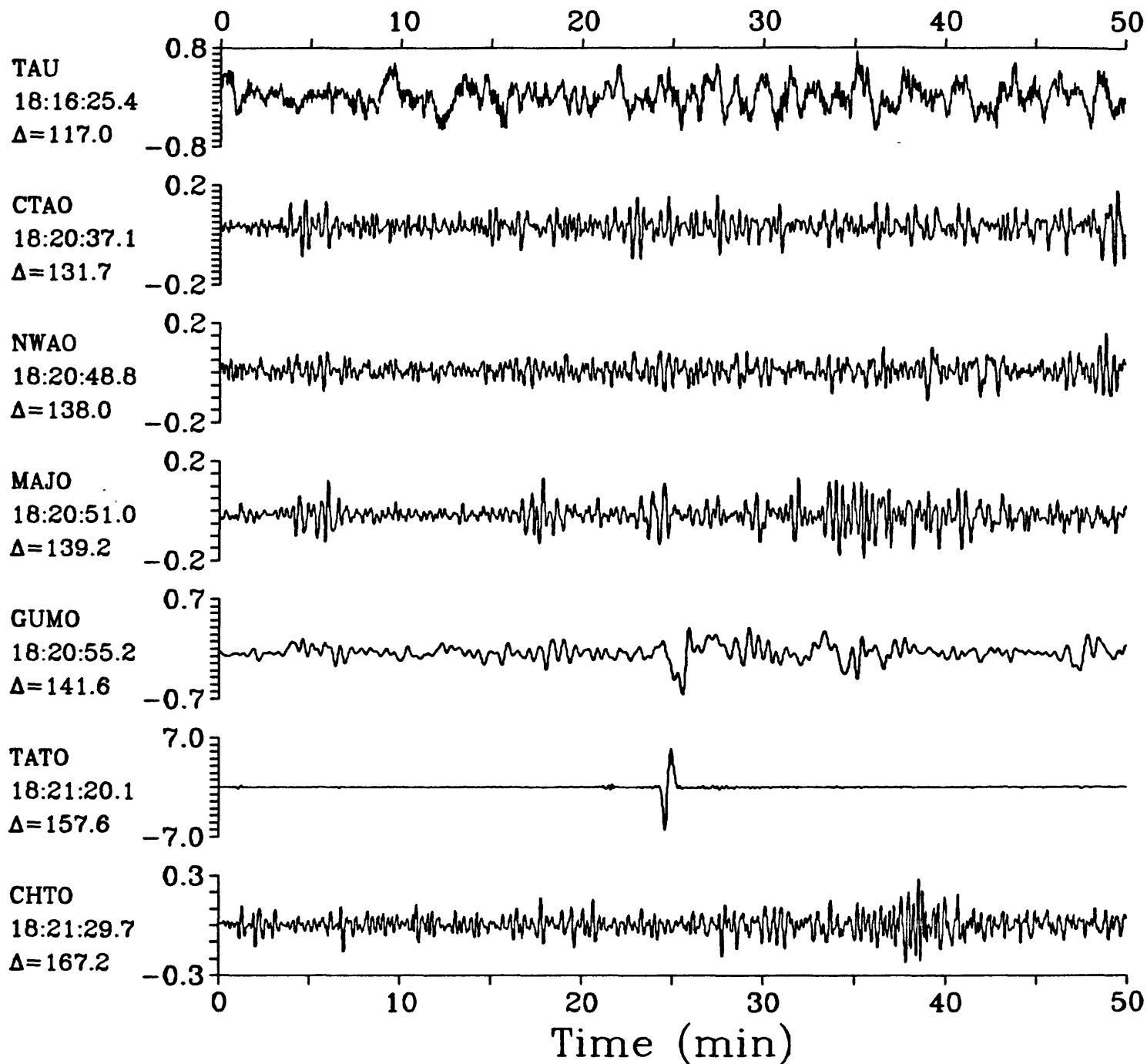
LPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$ 

LPZ

08 April 1986 18:02:44.98

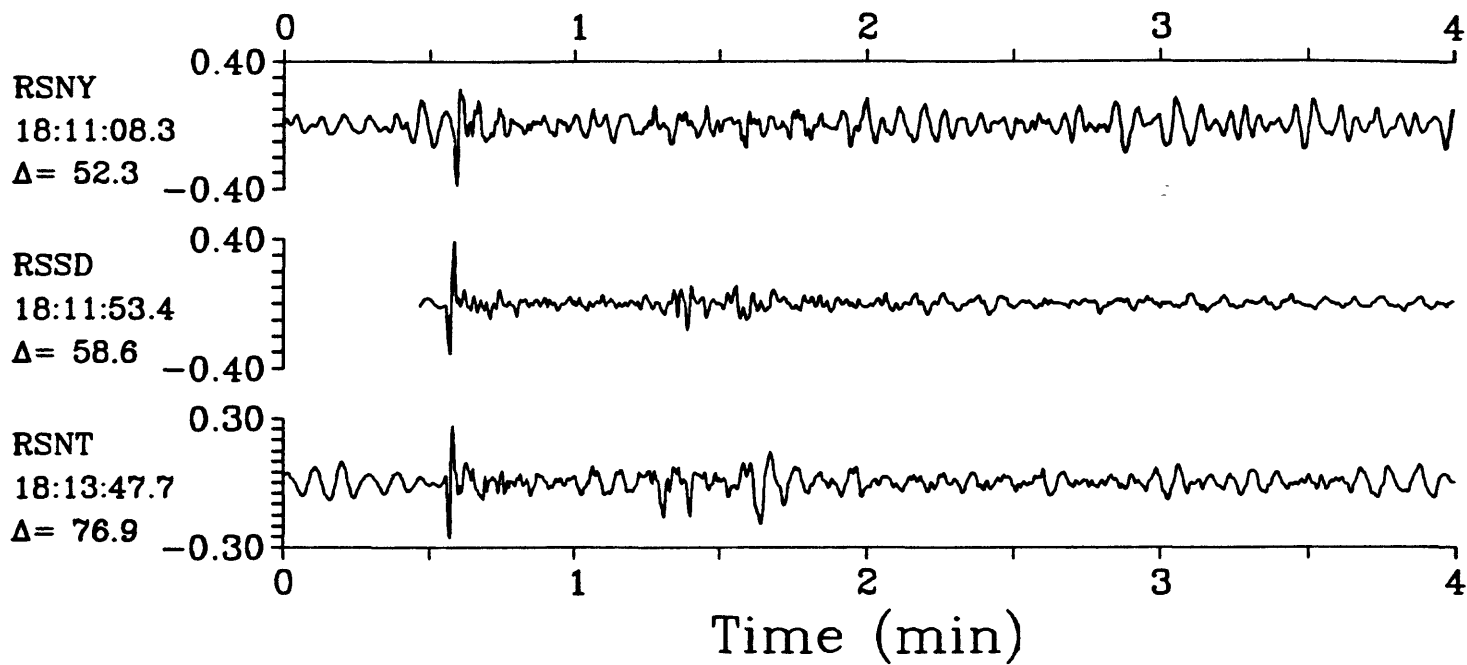
LPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$ 

IPZ

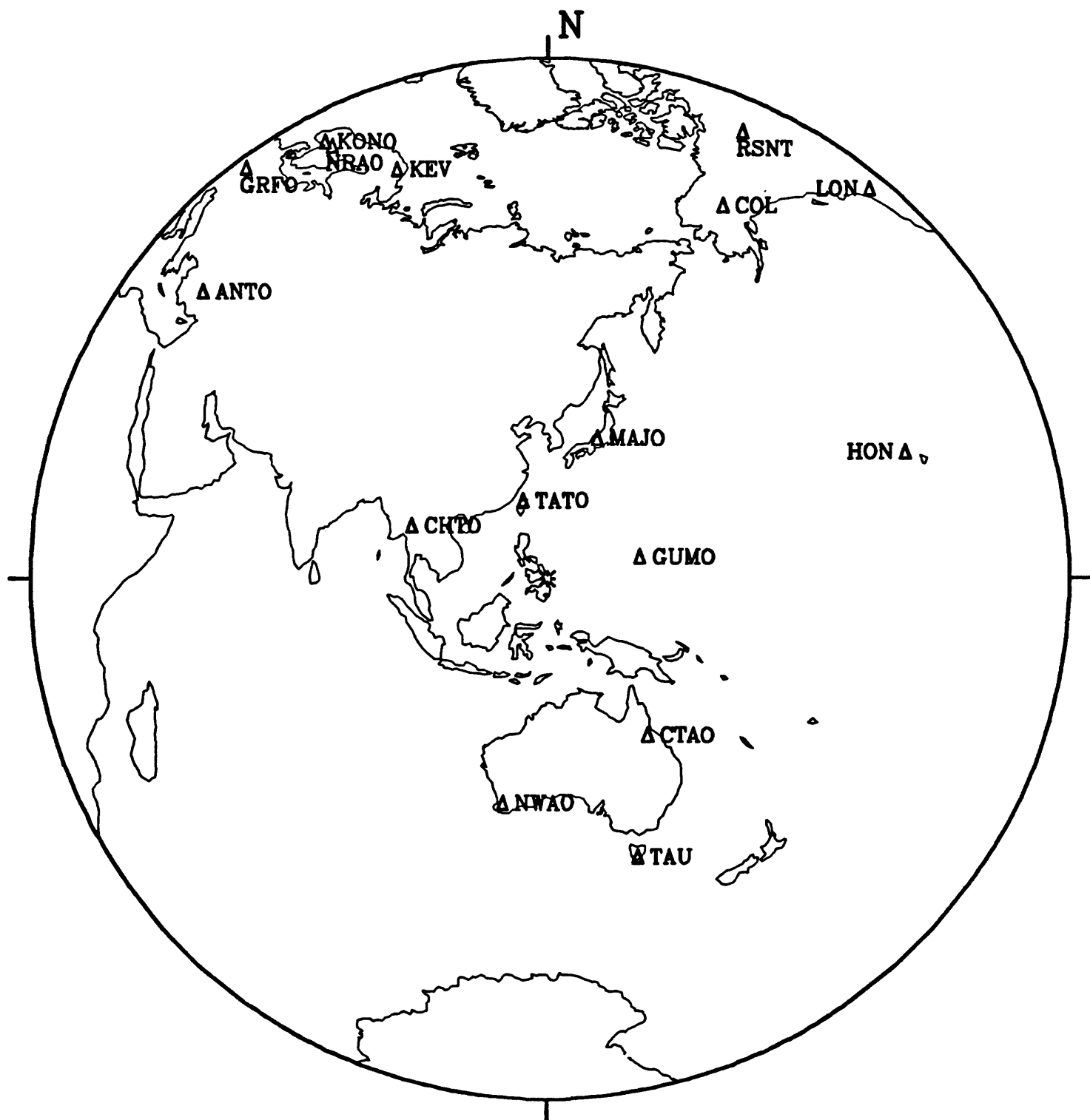
08 April 1986 18:02:44.98

IPZ

Peru-Brazil Border Region $h=176.6$ $m_b=5.8$ 

09 April 1986 21:56:19.67

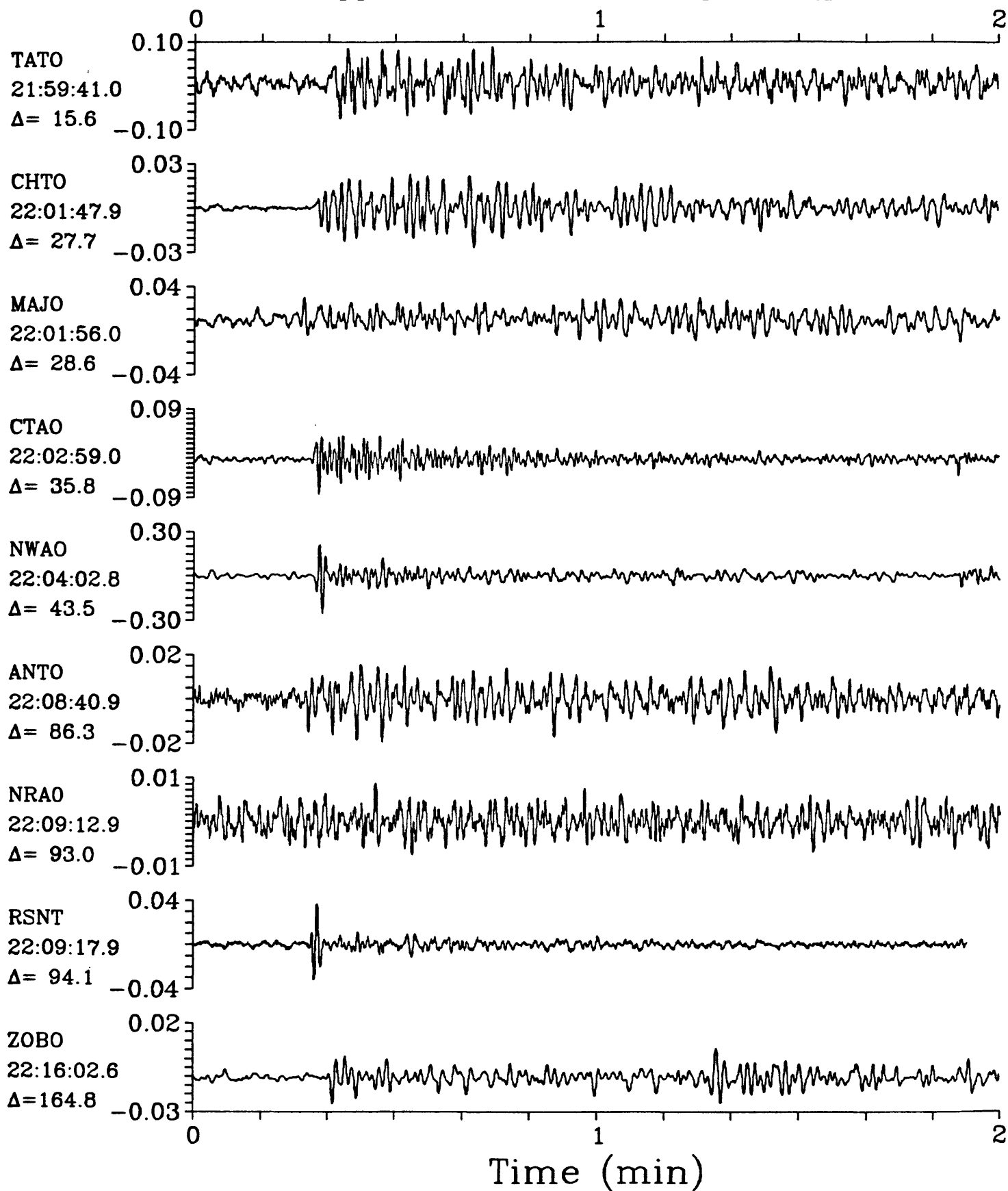
Mindanao, Philippine Islands



SPZ

09 April 1986 21:56:19.67

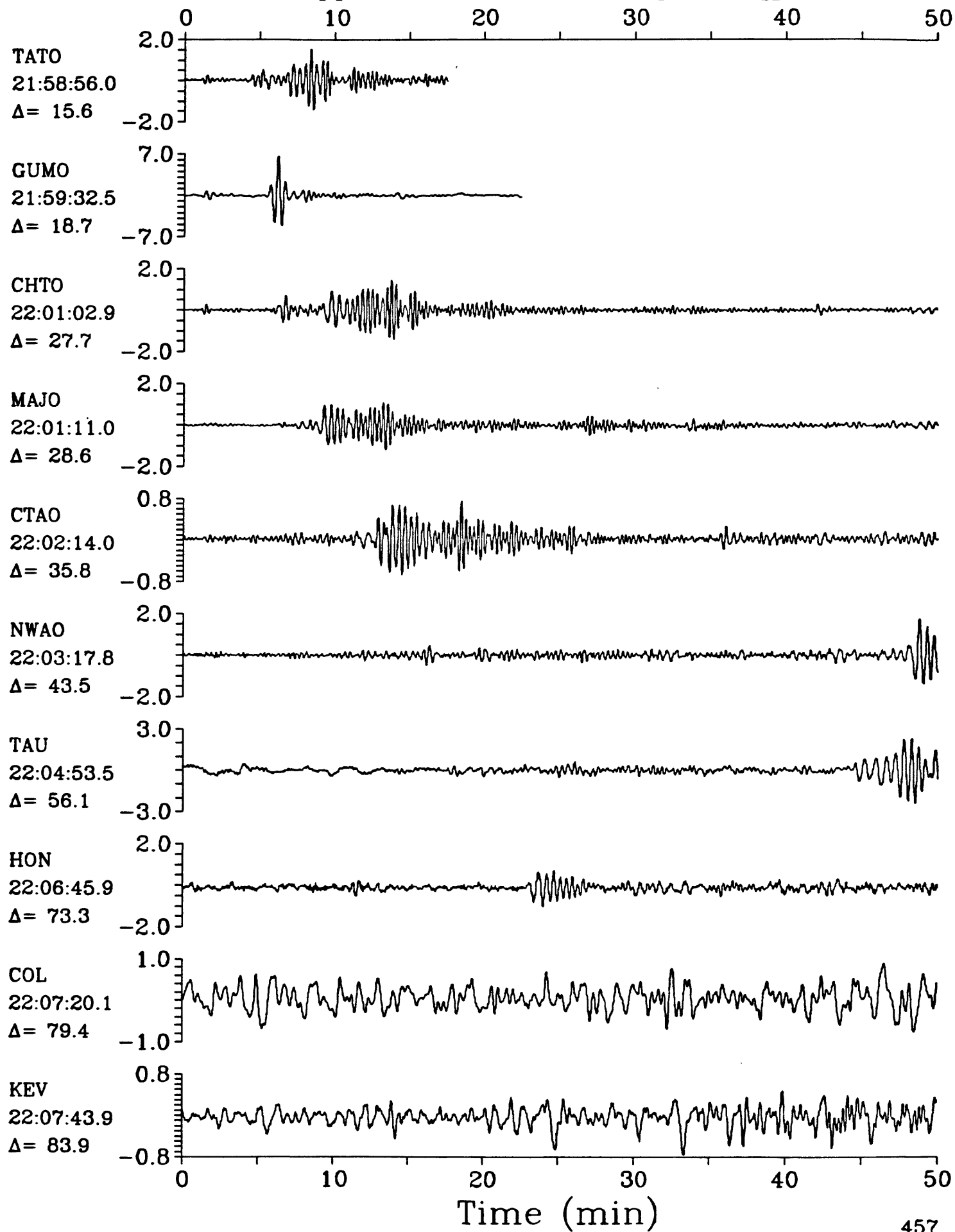
SPZ

Mindanao, Philippine Islands $h=55.7$ $m_b=5.3$ $M_{SZ}=5.8$ 

LPZ

09 April 1986 21:56:19.67

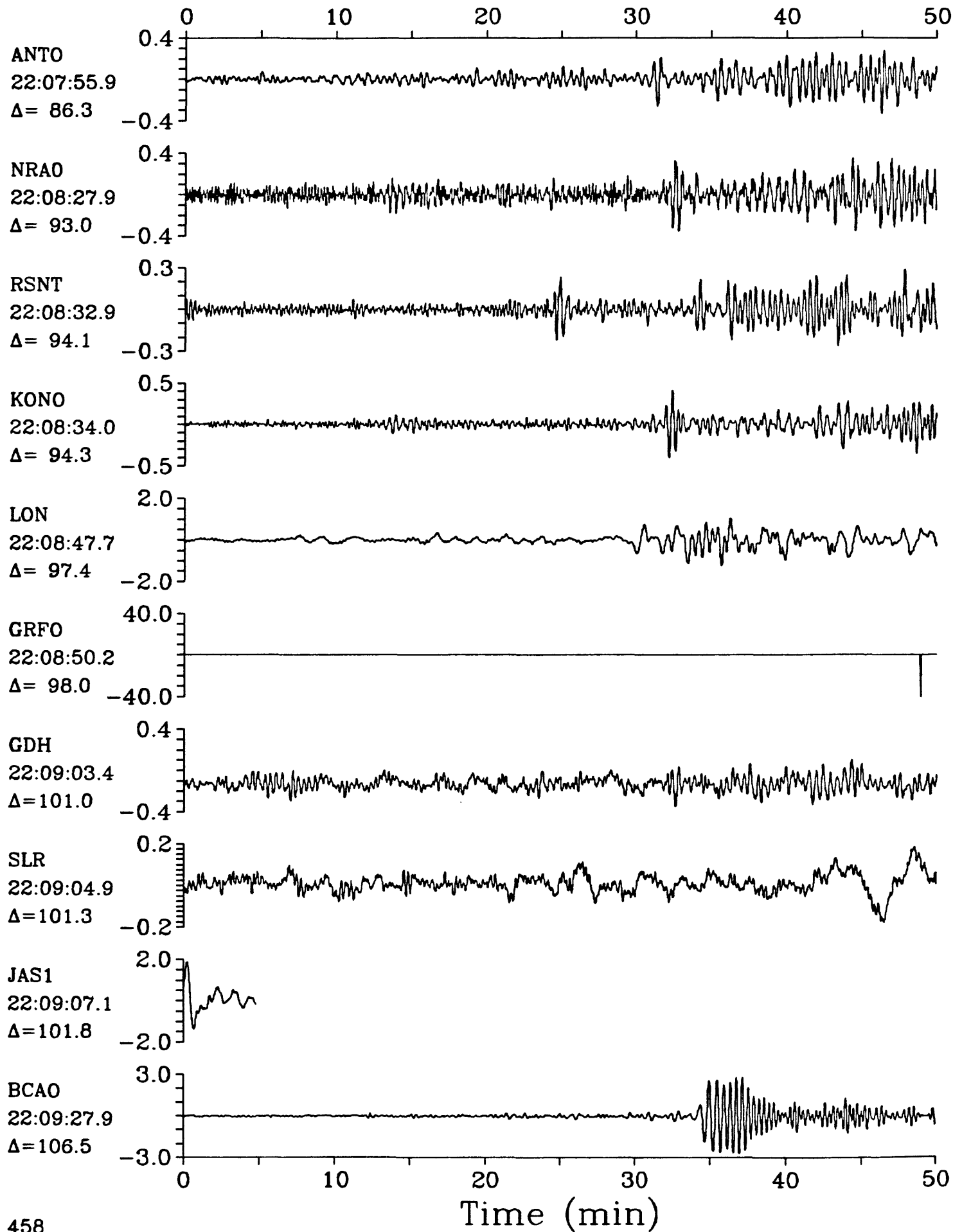
LPZ

Mindanao, Philippine Islands $h=55.7$ $m_b=5.3$ $M_{sz}=5.8$ 

LPZ

09 April 1986 21:56:19.67

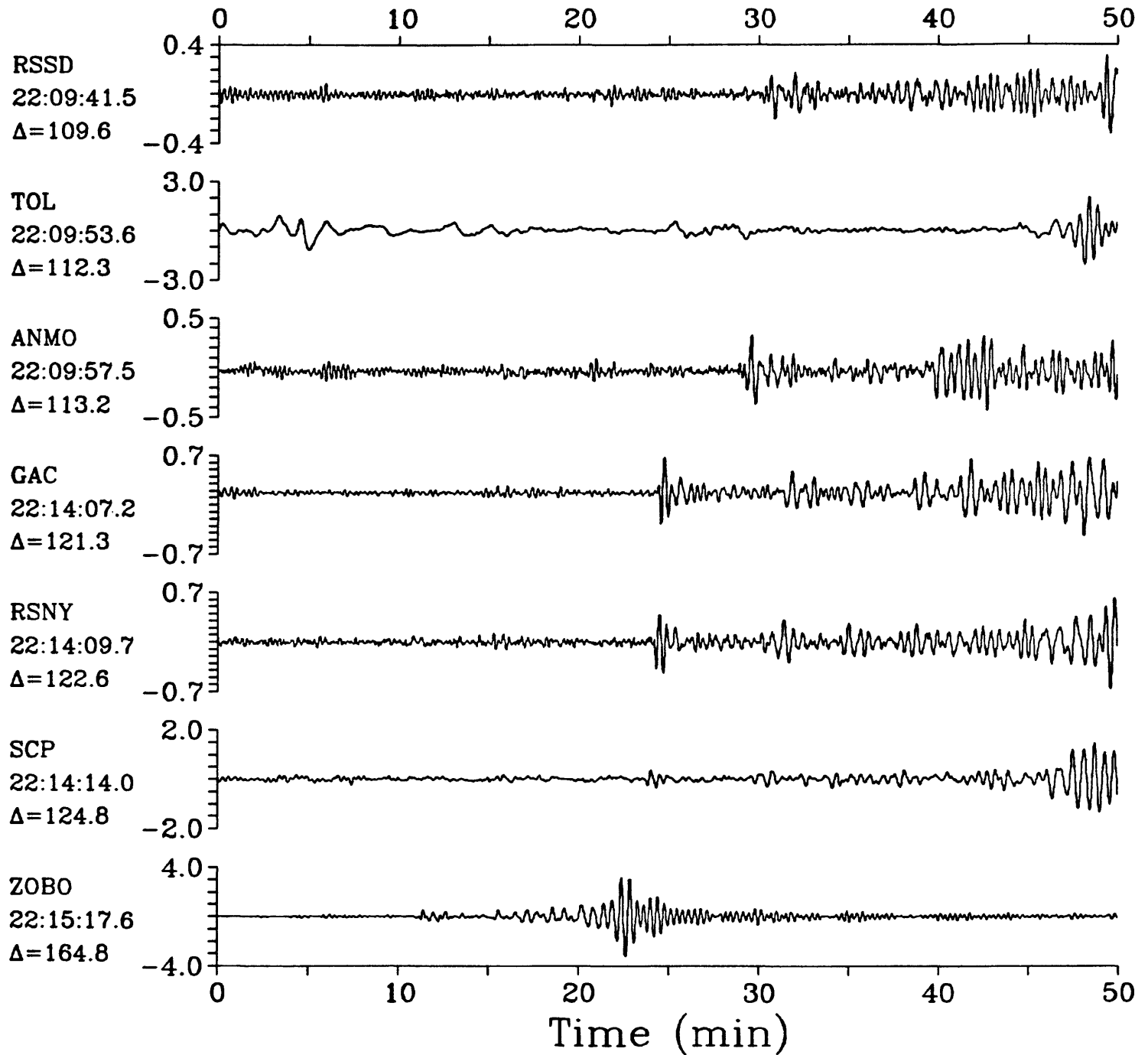
LPZ

Mindanao, Philippine Islands $h=55.7$ $m_b=5.3$ $M_{sz}=5.8$ 

LPZ

09 April 1986 21:56:19.67

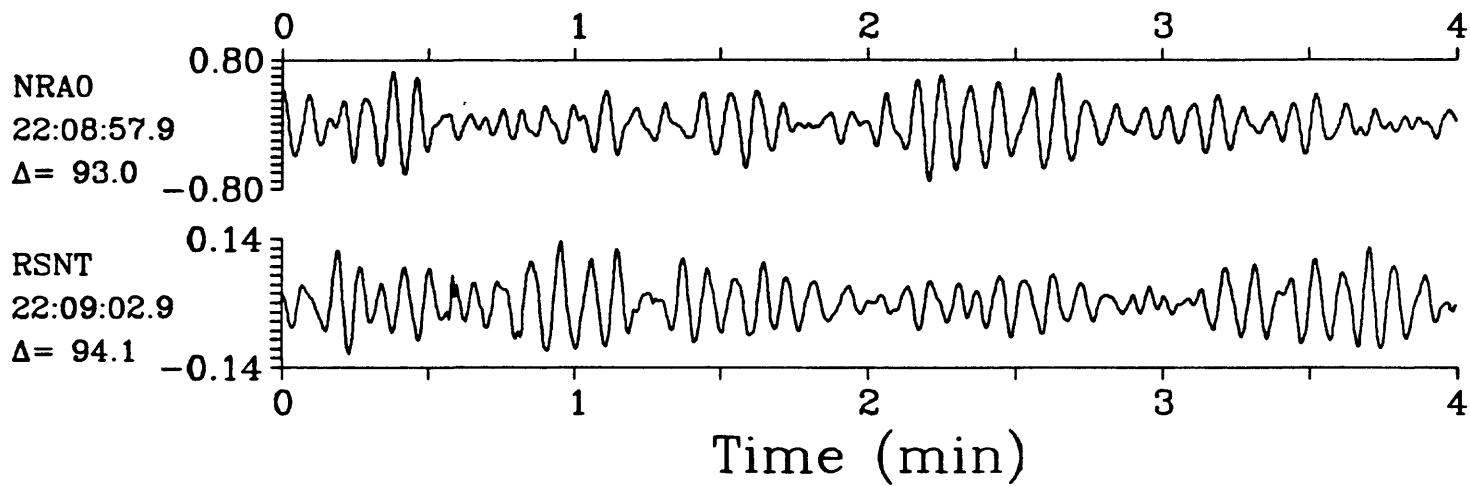
LPZ

Mindanao, Philippine Islands $h=55.7$ $m_b=5.3$ $M_{sz}=5.8$ 

IPZ

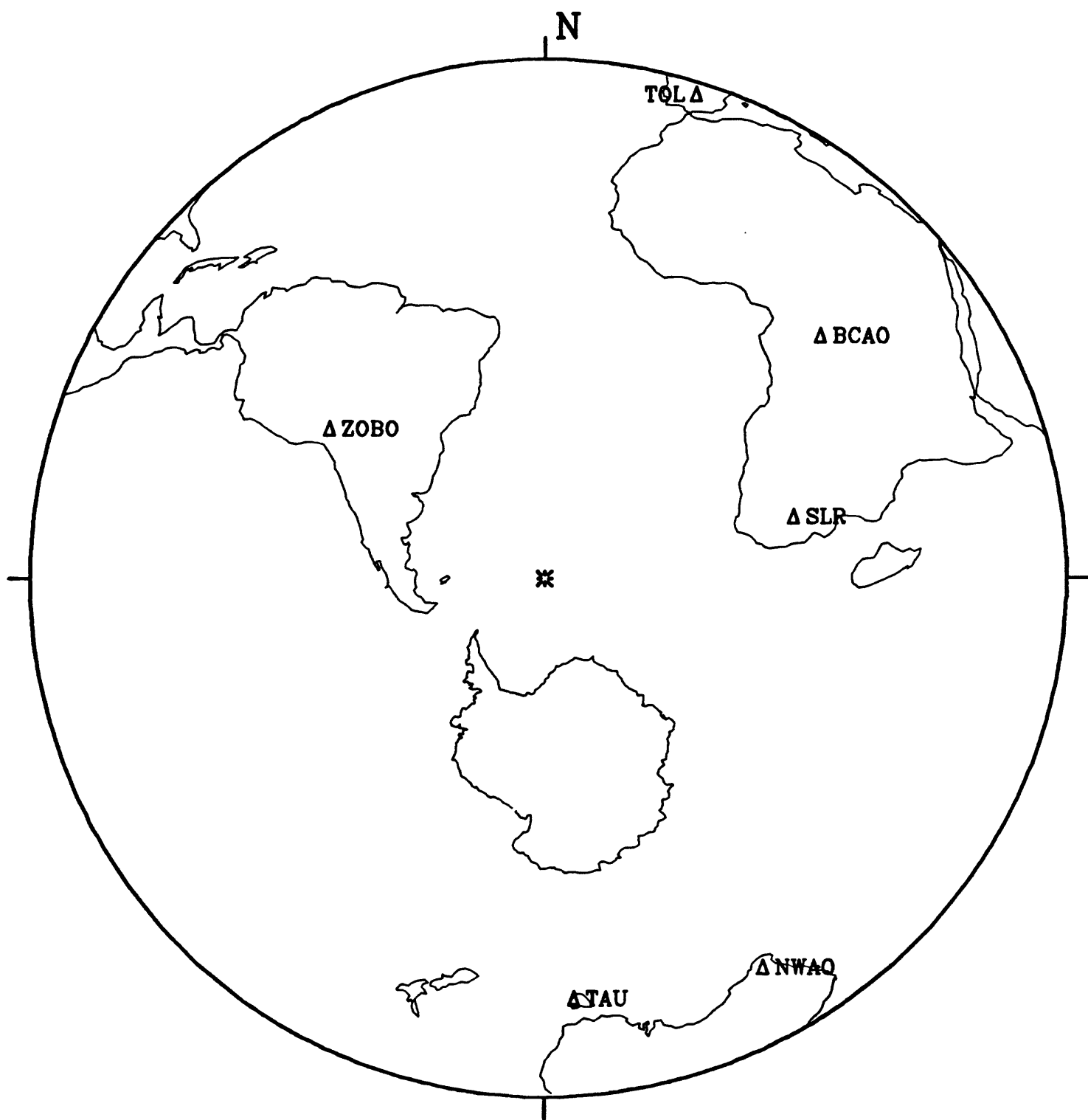
09 April 1986 21:56:19.67

IPZ

Mindanao, Philippine Islands $h=55.7$ $m_b=5.3$ $M_{sz}=5.8$ 

09 April 1986 22:10:15.52

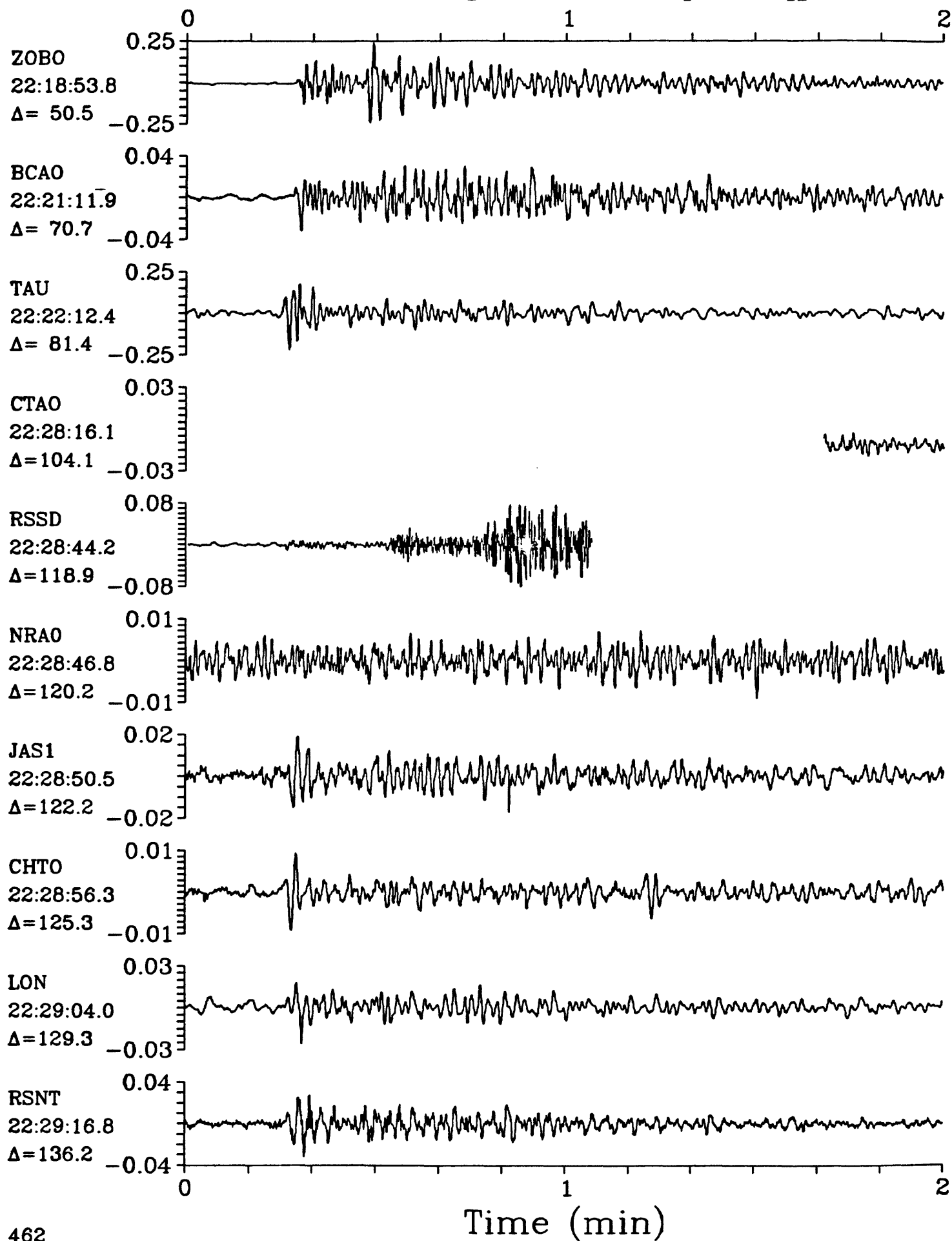
South Sandwich Islands Region



SPZ

09 April 1986 22:10:15.52

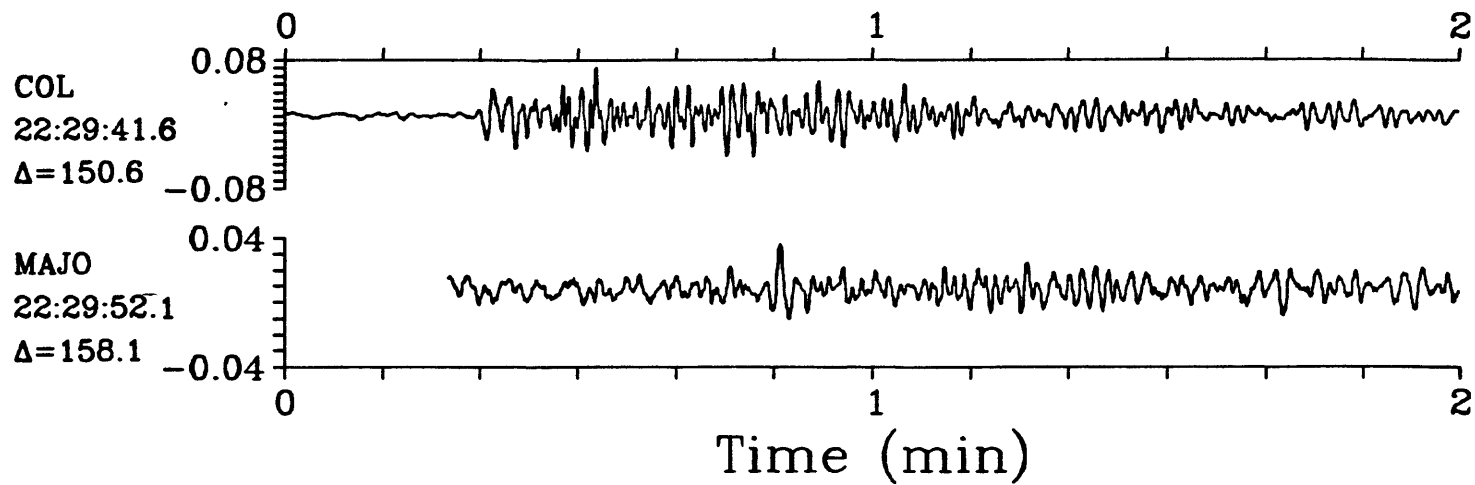
SPZ

South Sandwich Islands Region $h=50.0$ $m_b=5.5$ $M_{sz}=5.2$ 

SPZ

09 April 1986 22:10:15.52

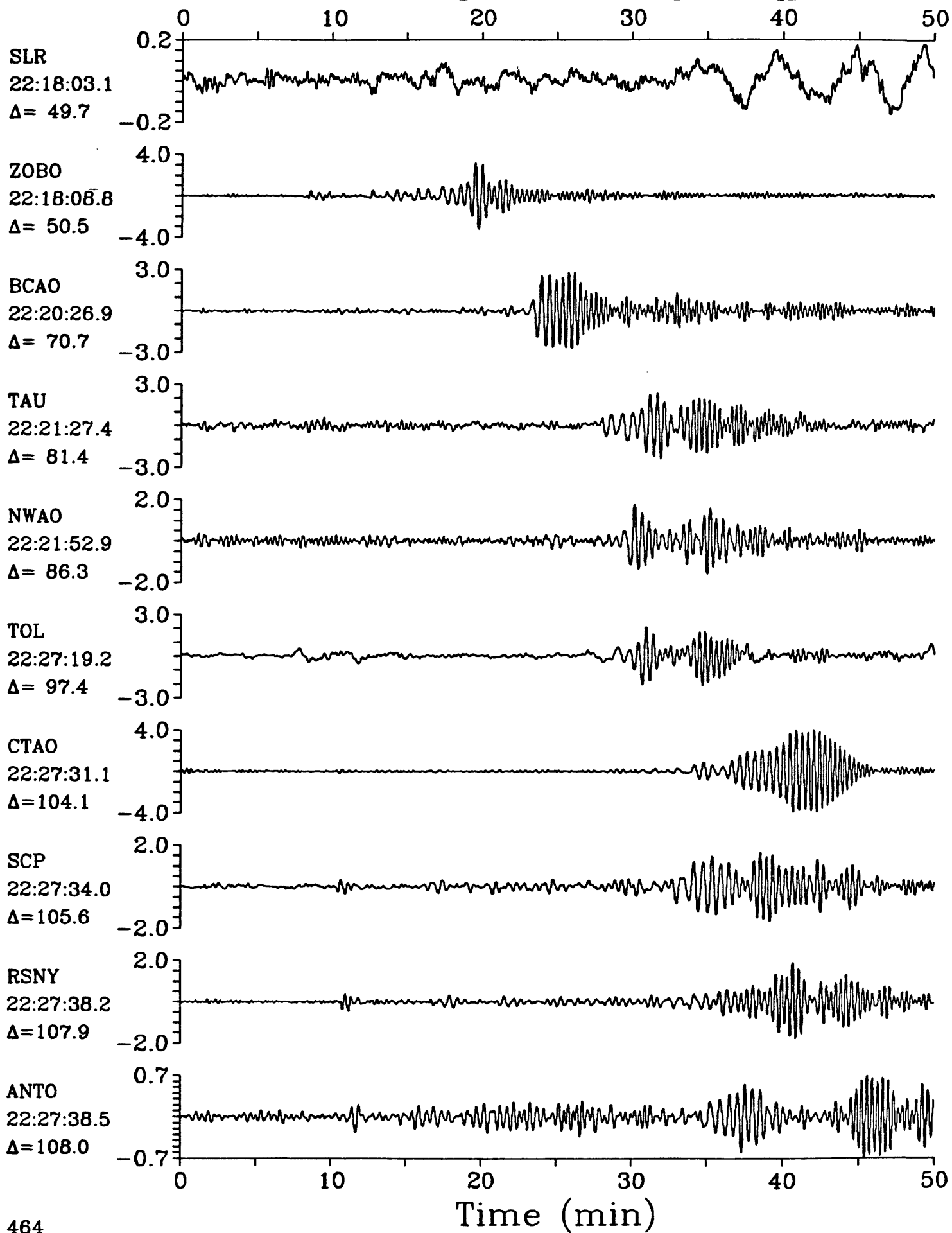
SPZ

South Sandwich Islands Region $h=50.0$ $m_b=5.5$ $M_{sz}=5.2$ 

LPZ

09 April 1986 22:10:15.52

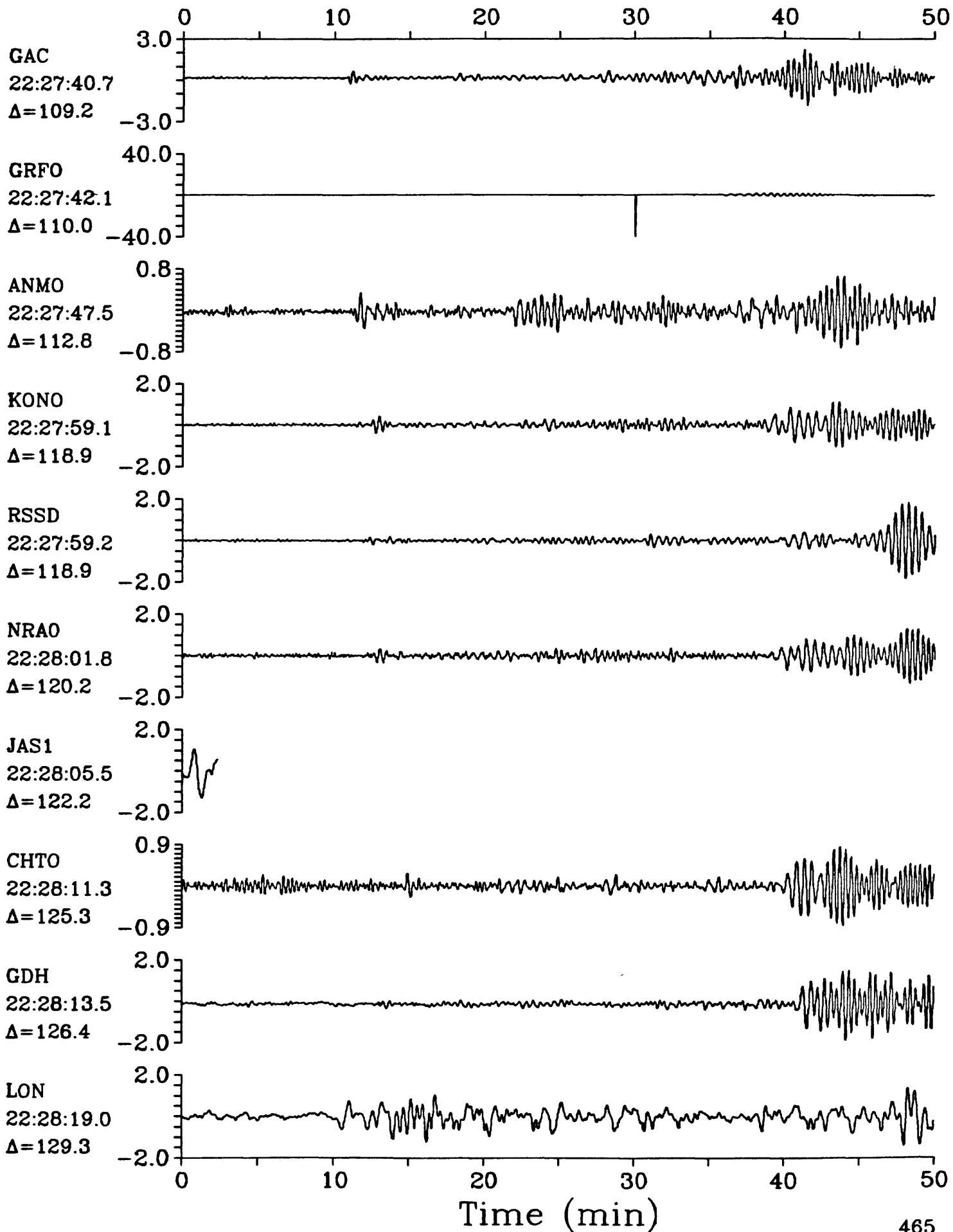
LPZ

South Sandwich Islands Region $h=50.0$ $m_b=5.5$ $M_{sz}=5.2$ 

LPZ

09 April 1986 22:10:15.52

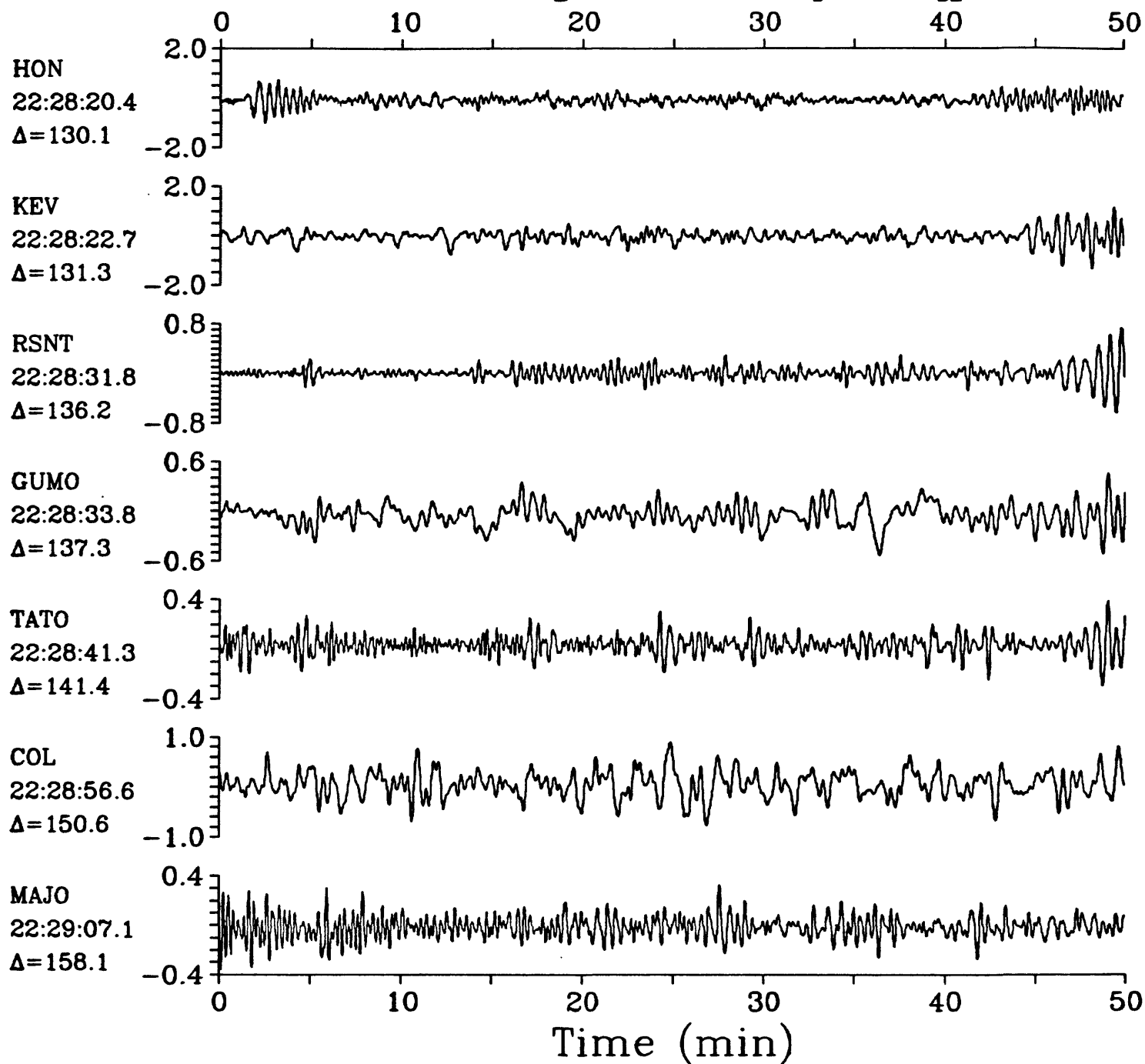
LPZ

South Sandwich Islands Region $h=50.0$ $m_b=5.5$ $M_{sz}=5.2$ 

LPZ

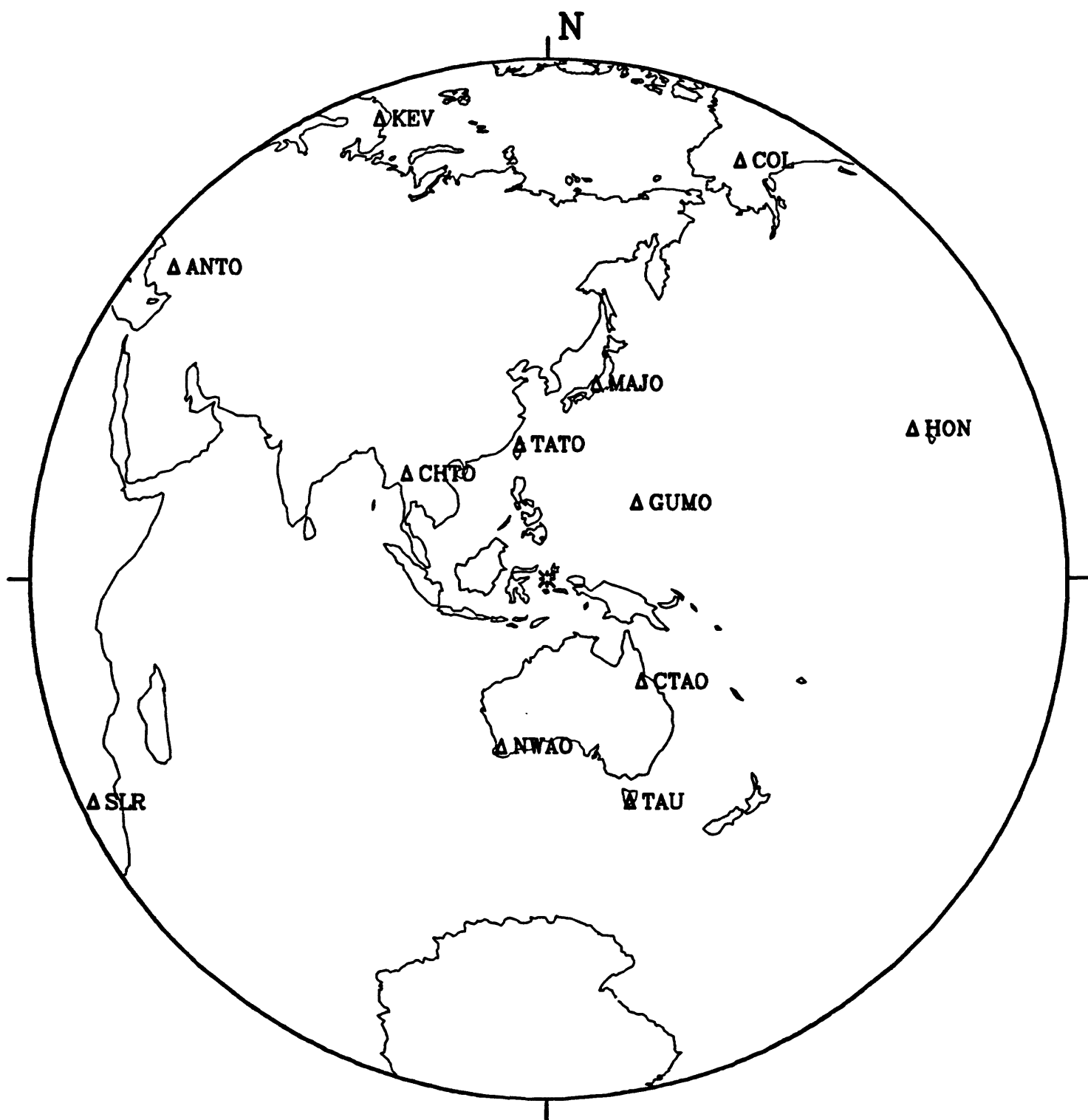
09 April 1986 22:10:15.52

LPZ

South Sandwich Islands Region $h=50.0$ $m_b=5.5$ $M_{sz}=5.2$ 

10 April 1986 02:21:13.32

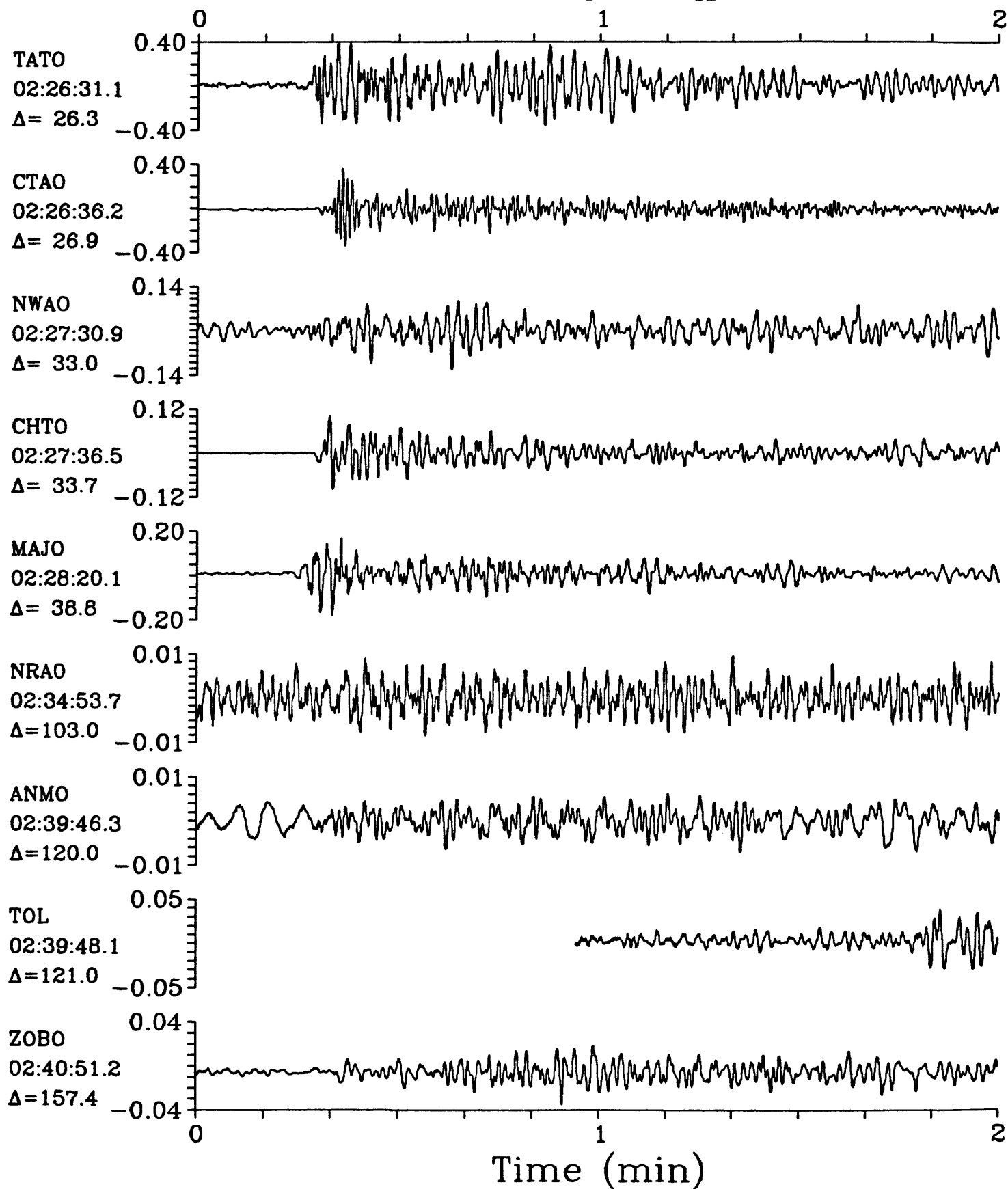
Molucca Sea



SPZ

10 April 1986 02:21:13.32
Molucca Sea $h=33.0$ $m_b=5.8$ $M_{sz}=6.0$

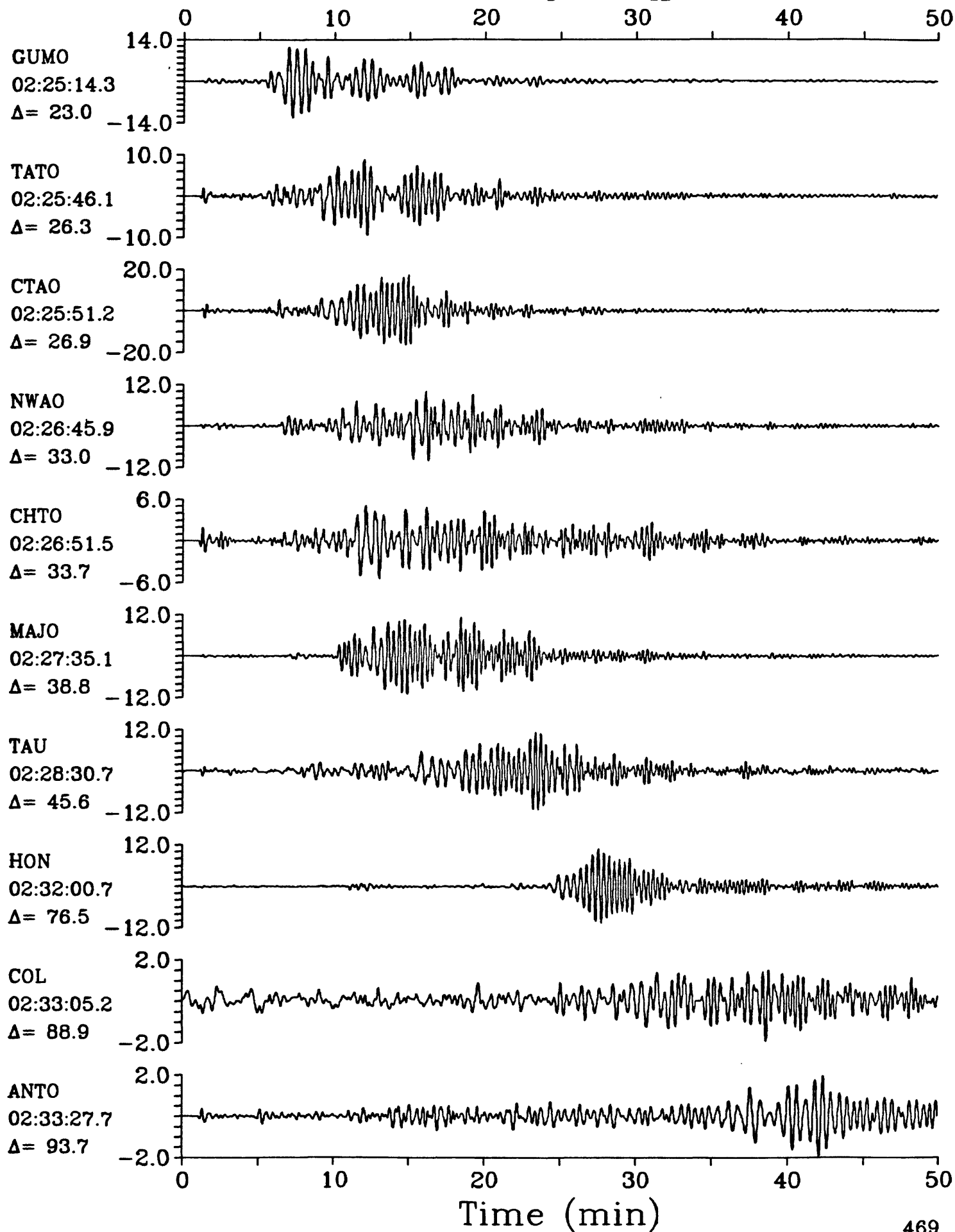
SPZ



LPZ

10 April 1986 02:21:13.32
Molucca Sea $h=33.0$ $m_b=5.8$ $M_{SZ}=6.0$

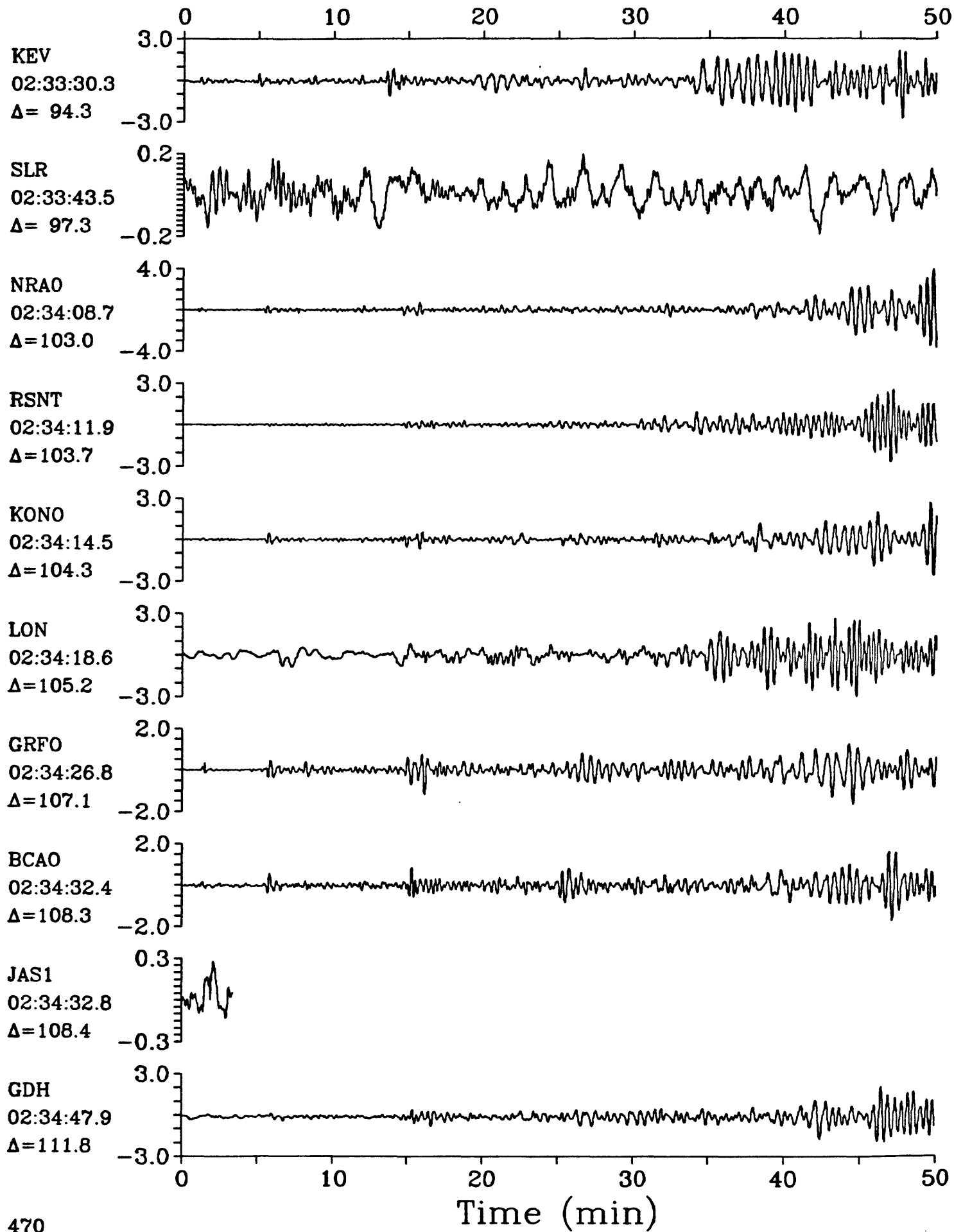
LPZ



LPZ

10 April 1986 02:21:13.32

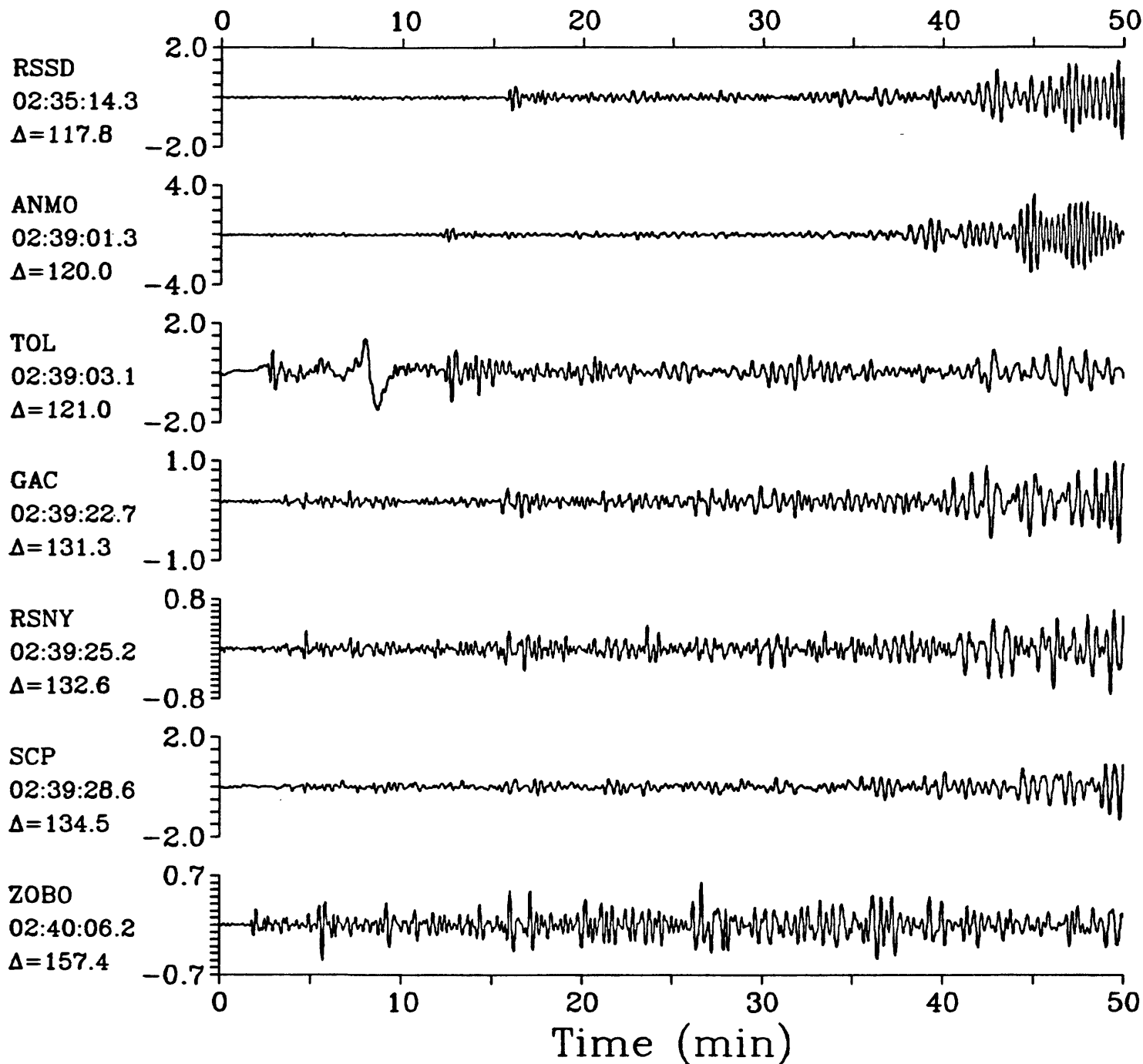
LPZ

Molucca Sea $h=33.0$ $m_b=5.8$ $M_{SZ}=6.0$ 

LPZ

10 April 1986 02:21:13.32
Molucca Sea $h=33.0$ $m_b=5.8$ $M_{sz}=6.0$

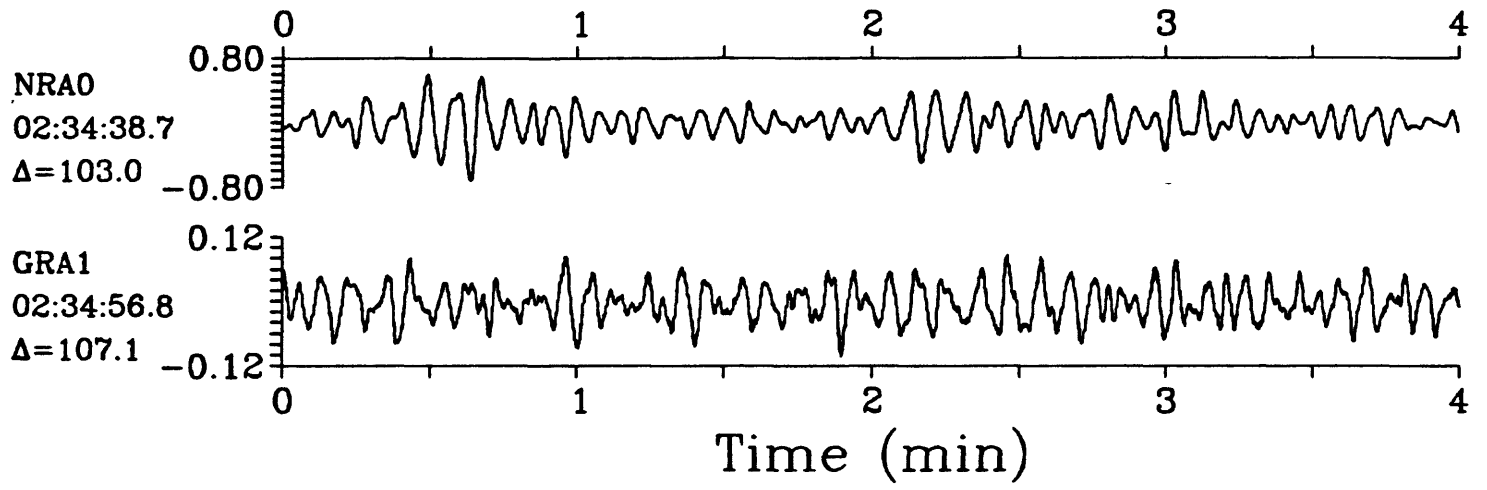
LPZ



IPZ

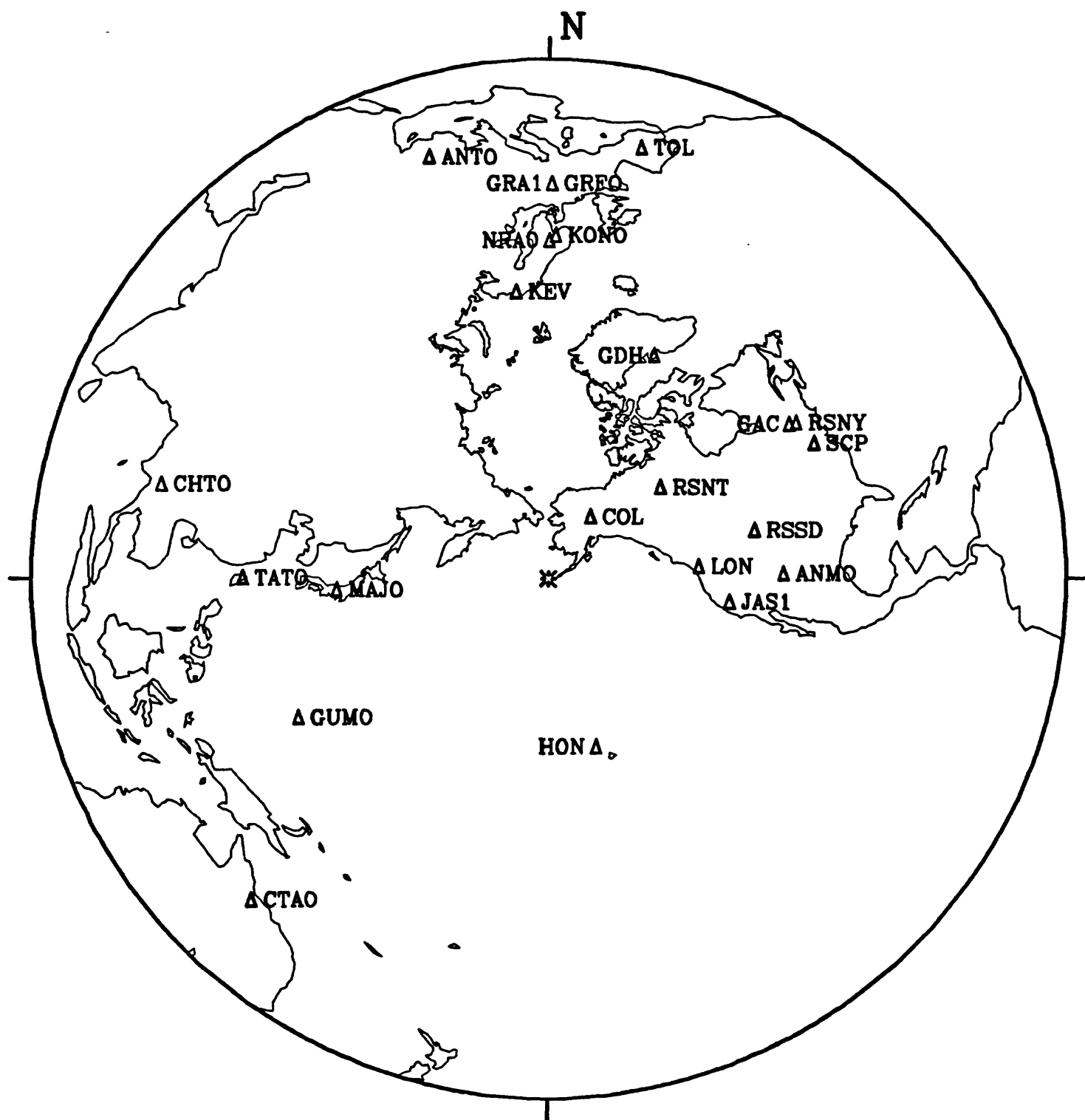
10 April 1986 02:21:13.32

IPZ

Molucca Sea $h=33.0$ $m_b=5.8$ $M_{sz}=6.0$ 

11 April 1986 17:22:20.60

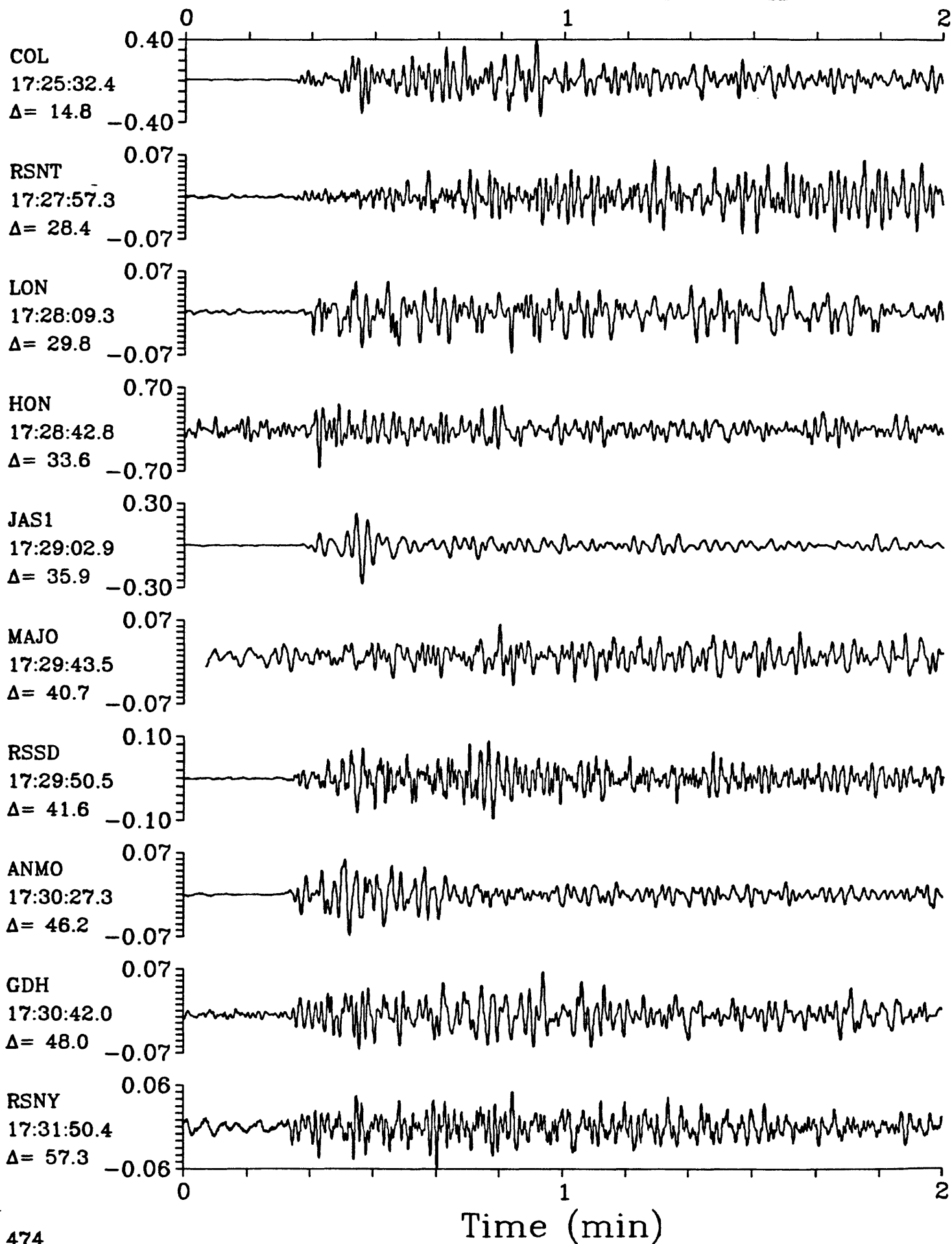
Fox Islands, Aleutian Islands



SPZ

11 April 1986 17:22:20.60

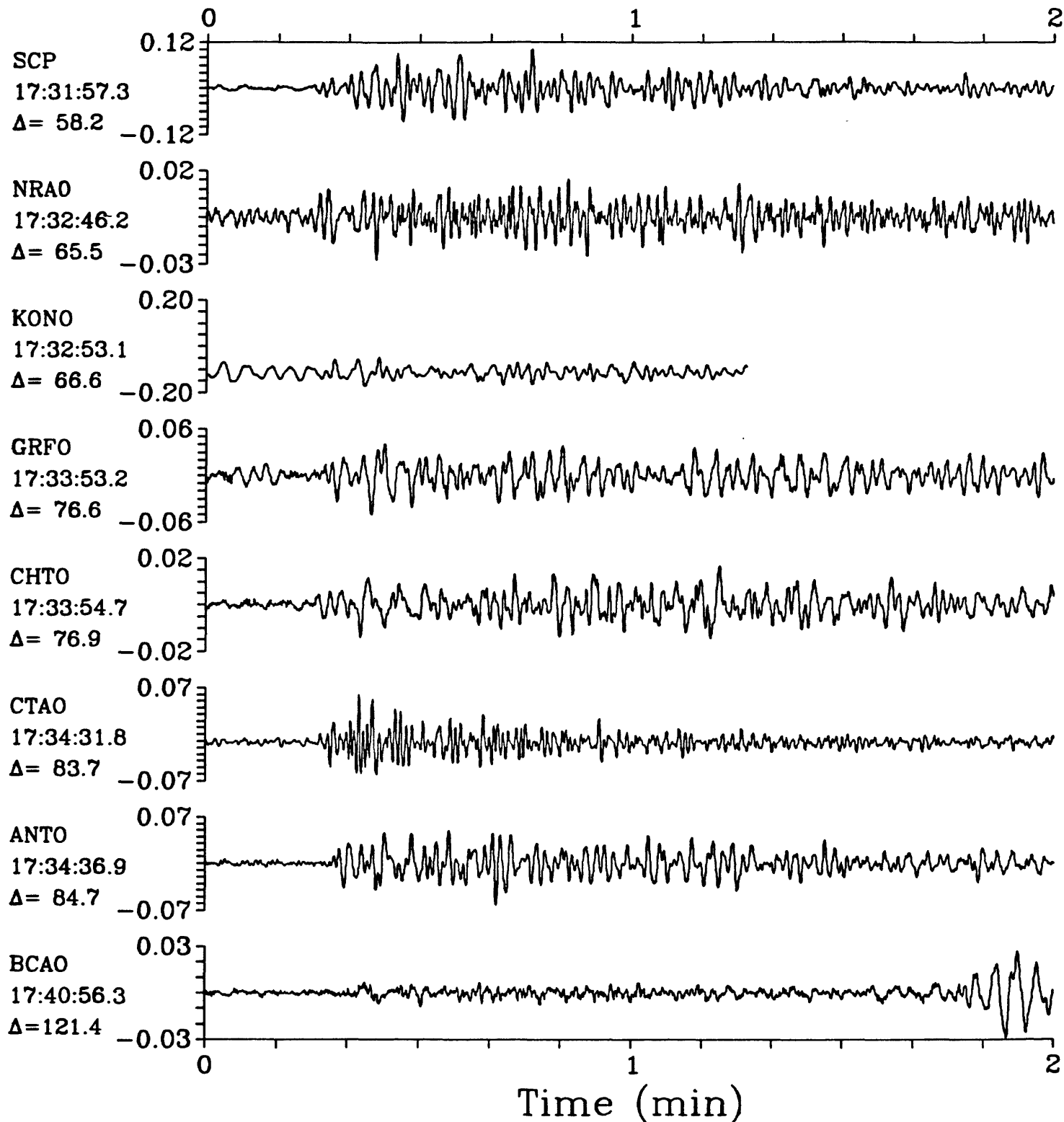
SPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{SZ}=5.9$ 

SPZ

11 April 1986 17:22:20.60

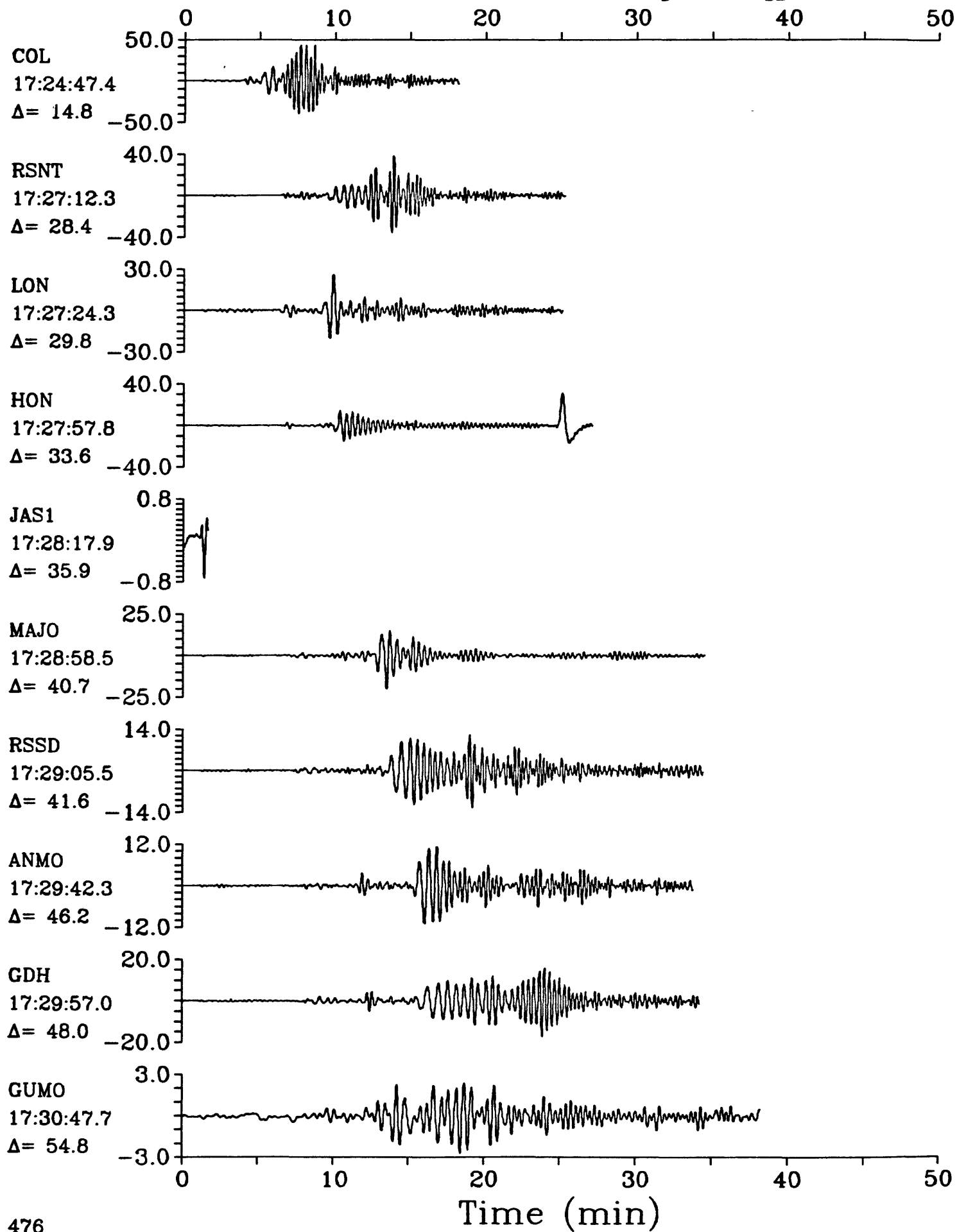
SPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{SZ}=5.9$ 

LPZ

11 April 1986 17:22:20.60

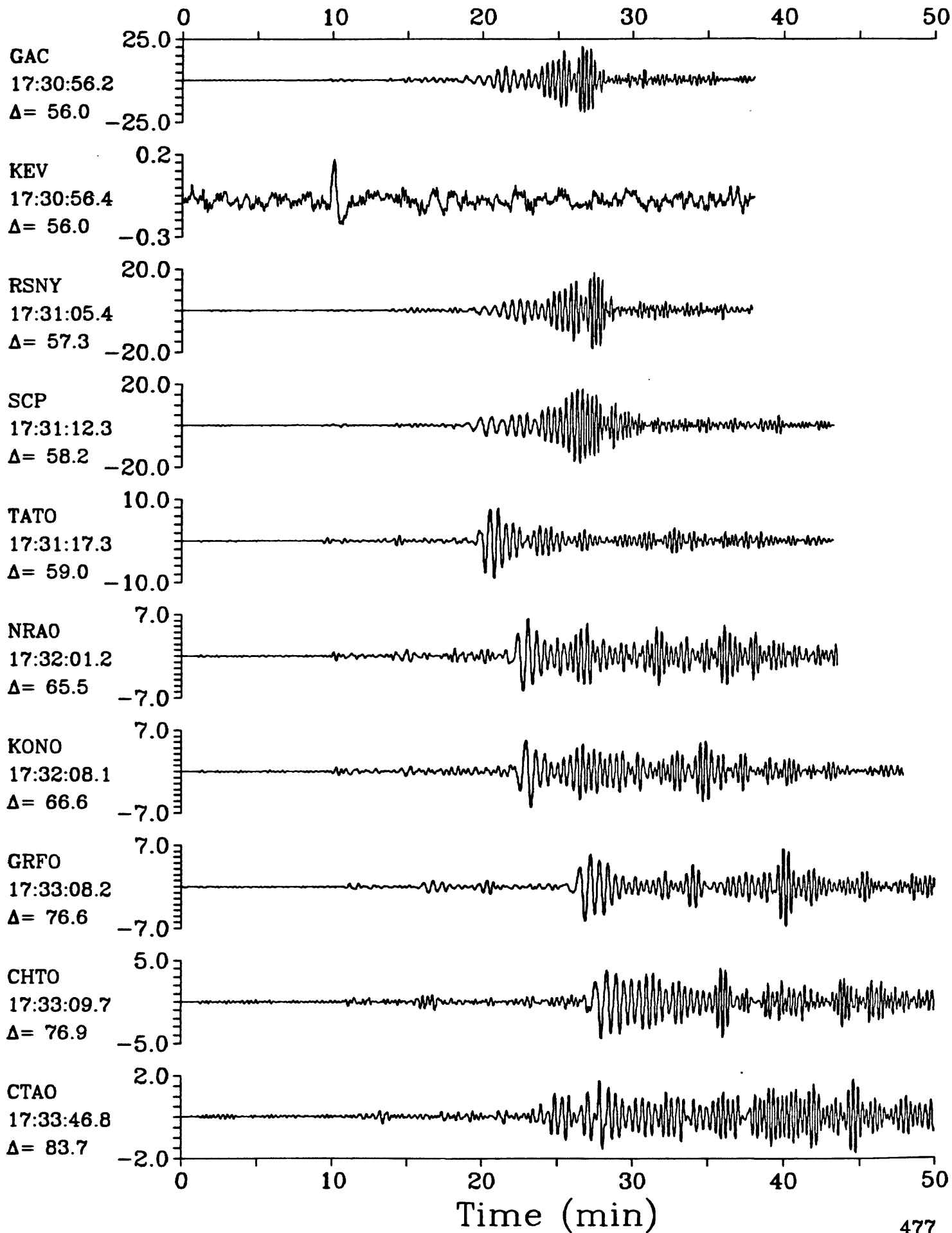
LPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{SZ}=5.9$ 

LPZ

11 April 1986 17:22:20.60

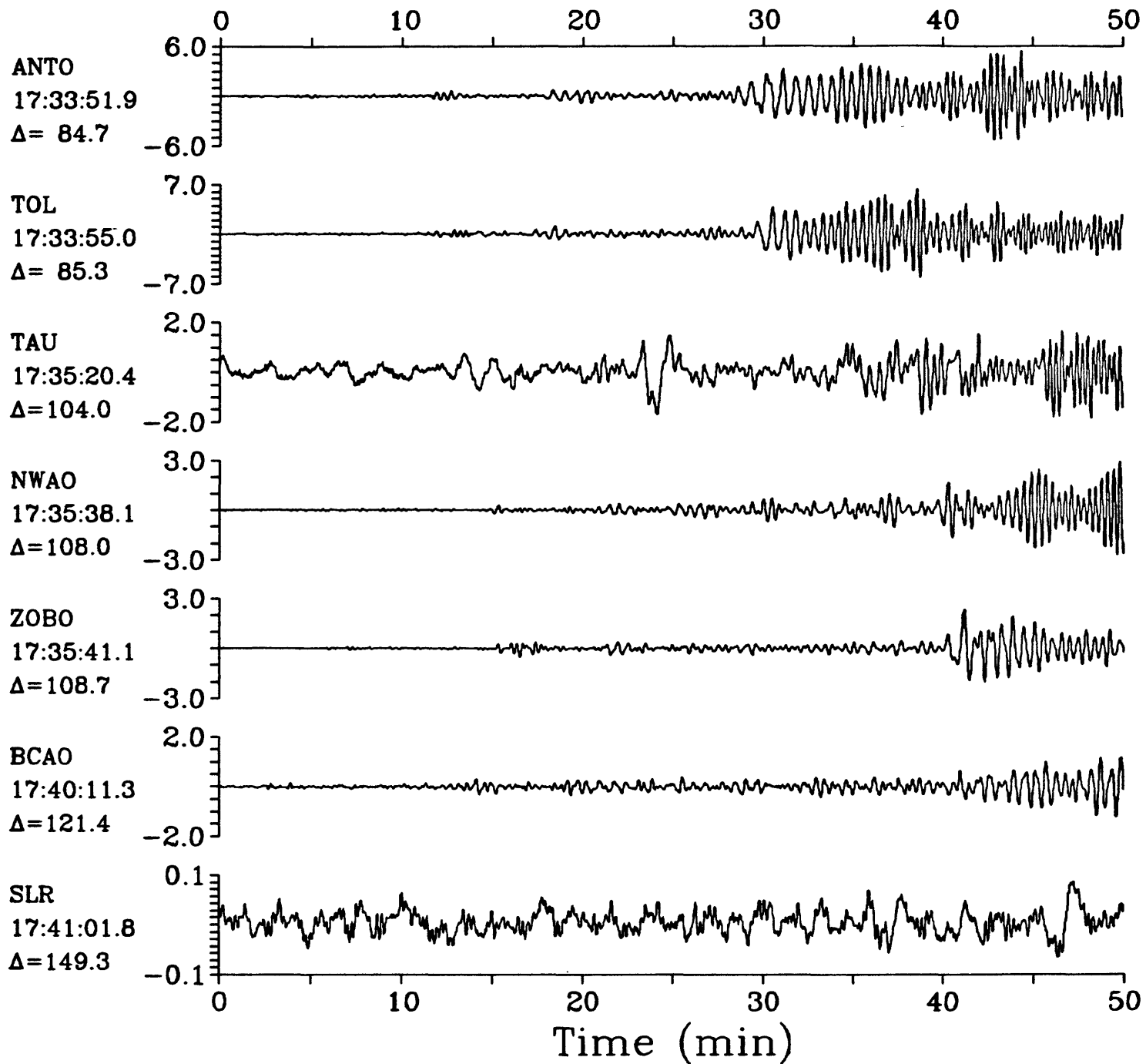
LPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{sz}=5.9$ 

LPZ

11 April 1986 17:22:20.60

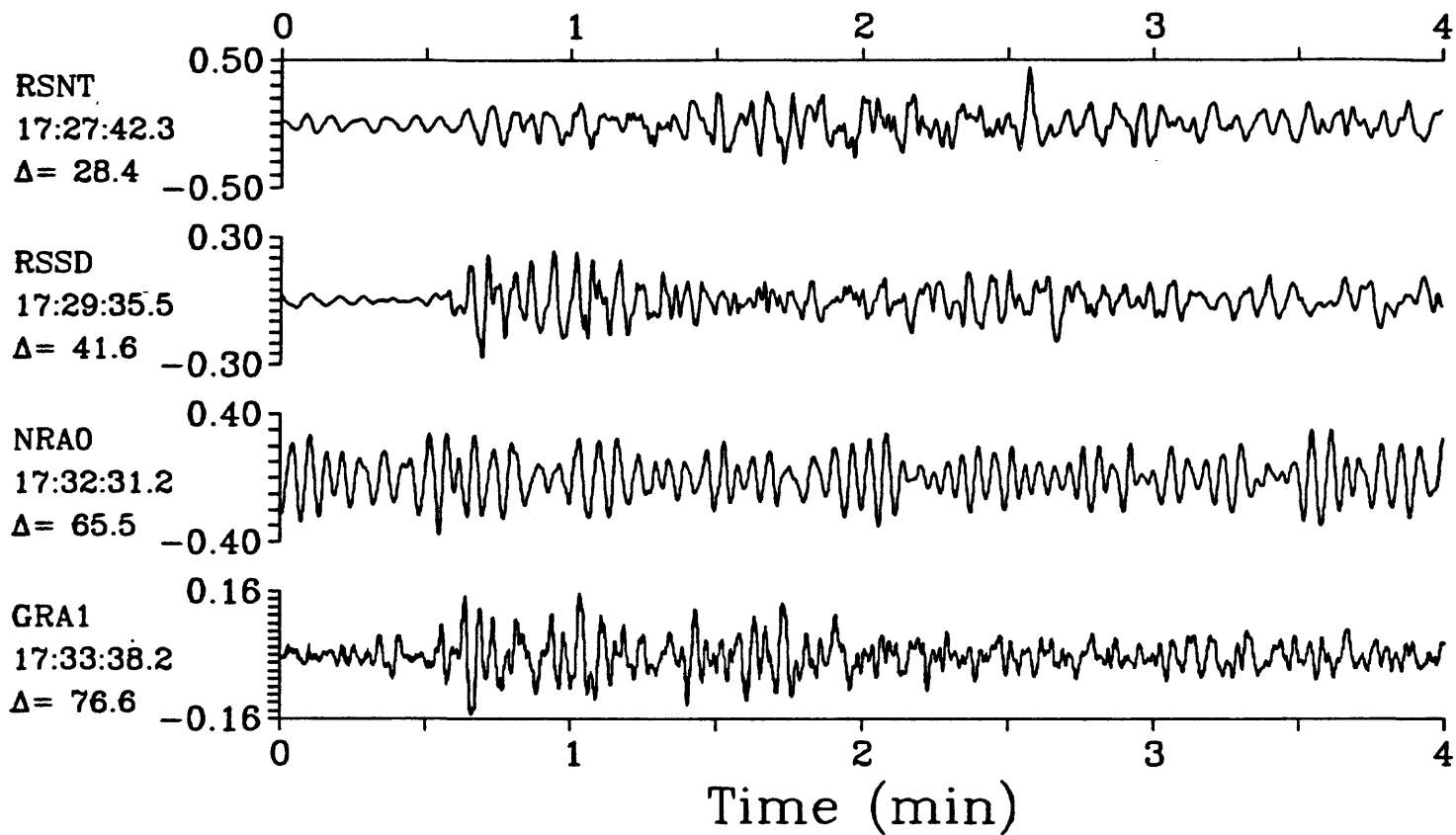
LPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{sz}=5.9$ 

IPZ

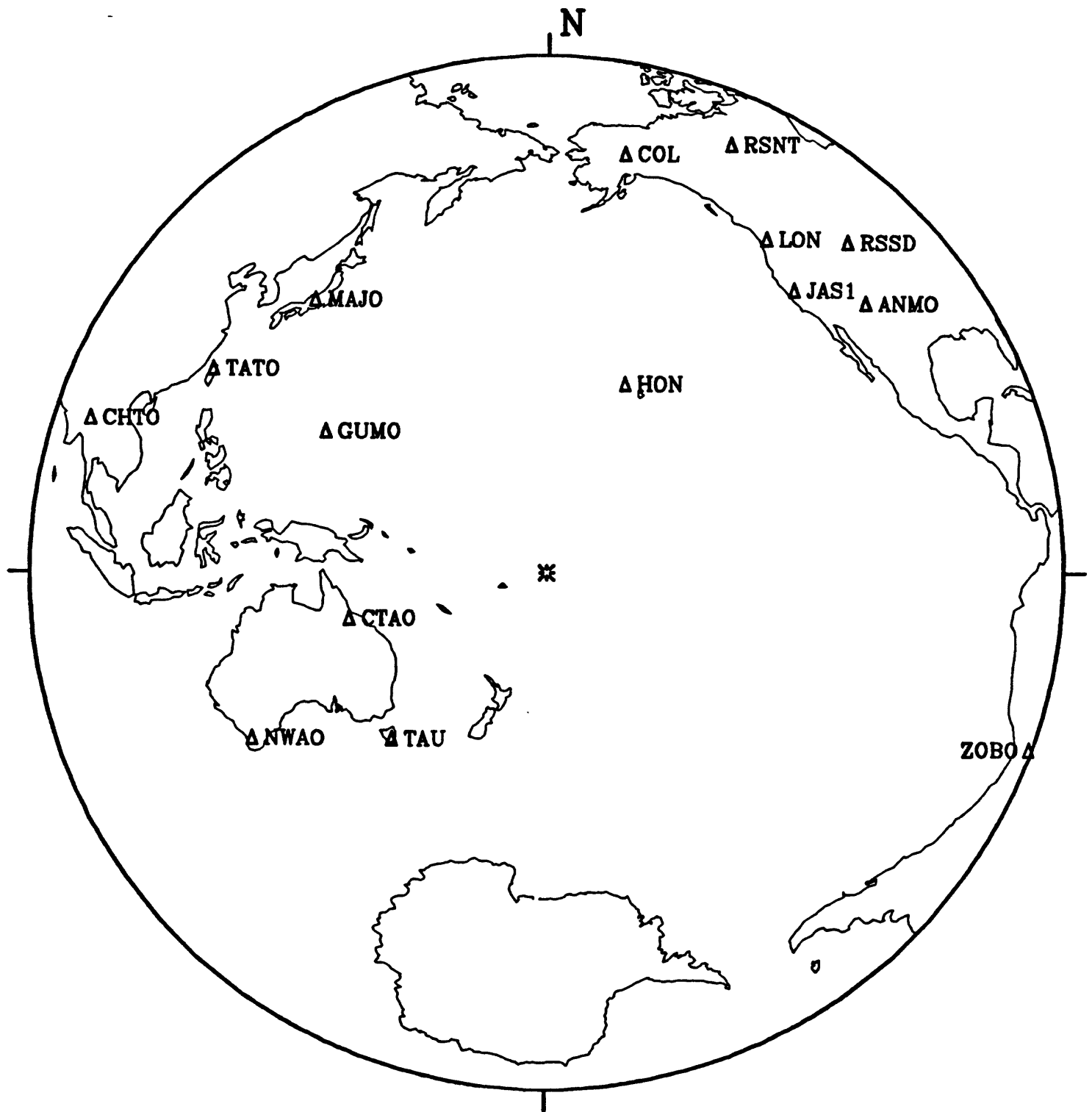
11 April 1986 17:22:20.60

IPZ

Fox Islands, Aleutian Islands $h=33.0$ $m_b=5.2$ $M_{sz}=5.9$ 

12 April 1986 04:04:31.57

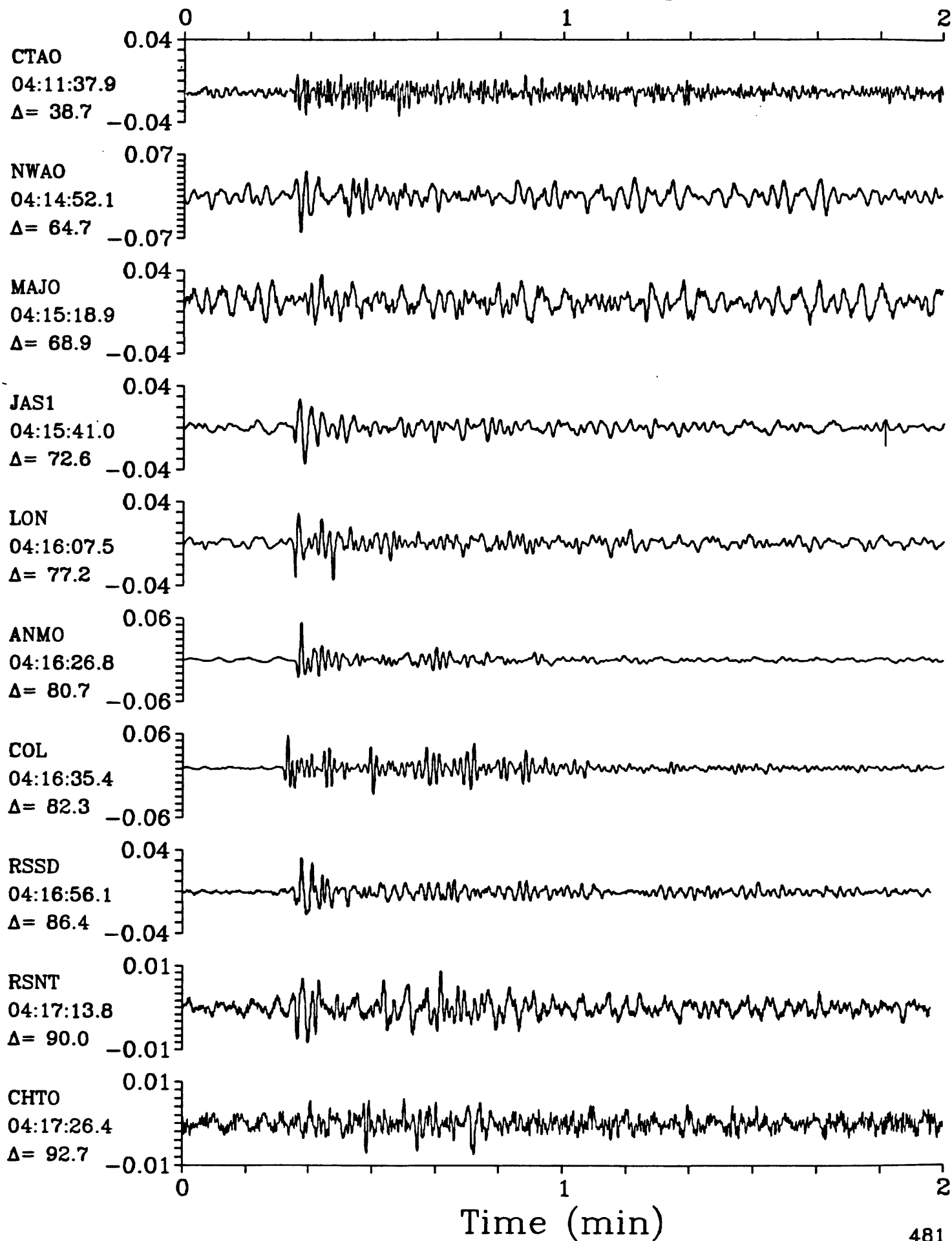
Tonga Islands



SPZ

12 April 1986 04:04:31.57
Tonga Islands $h=33.0$ $m_b=5.6$ $M_{sz}=5.1$

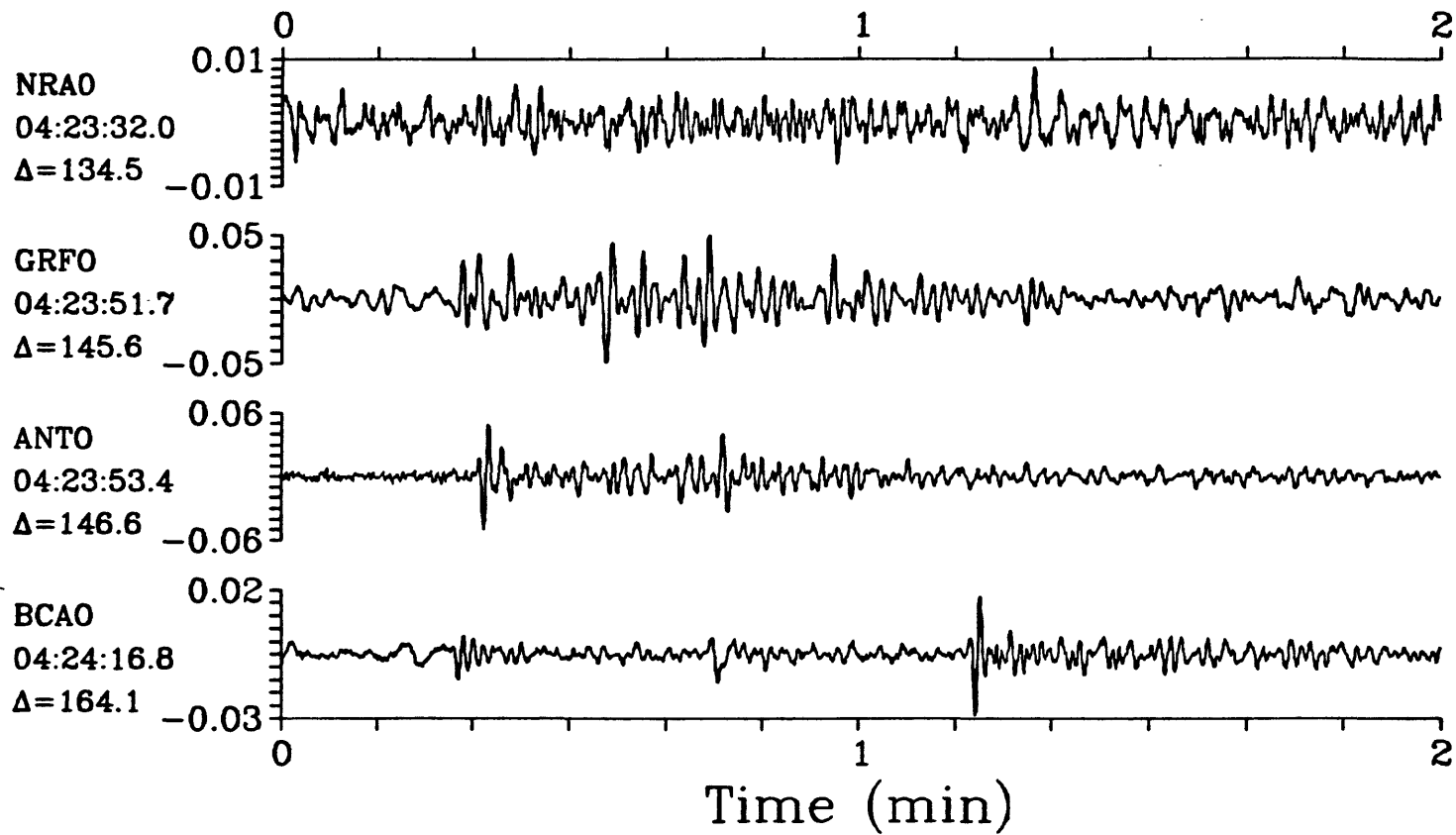
SPZ



SPZ

12 April 1986 04:04:31.57

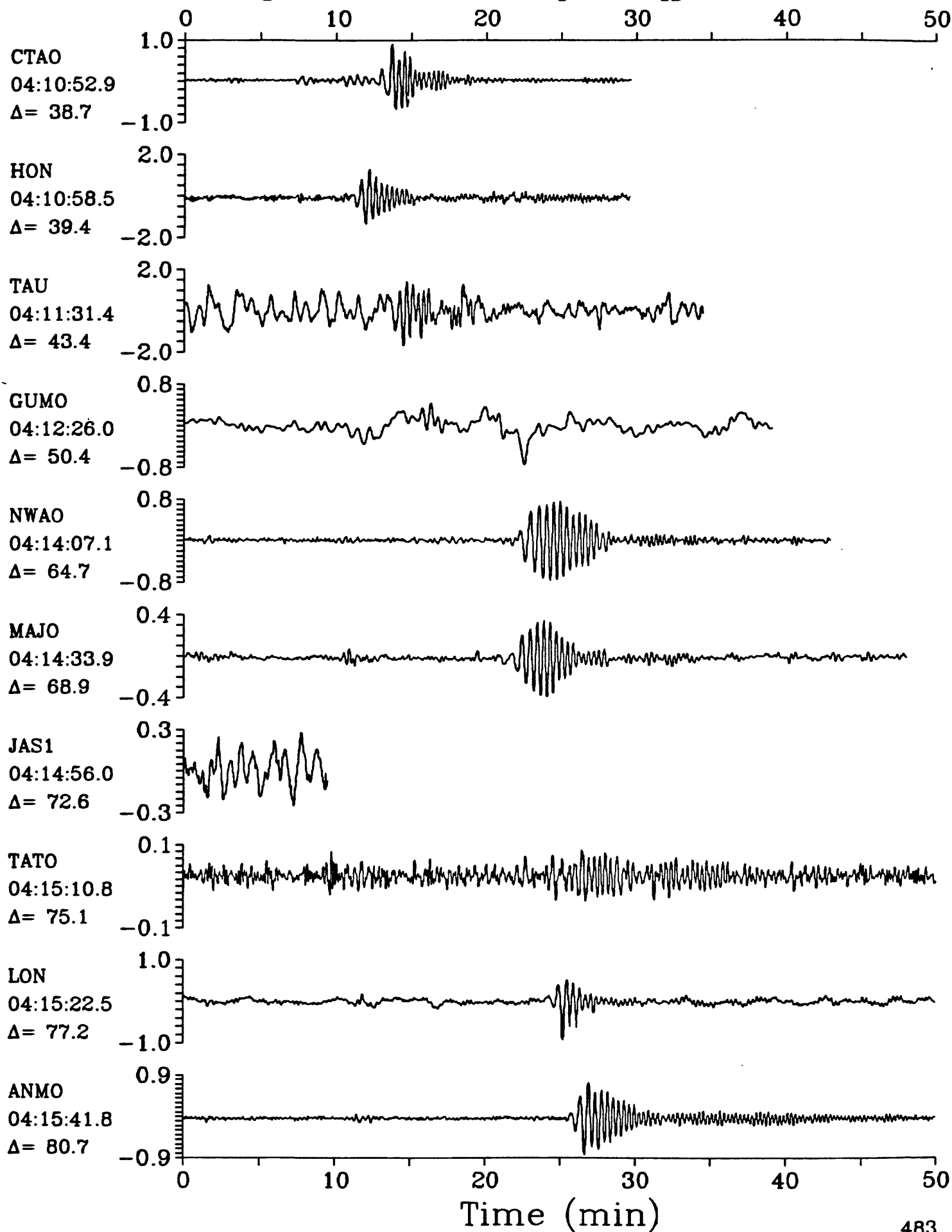
SPZ

Tonga Islands $h=33.0$ $m_b=5.6$ $M_{sz}=5.1$ 

LPZ

12 April 1986 04:04:31.57
Tonga Islands $h=33.0$ $m_b=5.6$ $M_{sz}=5.1$

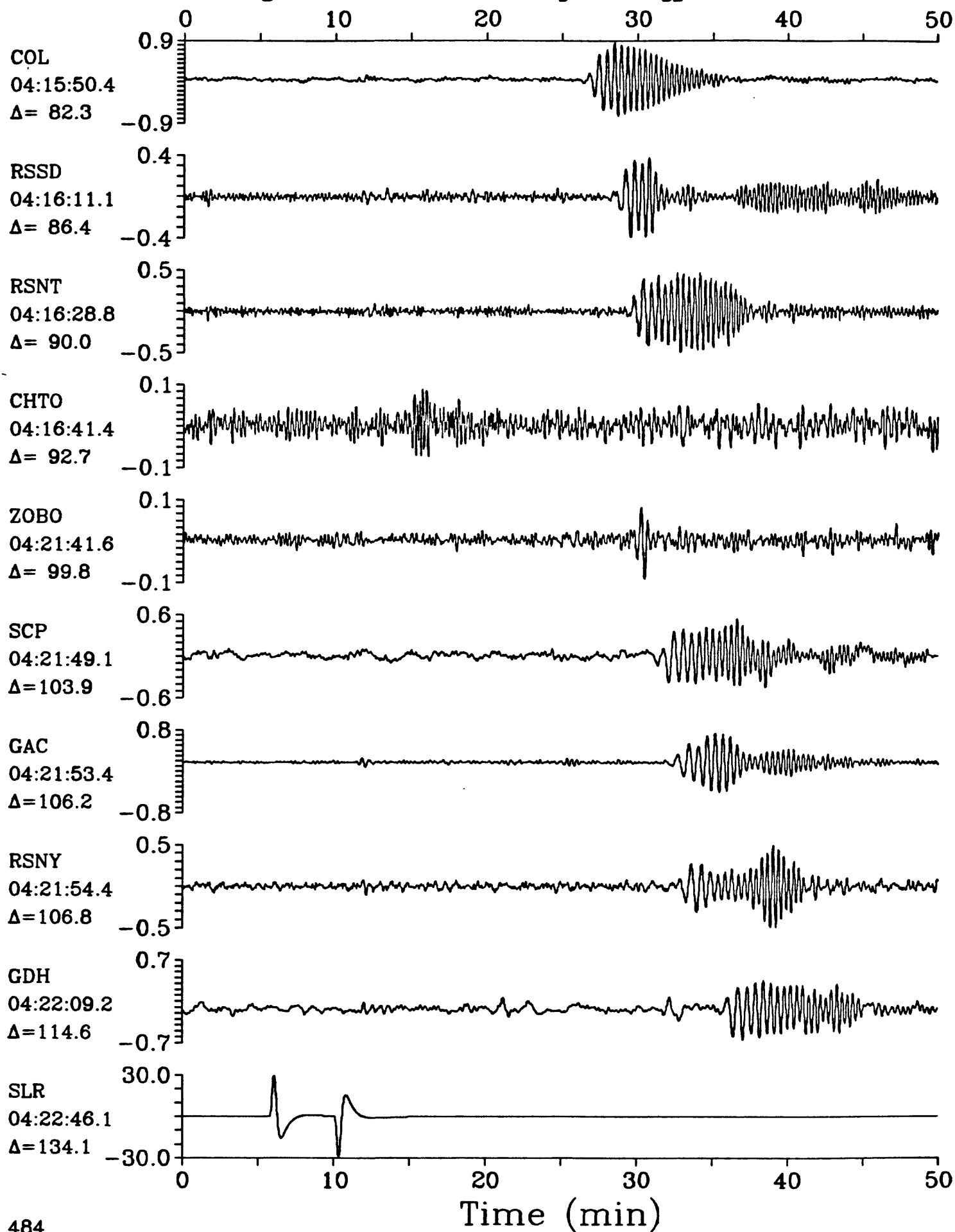
LPZ



LPZ

12 April 1986 04:04:31.57
Tonga Islands $h=33.0$ $m_b=5.6$ $M_{sz}=5.1$

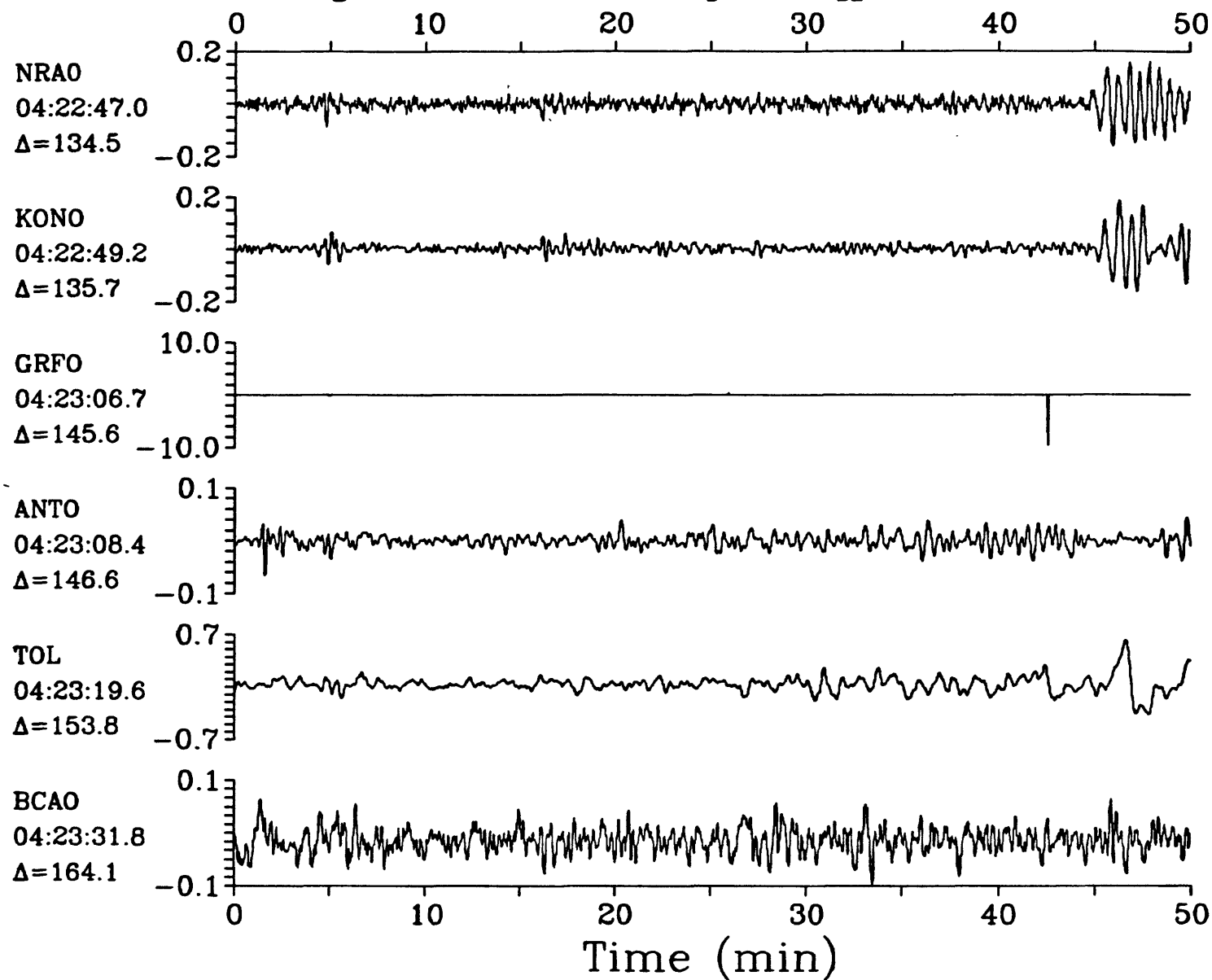
LPZ



LPZ

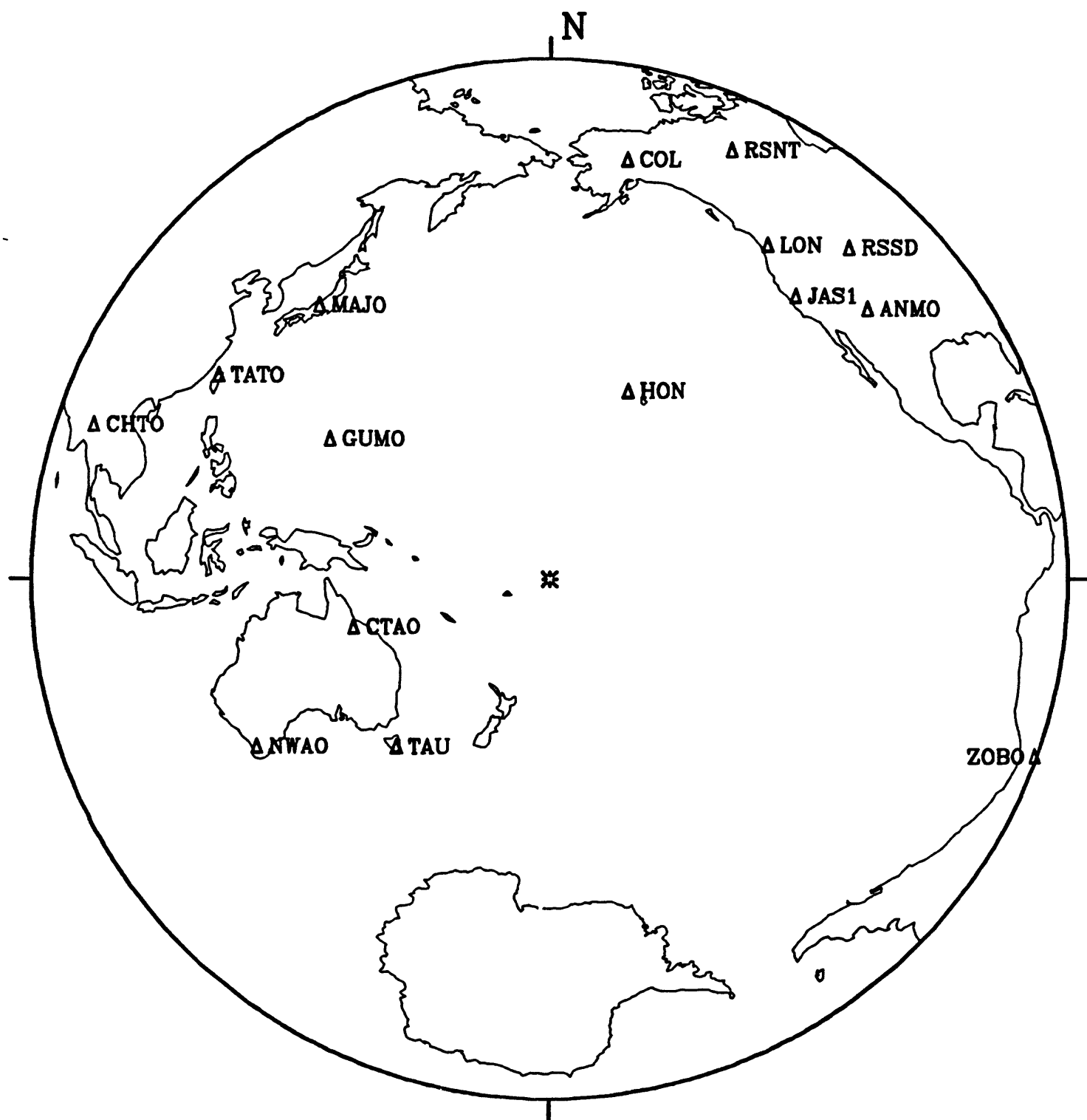
12 April 1986 04:04:31.57

LPZ

Tonga Islands $h=33.0$ $m_b=5.6$ $M_{sz}=5.1$ 

12 April 1986 20:20:45.99

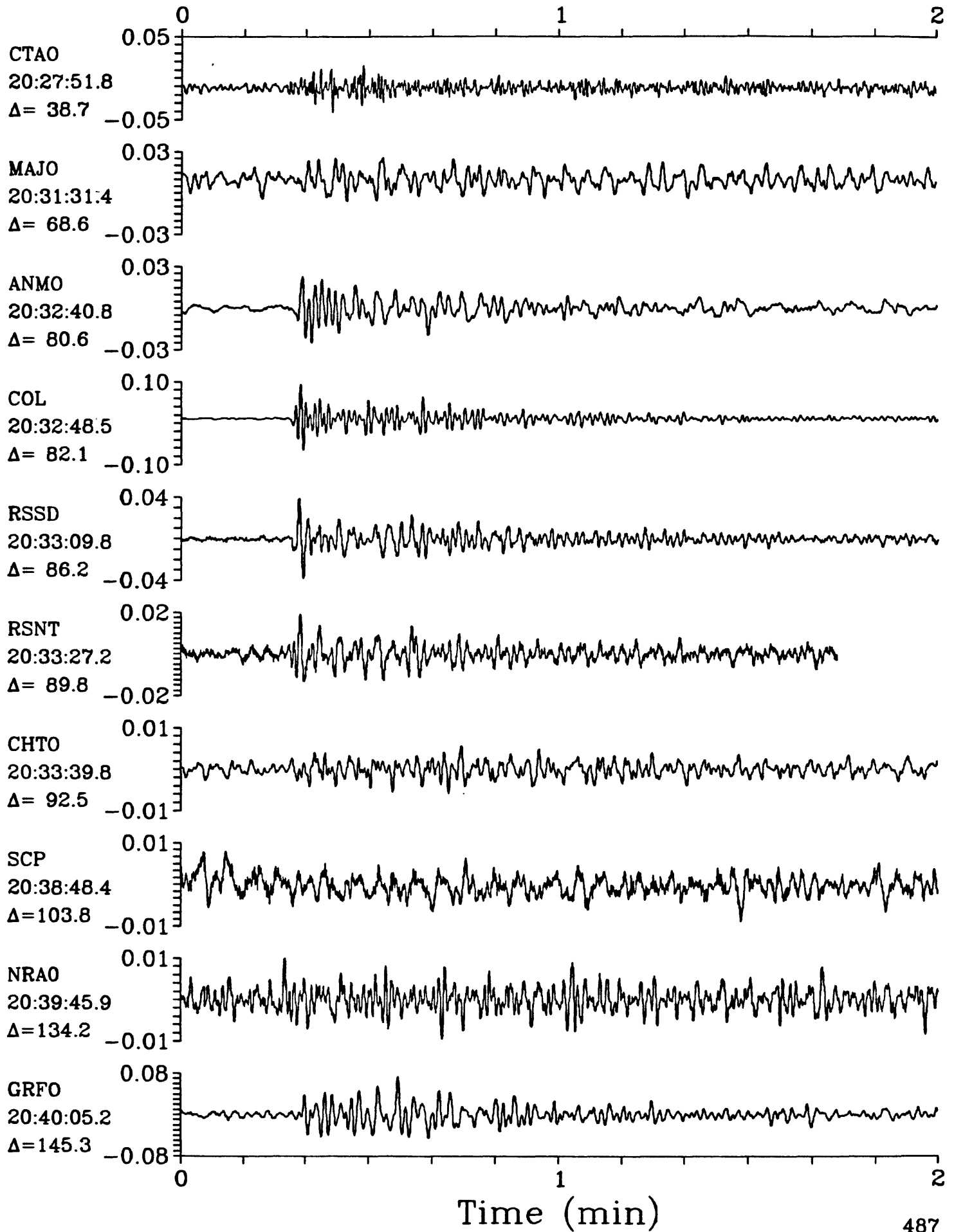
Tonga Islands



SPZ

12 April 1986 20:20:45.99
Tonga Islands $h=33.0$ $m_b=5.3$ $M_{SZ}=5.6$

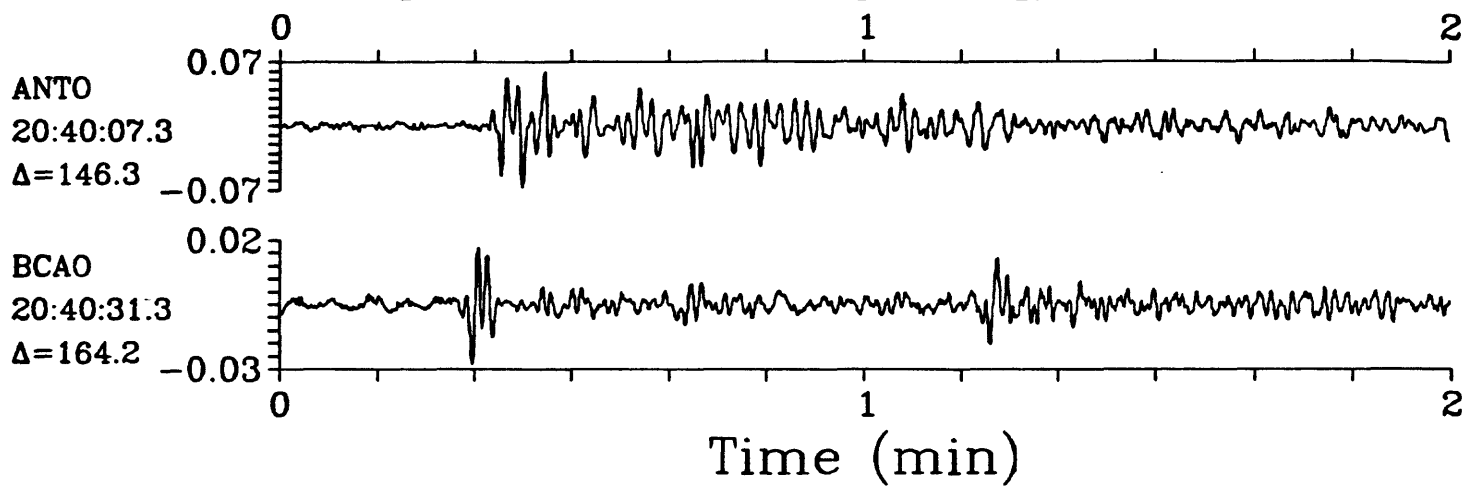
SPZ



SPZ

12 April 1986 20:20:45.99
Tonga Islands $h=33.0$ $m_b=5.3$ $M_{sz}=5.6$

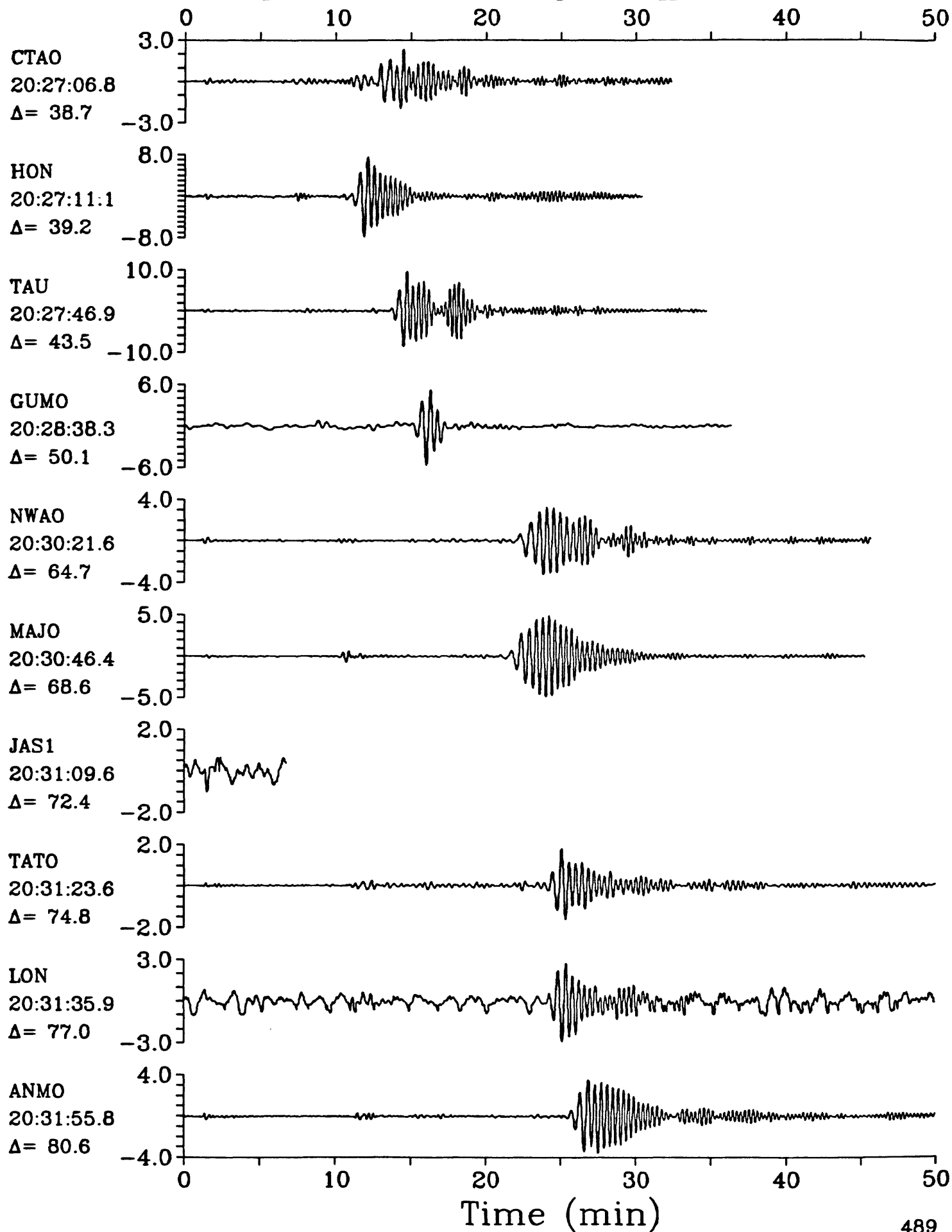
SPZ



LPZ

12 April 1986 20:20:45.99
Tonga Islands $h=33.0$ $m_b=5.3$ $M_{SZ}=5.6$

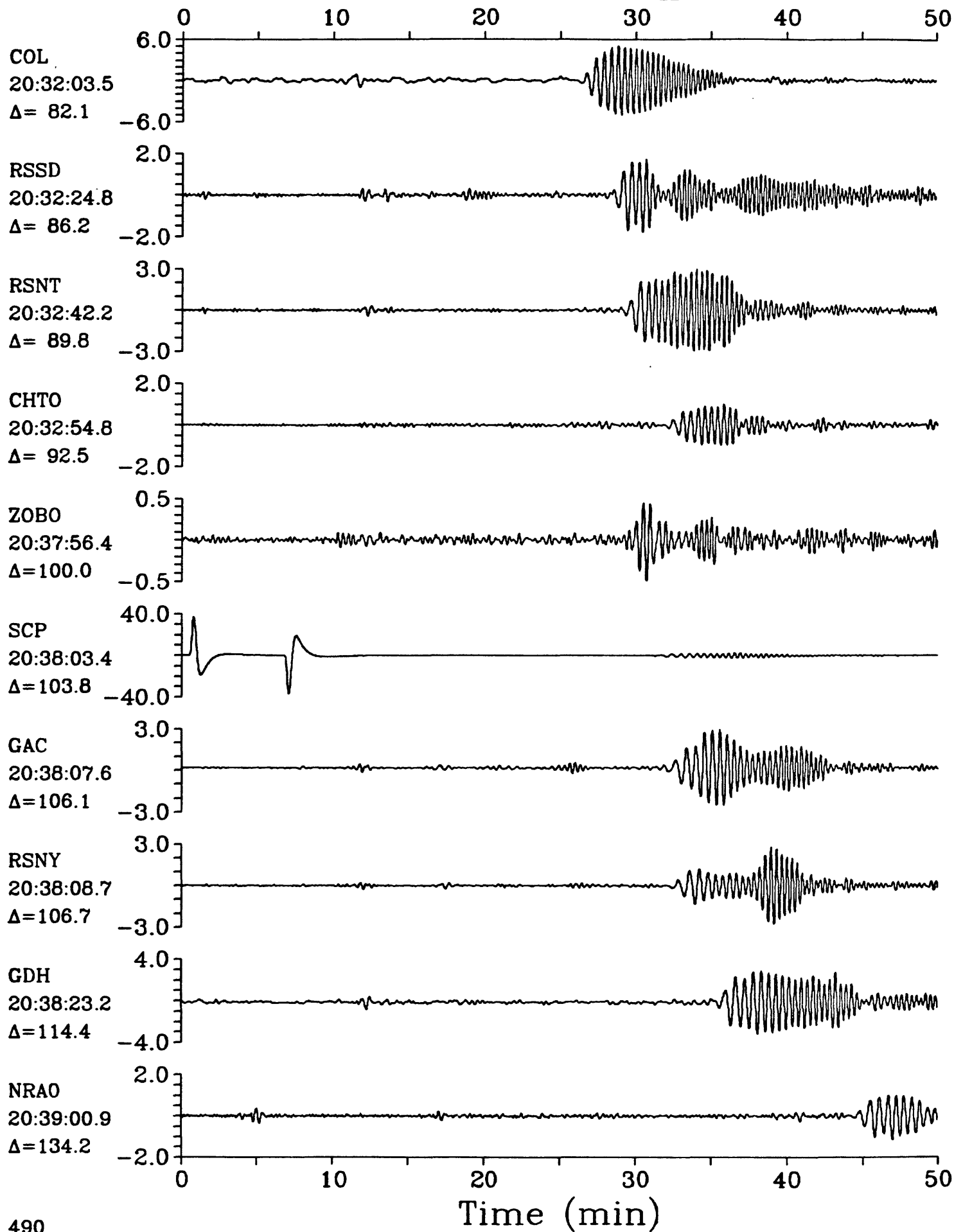
LPZ



LPZ

12 April 1986 20:20:45.99
Tonga Islands $h=33.0$ $m_b=5.3$ $M_{sz}=5.6$

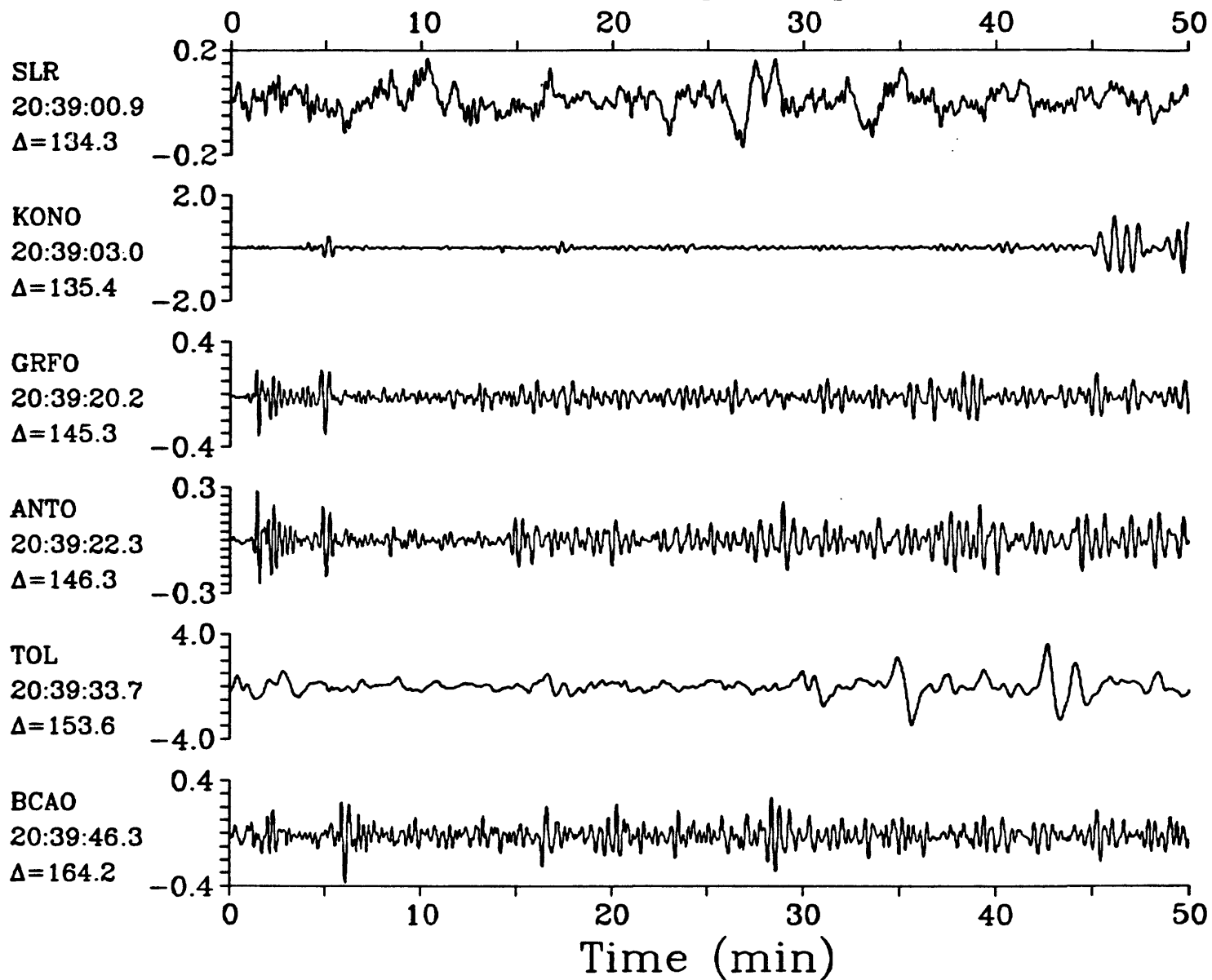
LPZ



LPZ

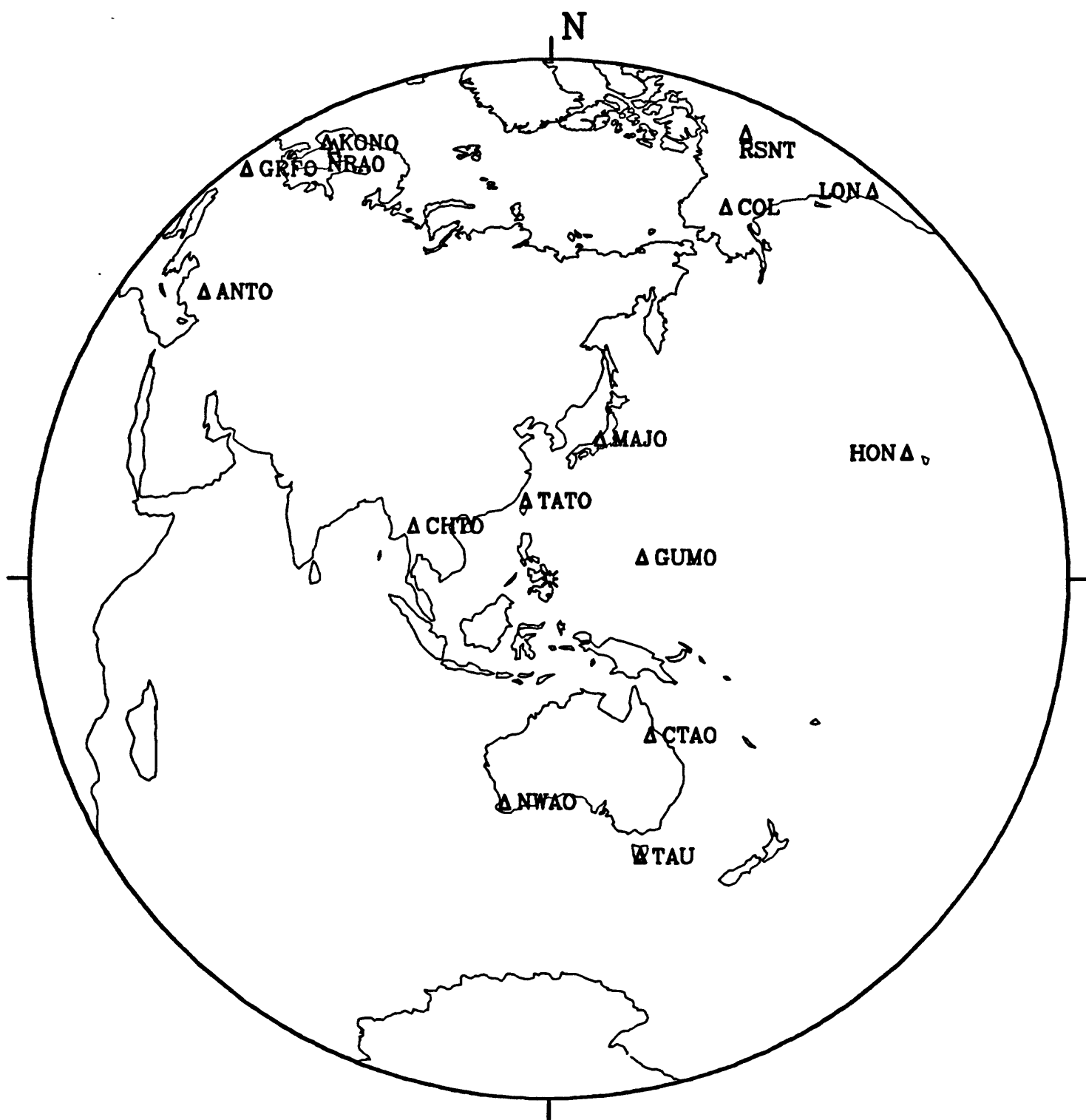
12 April 1986 20:20:45.99
Tonga Islands $h=33.0$ $m_b=5.3$ $M_{sz}=5.6$

LPZ



13 April 1986 21:52:52.76

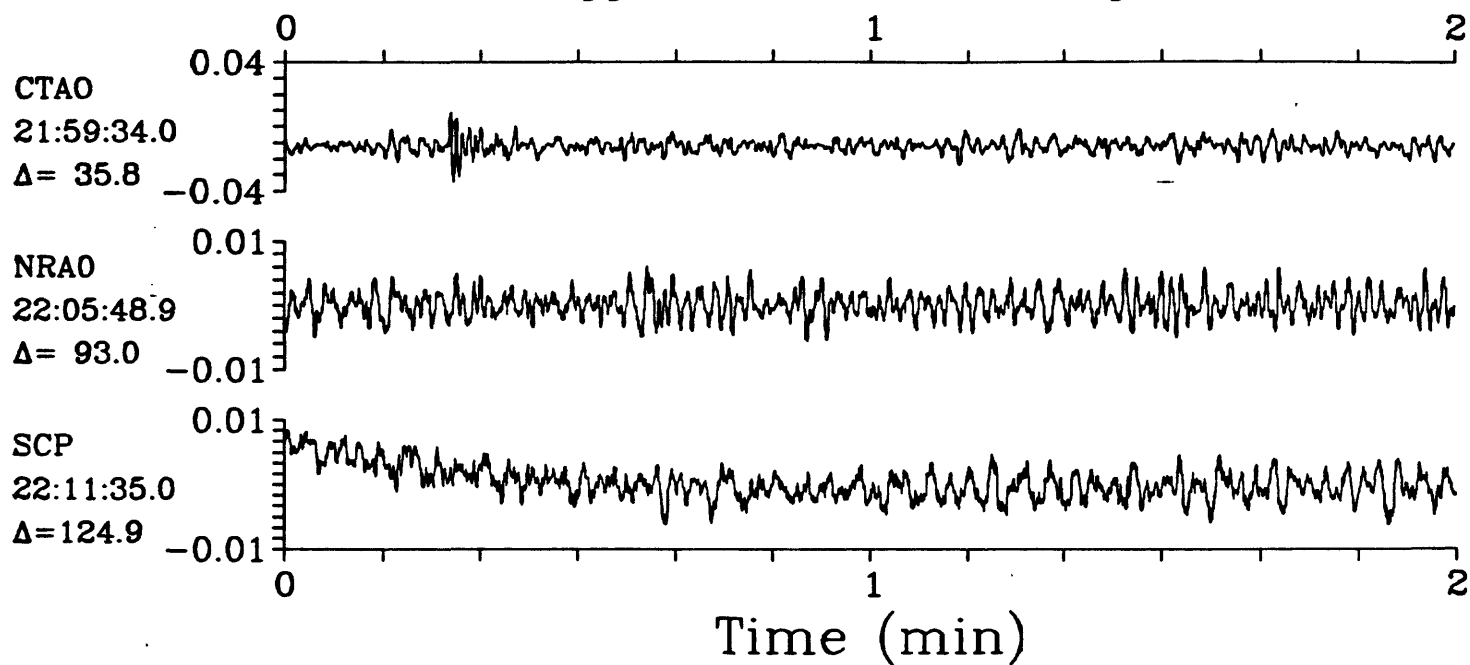
Mindanao, Philippine Islands



SPZ

13 April 1986 21:52:52.76

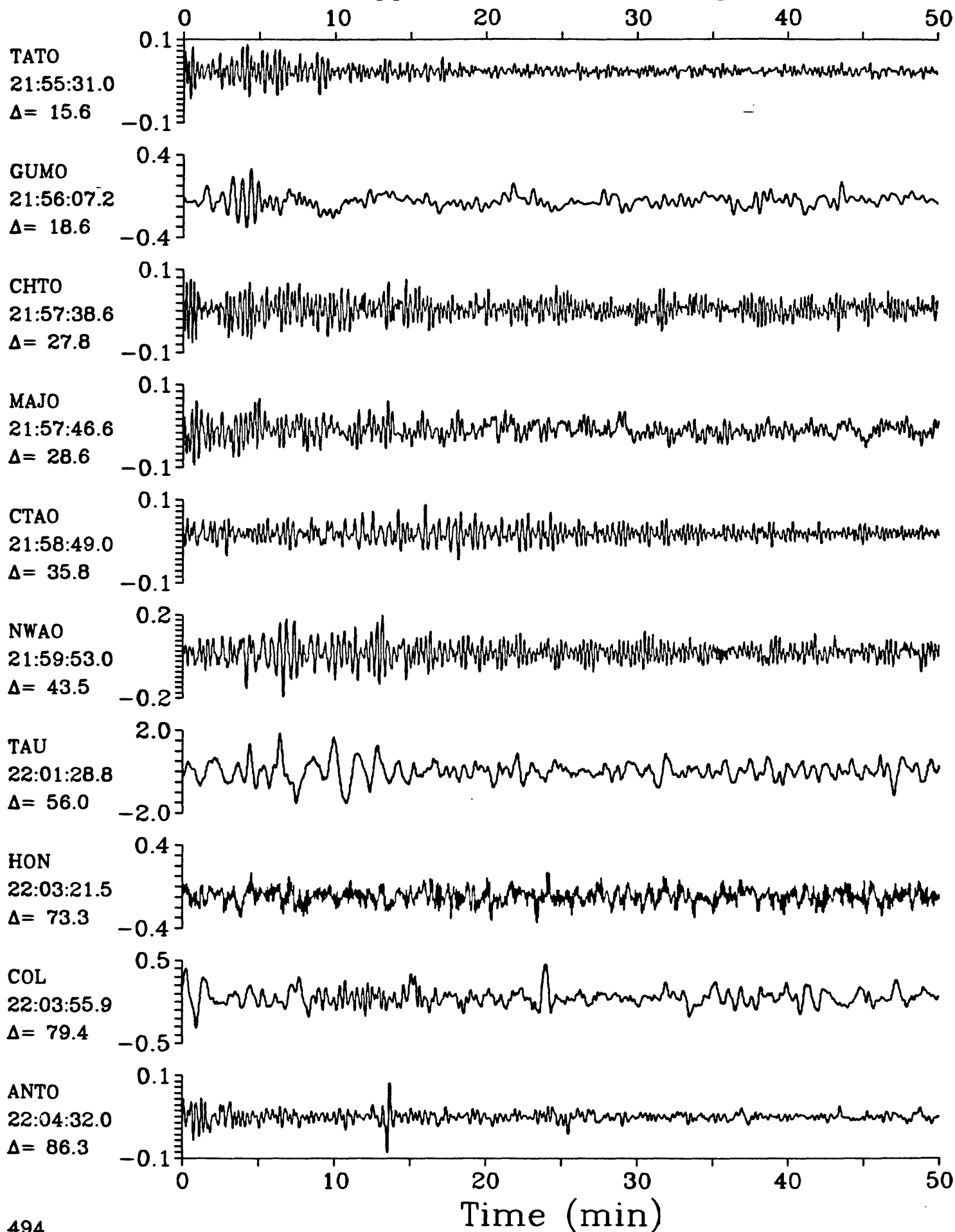
SPZ

Mindanao, Philippine Islands $h=33.0$ $m_b=6.2$ 

LPZ

13 April 1986 21:52:52.76

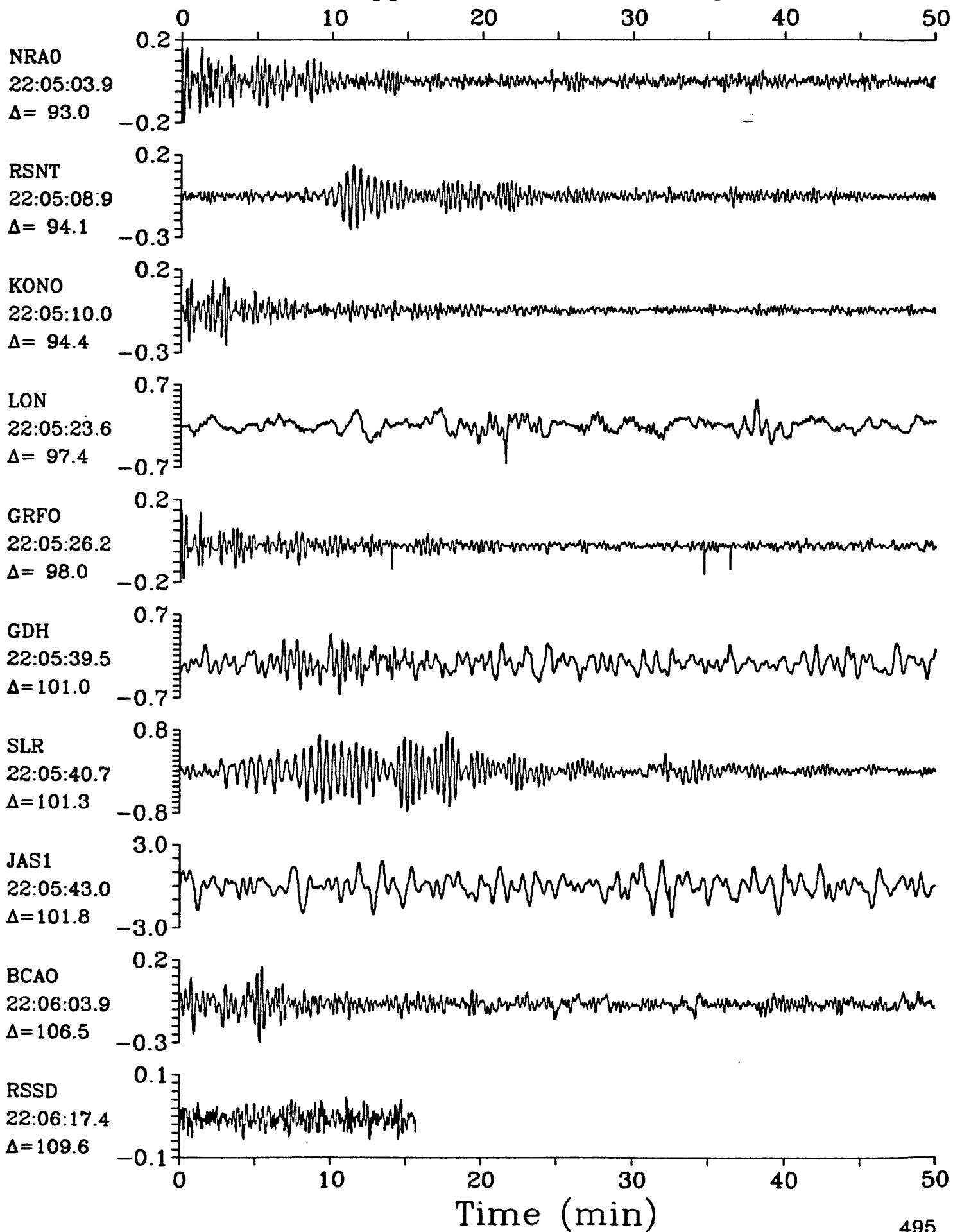
LPZ

Mindanao, Philippine Islands $h=33.0$ $m_b=6.2$ 

LPZ

13 April 1986 21:52:52.76

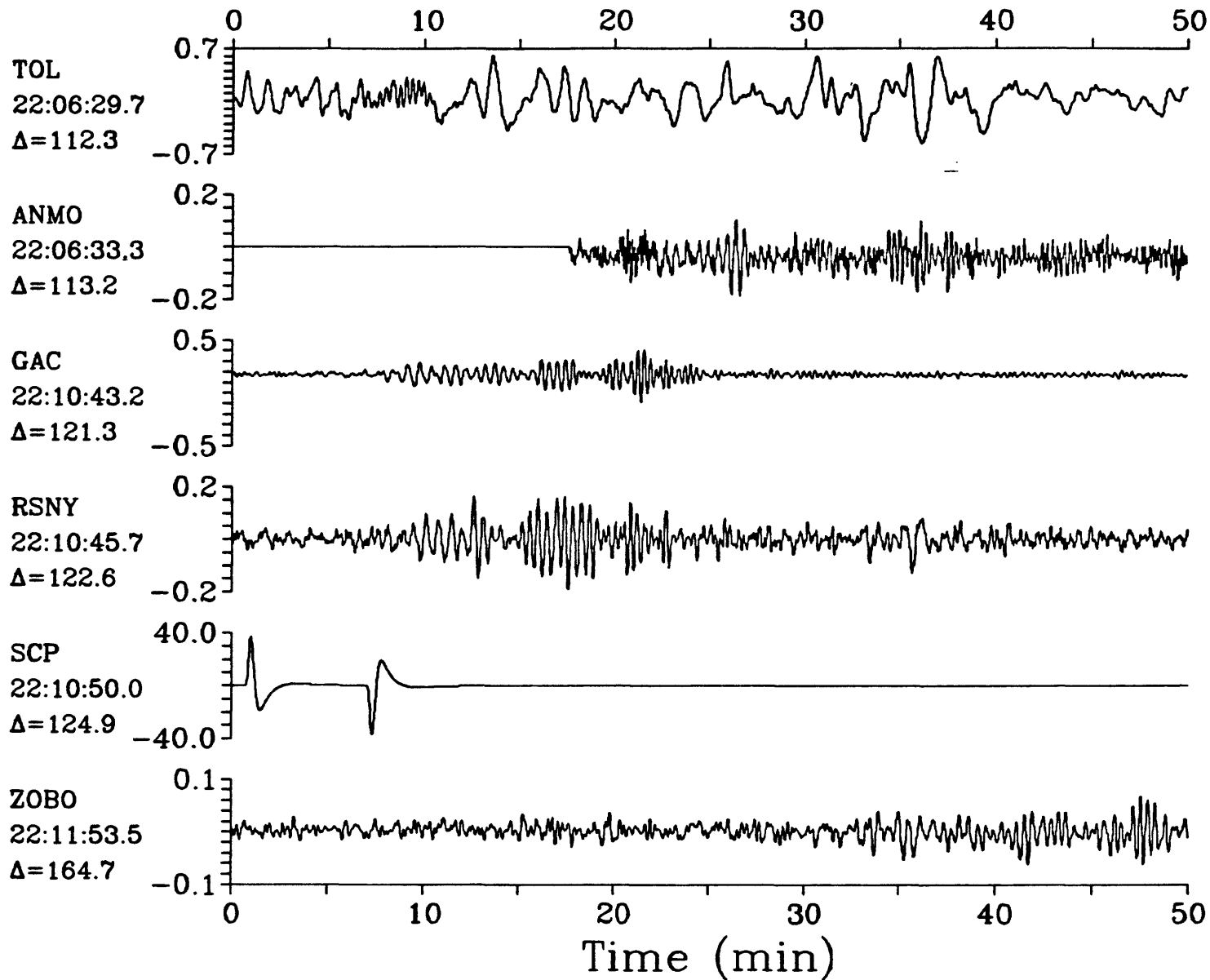
LPZ

Mindanao, Philippine Islands $h=33.0$ $m_b=6.2$ 

LPZ

13 April 1986 21:52:52.76

LPZ

Mindanao, Philippine Islands $h=33.0$ $m_b=6.2$ 

IPZ

13 April 1986 21:52:52.76

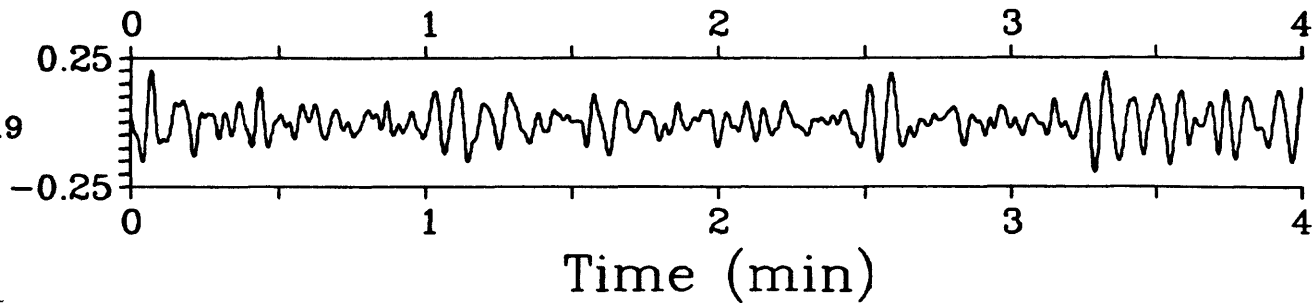
IPZ

Mindanao, Philippine Islands $h=33.0$ $m_b=6.2$

NRA0

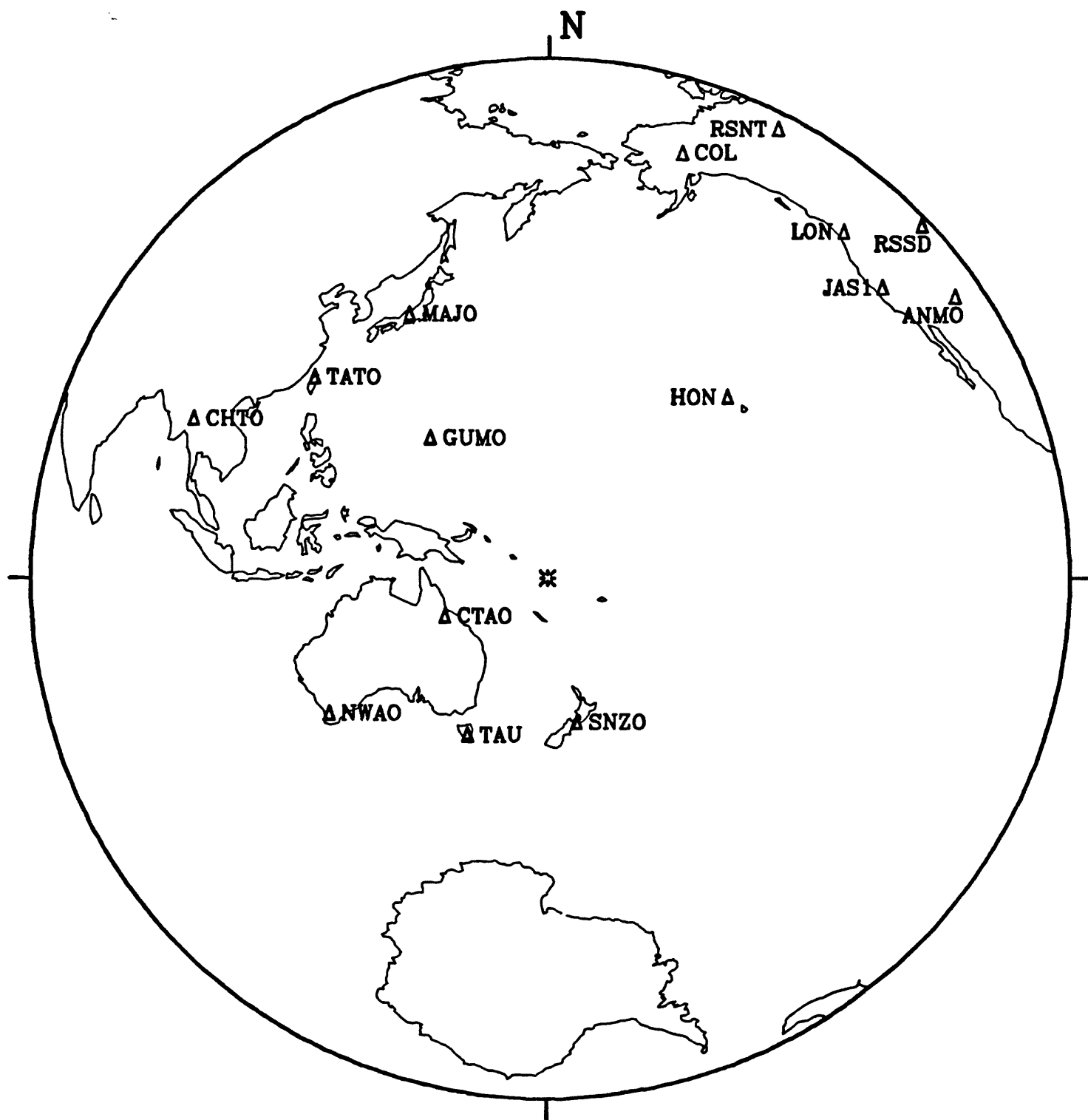
22:05:33.9

$\Delta = 93.0$



14 April 1986 00:25:12.46

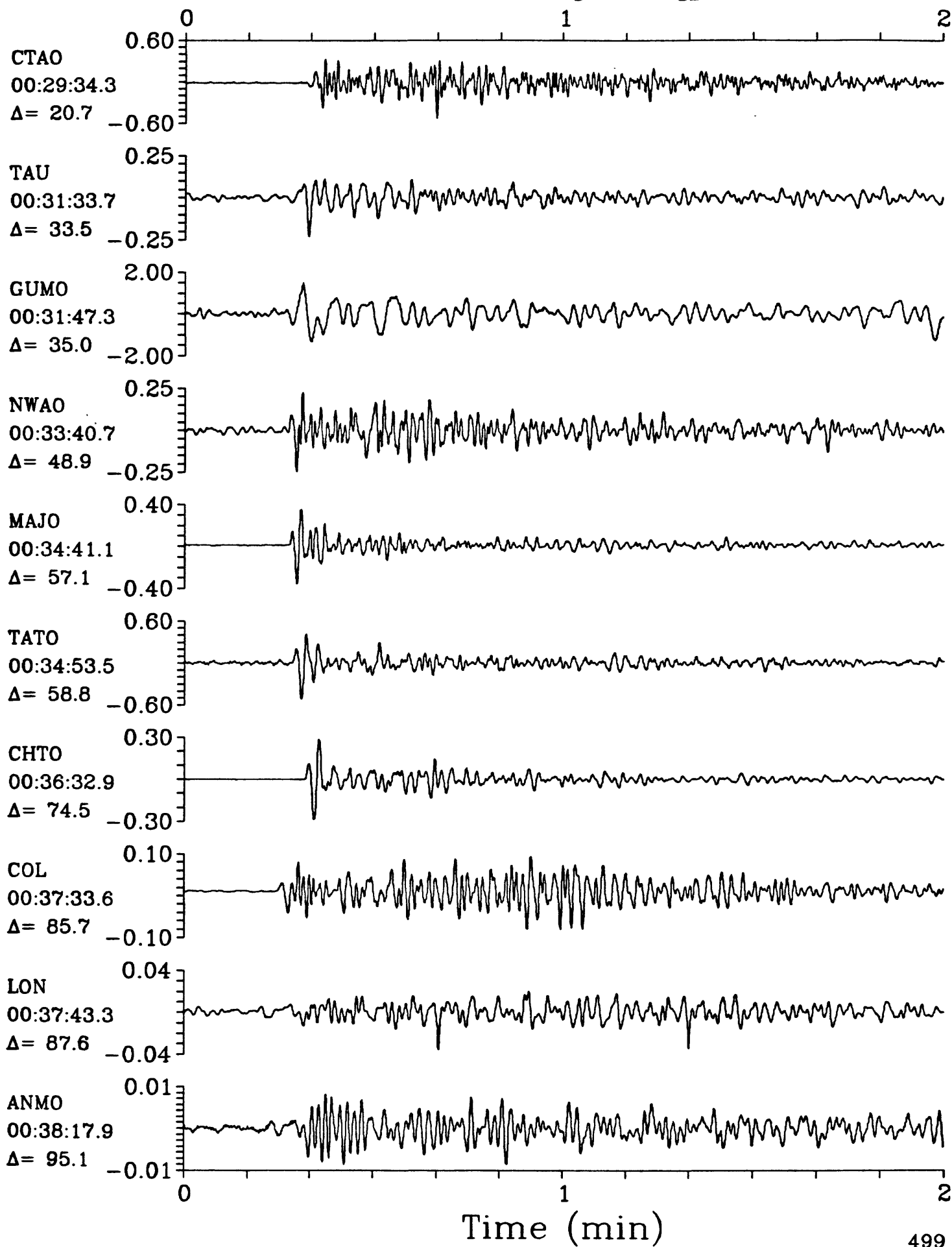
Vanuatu Islands



SPZ

14 April 1986 00:25:12.46

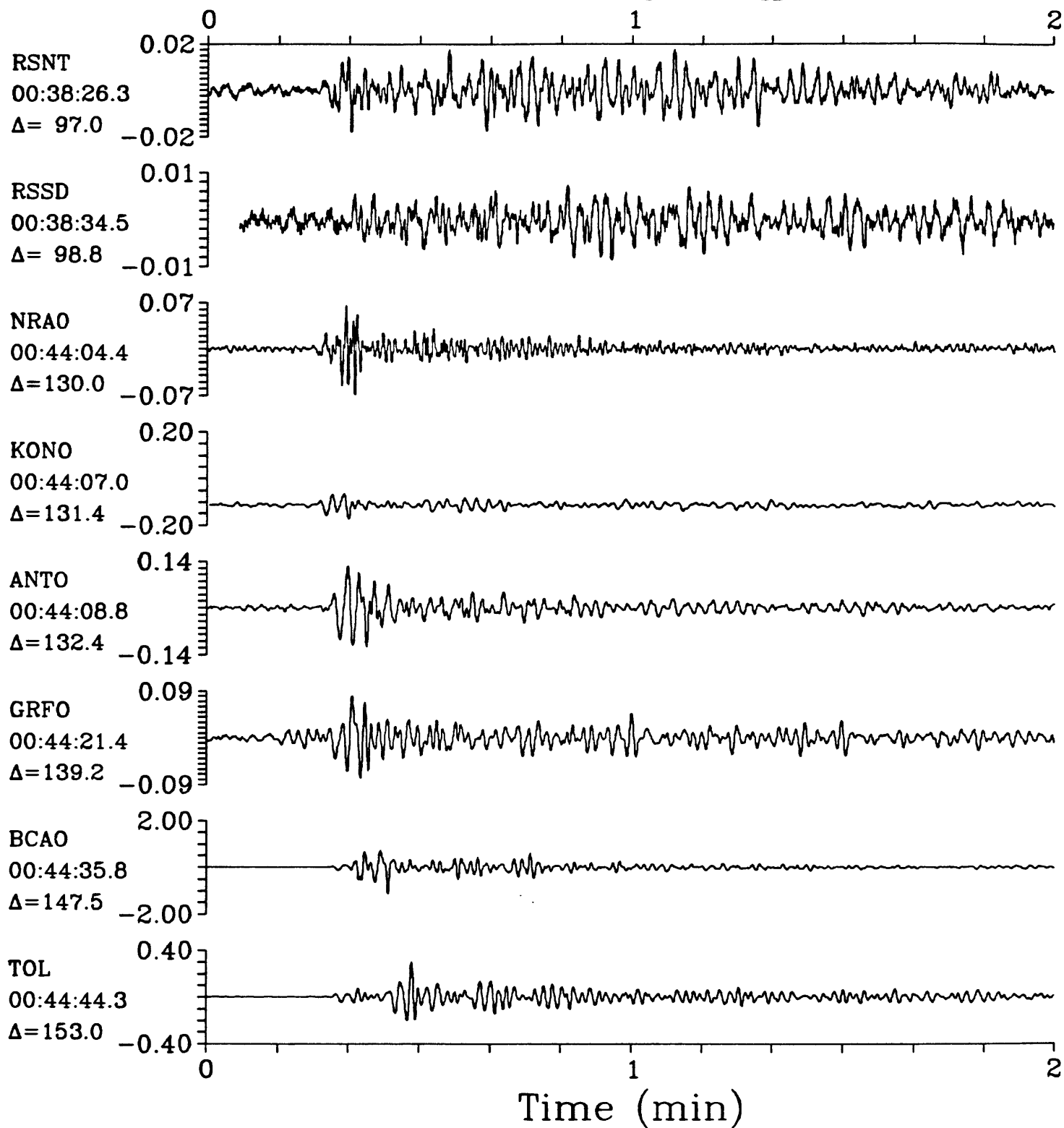
SPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{sz}=6.2$ 

SPZ

14 April 1986 00:25:12.46

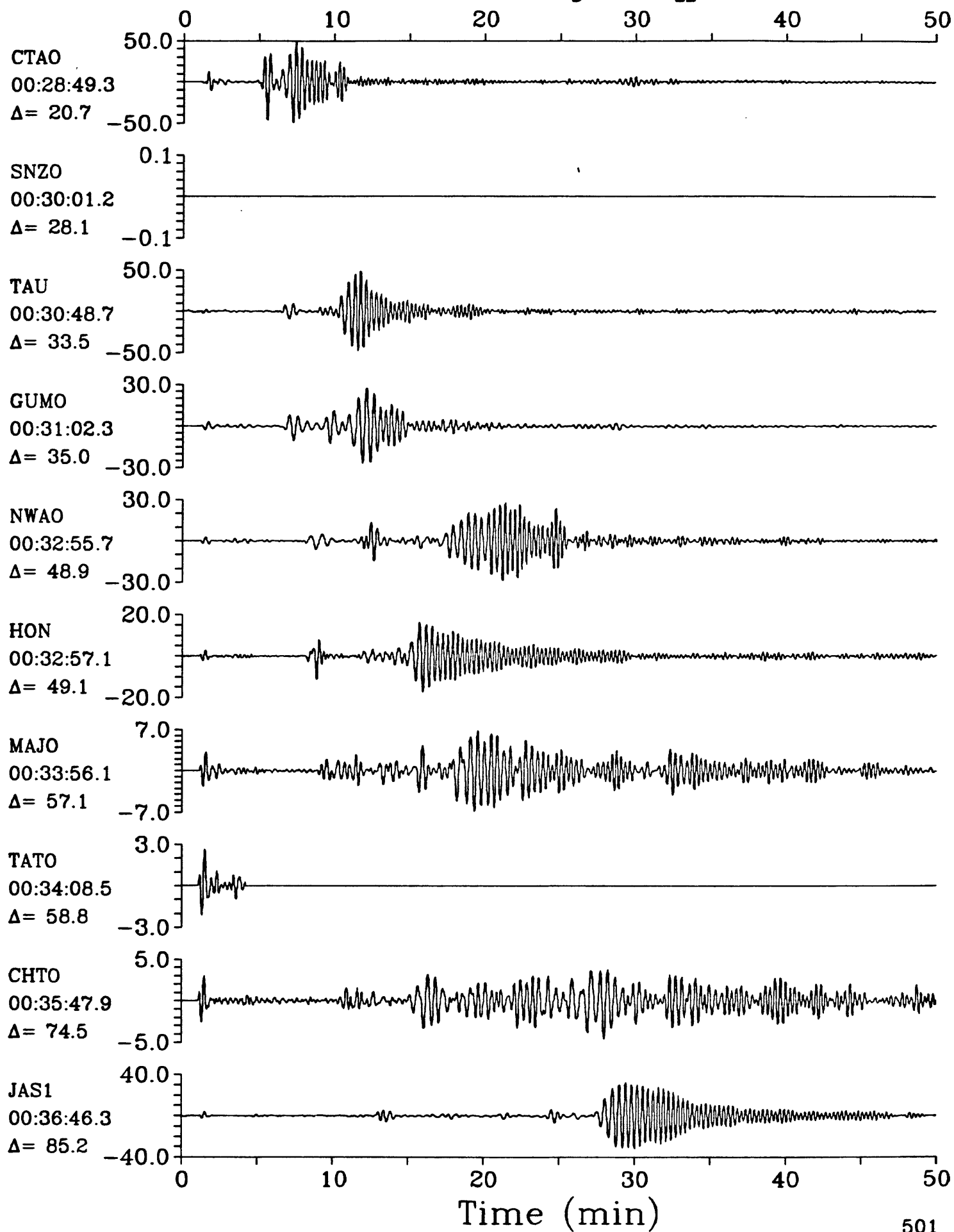
SPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{SZ}=6.2$ 

LPZ

14 April 1986 00:25:12.46

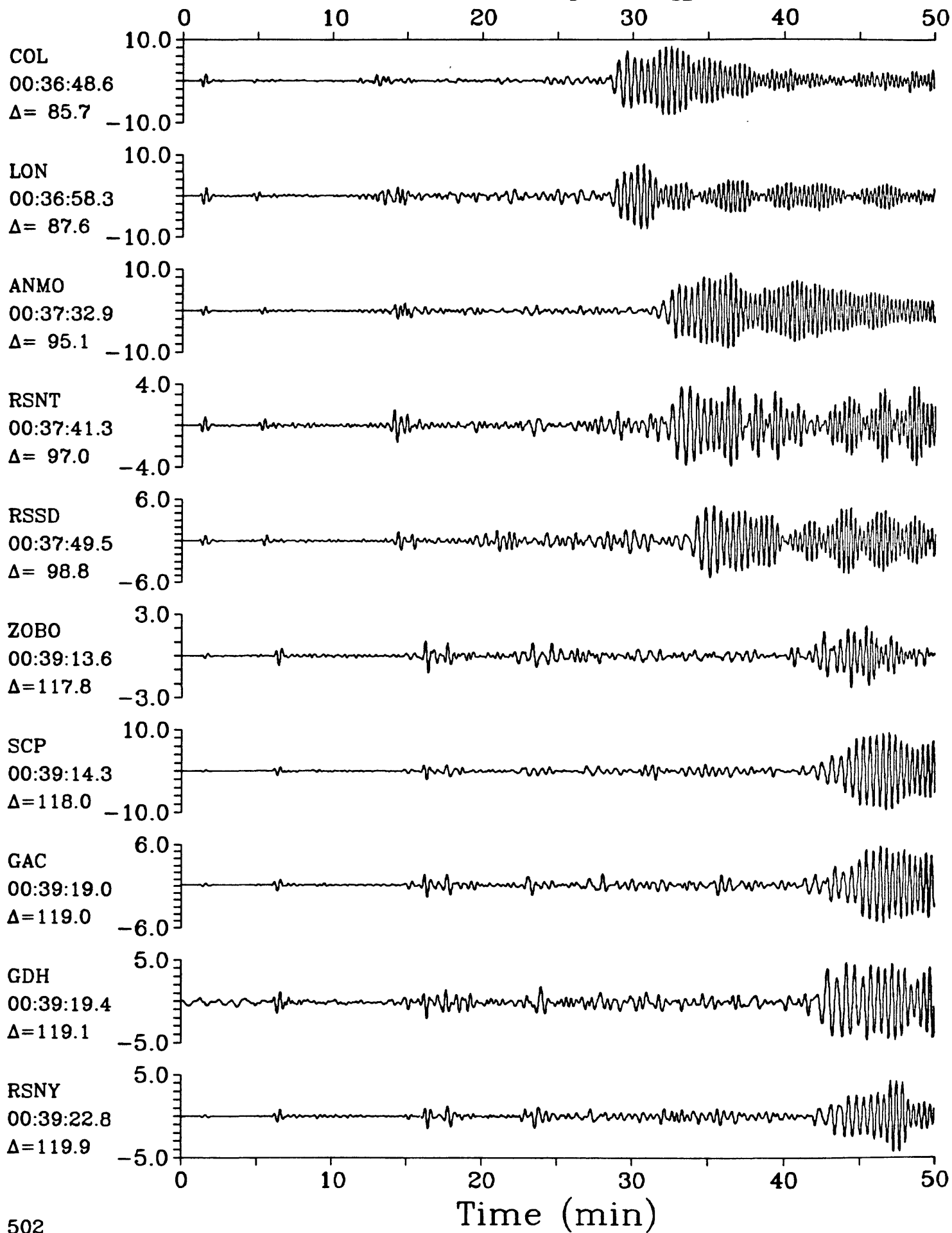
LPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{sz}=6.2$ 

LPZ

14 April 1986 00:25:12.46

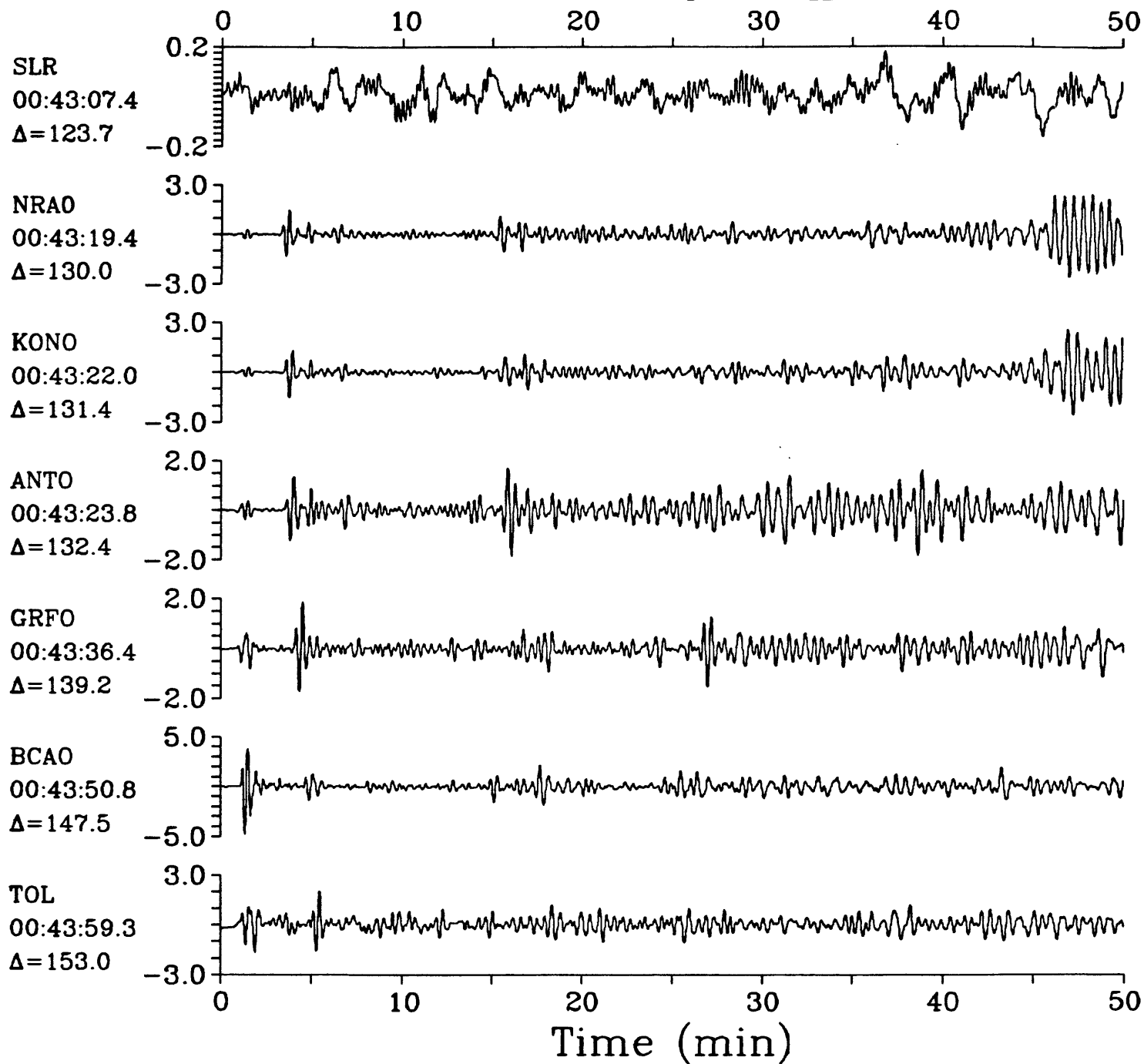
LPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{sz}=6.2$ 

LPZ

14 April 1986 00:25:12.46

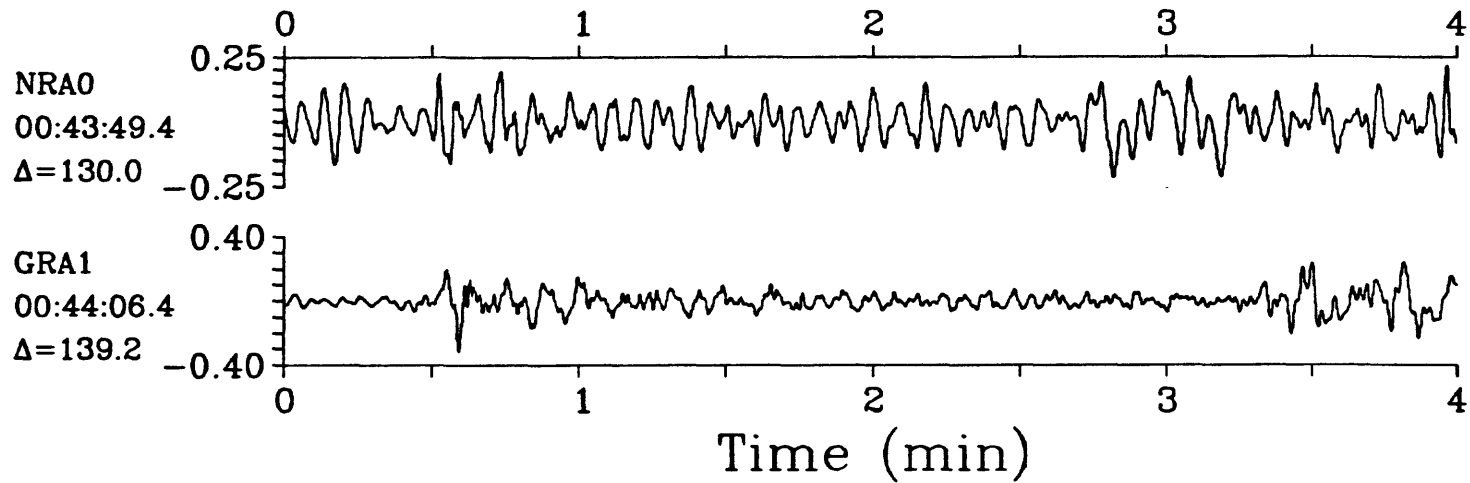
LPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{sz}=6.2$ 

IPZ

14 April 1986 00:25:12.46

IPZ

Vanuatu Islands $h=33.0$ $m_b=5.8$ $M_{sz}=6.2$ 

14 April 1986 10:52:48.69

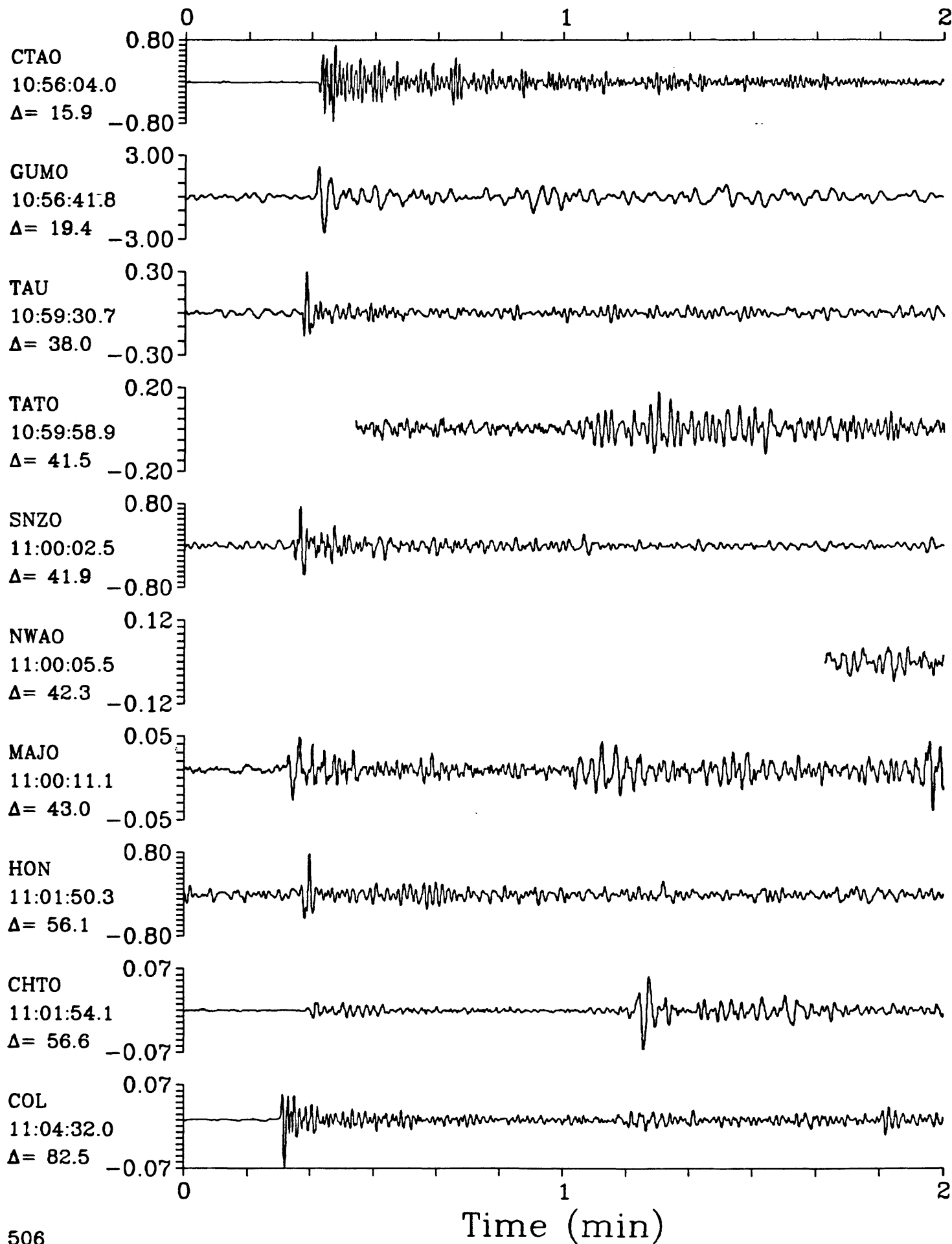
New Britain Region



SPZ

14 April 1986 10:52:48.69
New Britain Region $h=217.0$ $m_b=5.6$

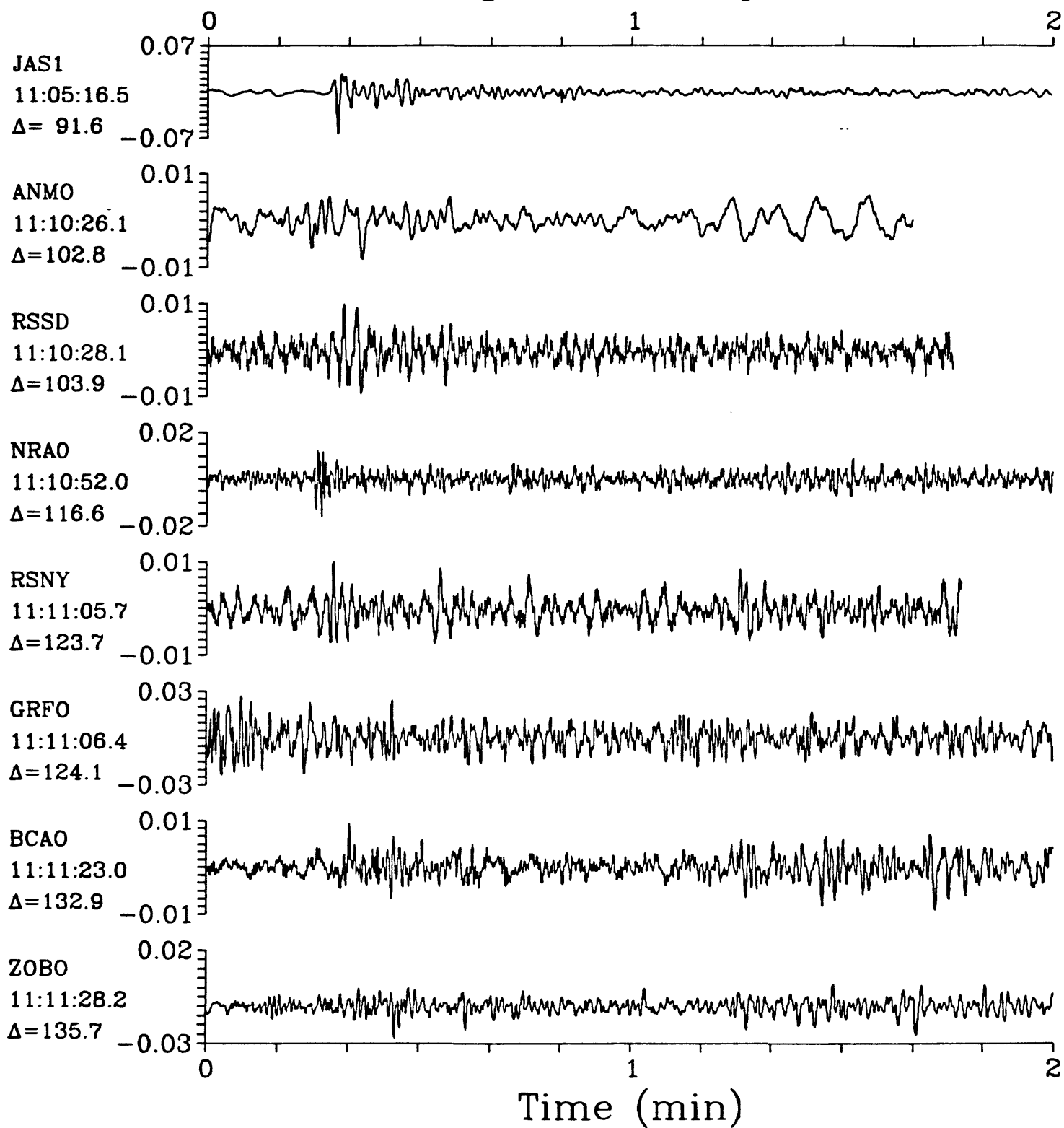
SPZ



SPZ

14 April 1986 10:52:48.69
New Britain Region $h=217.0$ $m_b=5.6$

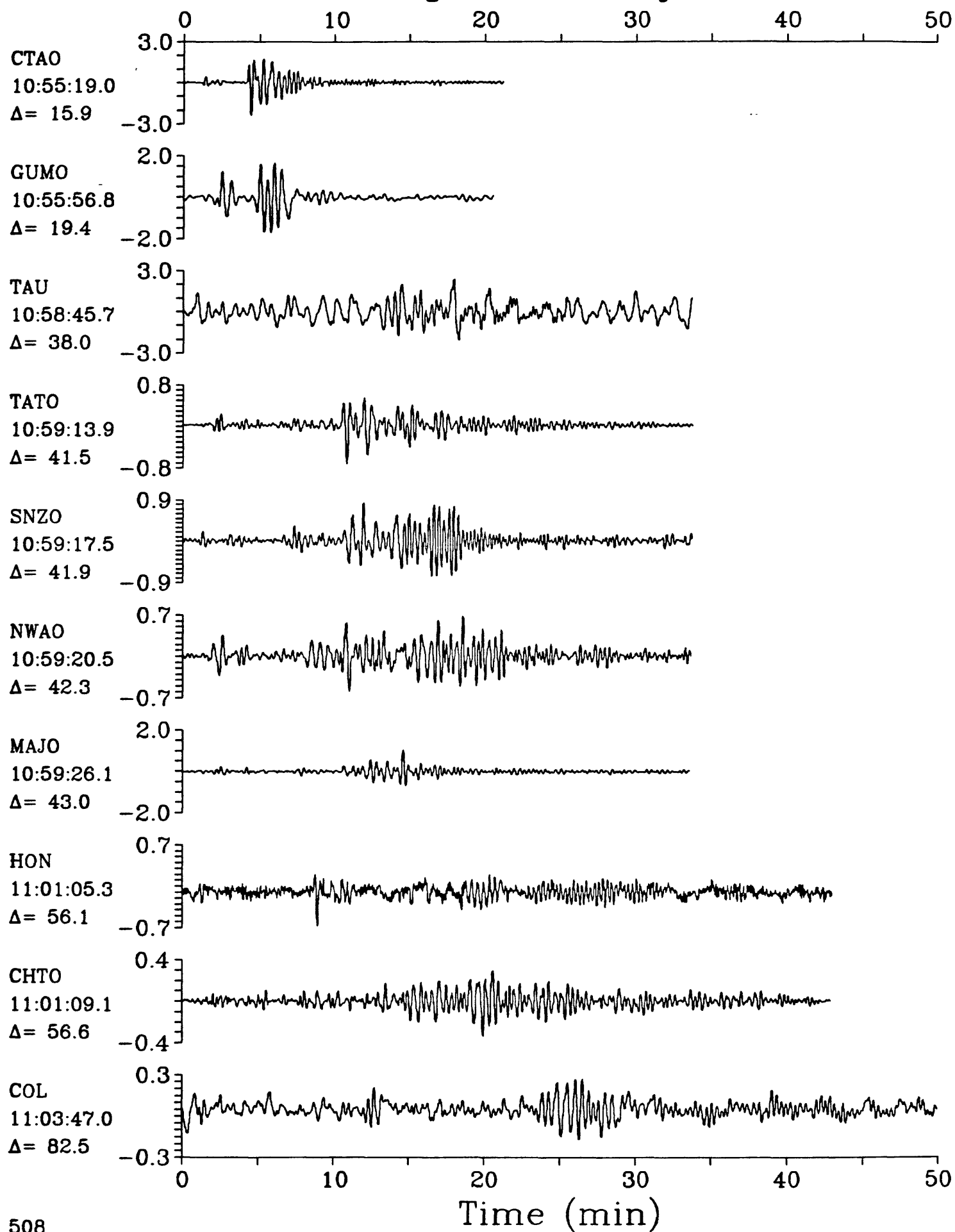
SPZ



LPZ

14 April 1986 10:52:48.69
New Britain Region $h=217.0$ $m_b=5.6$

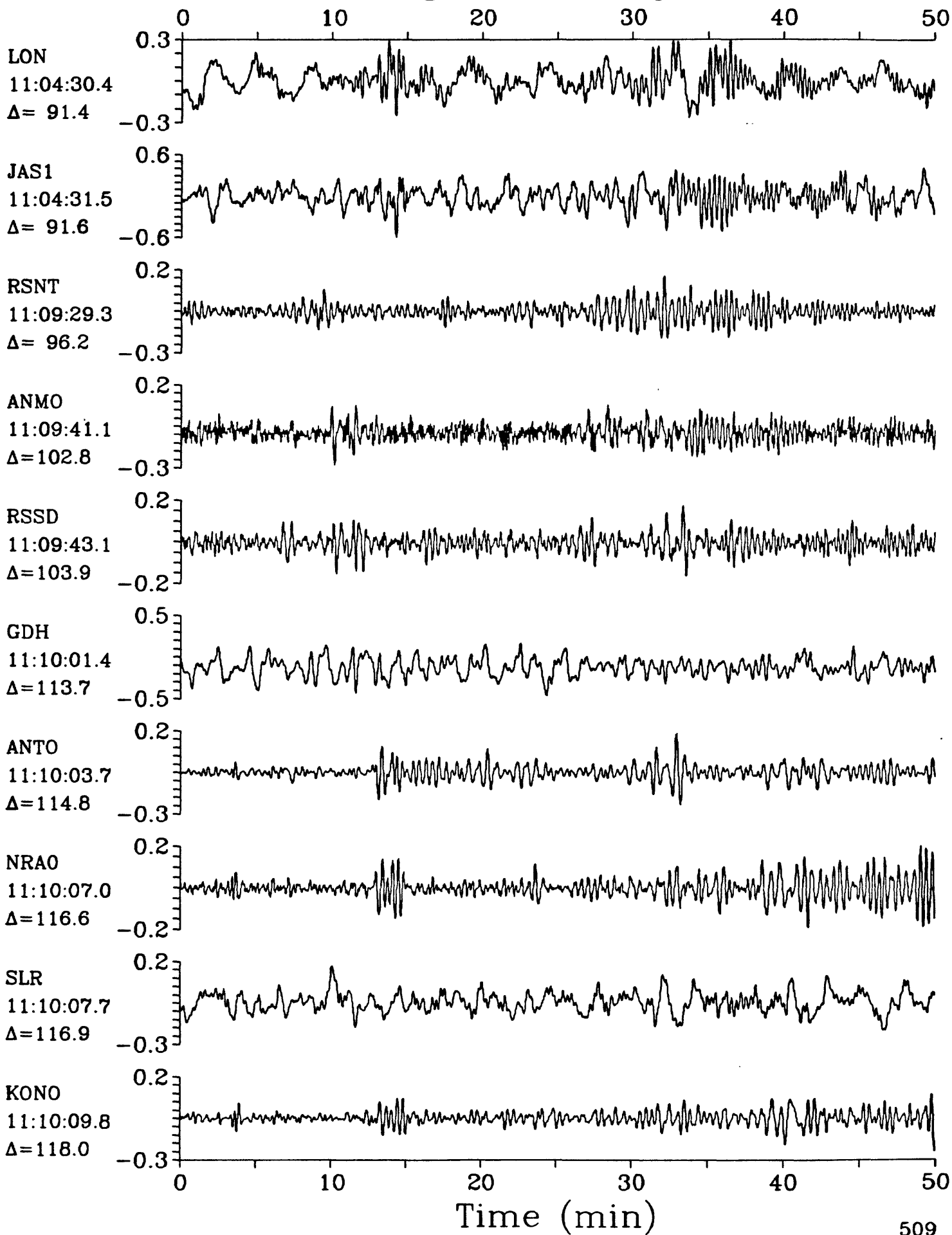
LPZ



LPZ

14 April 1986 10:52:48.69
New Britain Region $h=217.0$ $m_b=5.6$

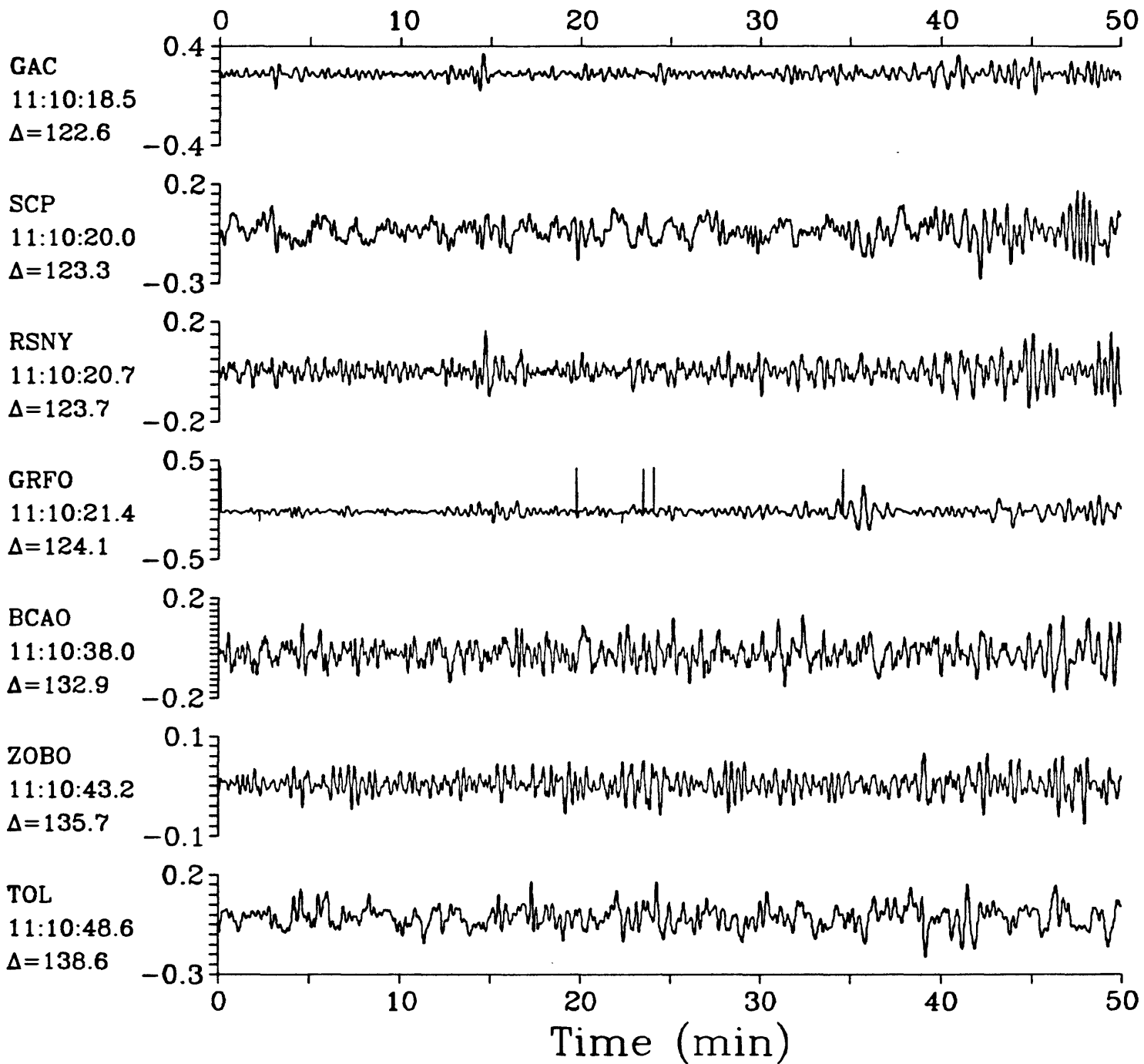
LPZ



LPZ

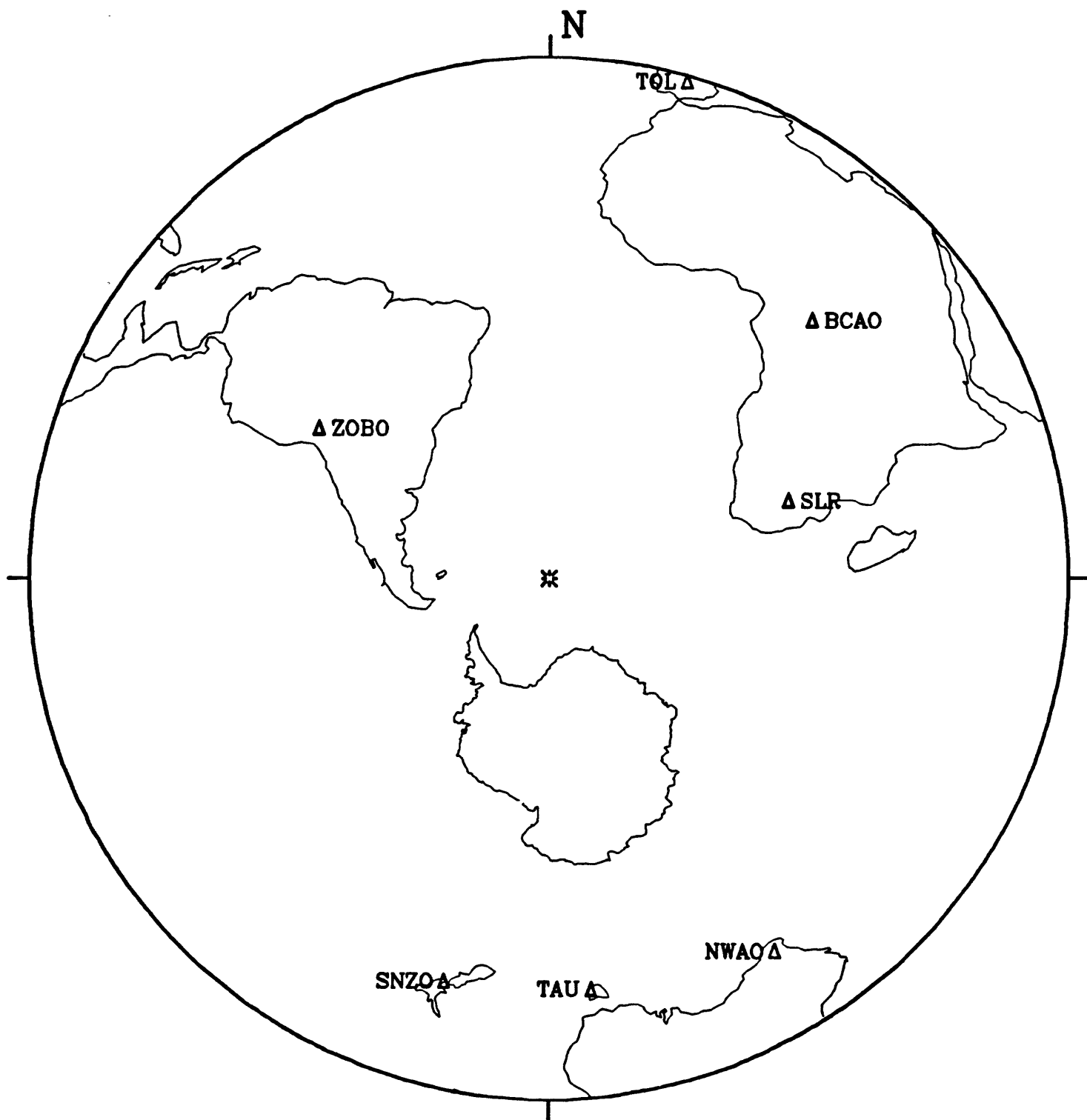
14 April 1986 10:52:48.69

LPZ

New Britain Region $h=217.0$ $m_b=5.6$ 

14 April 1986 14:52:13.75

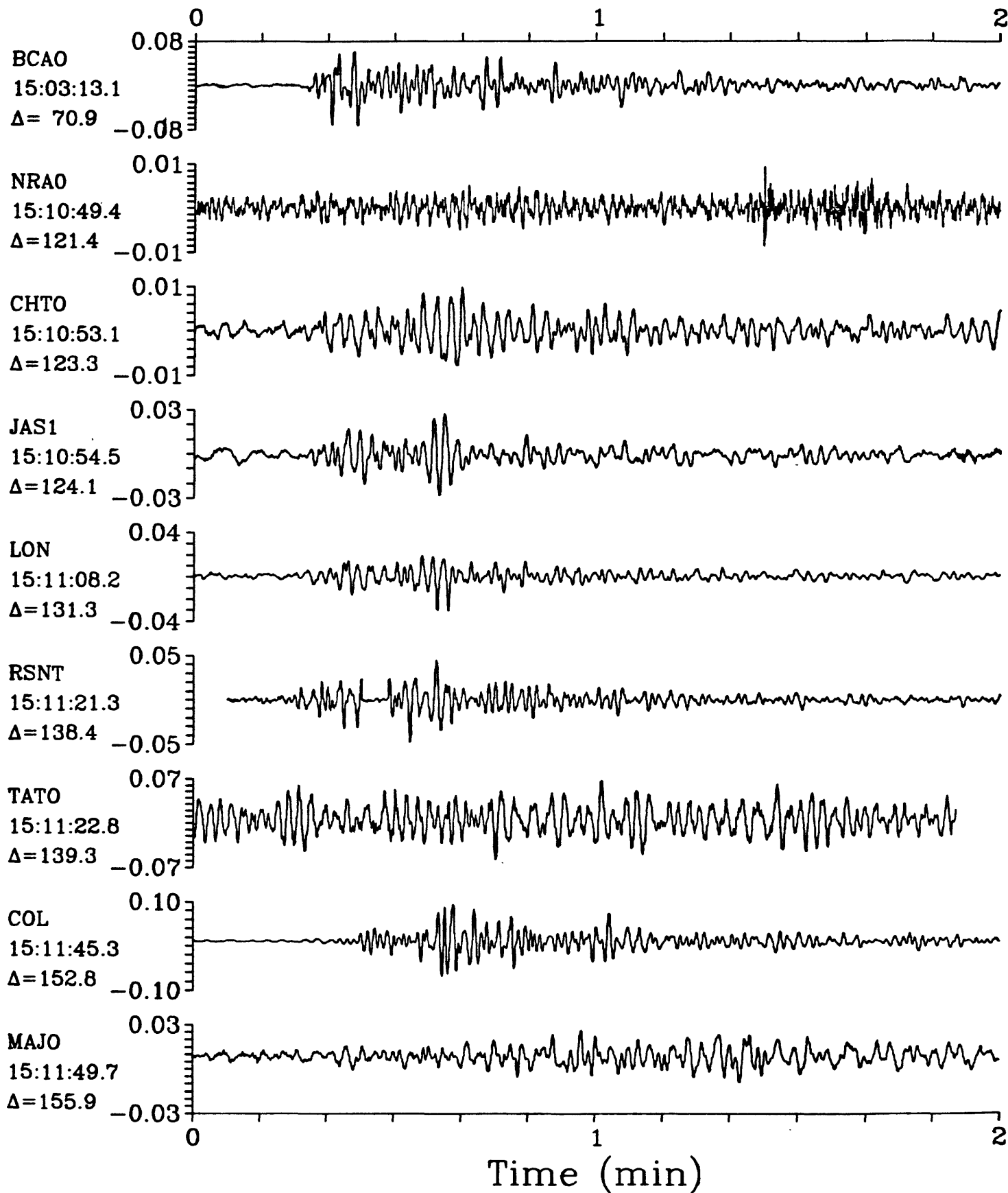
South Sandwich Islands Region



SPZ

14 April 1986 14:52:13.75

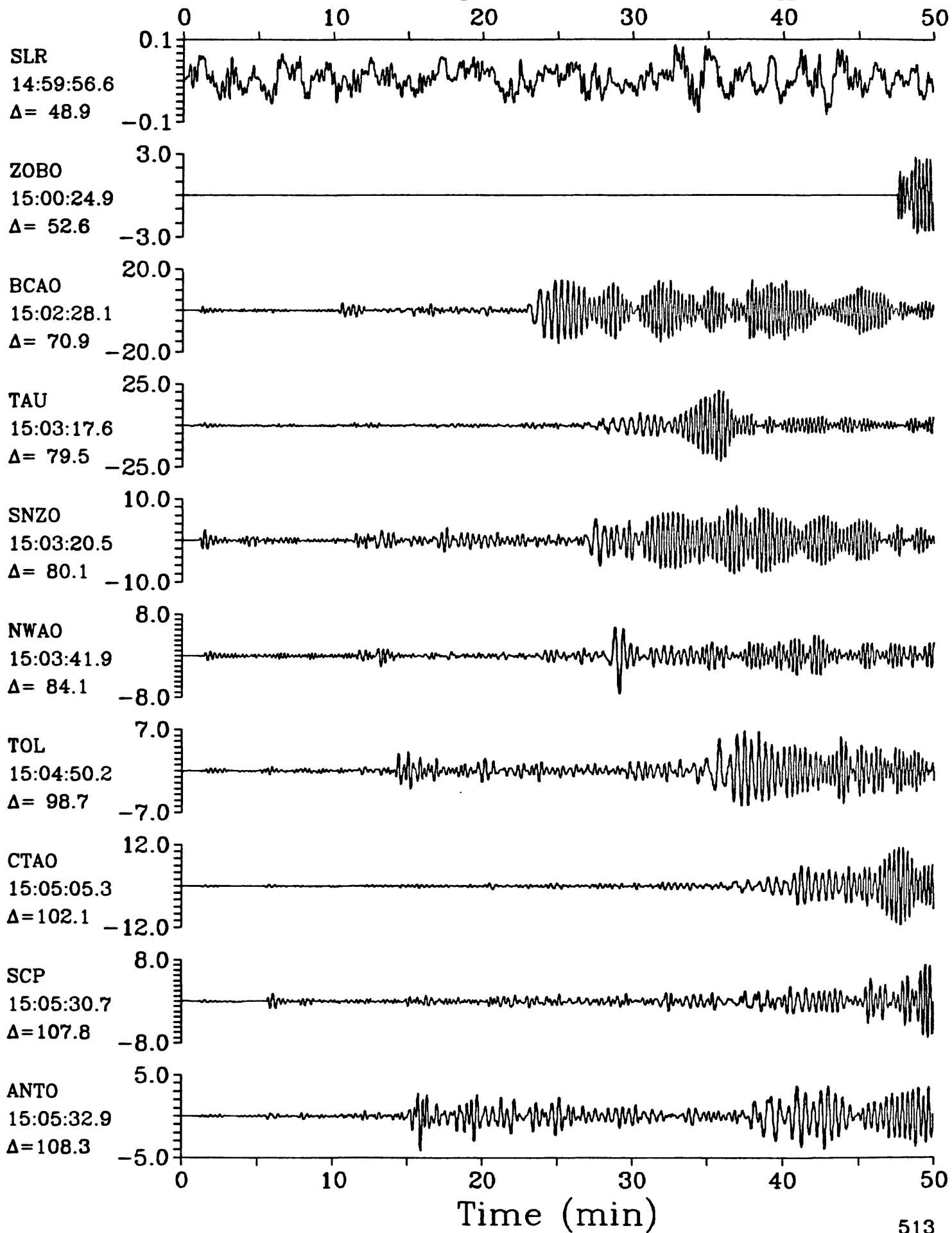
SPZ

South Sandwich Islands Region $h=33.0$ $m_b=5.7$ $M_{sz}=6.2$ 

LPZ

14 April 1986 14:52:13.75

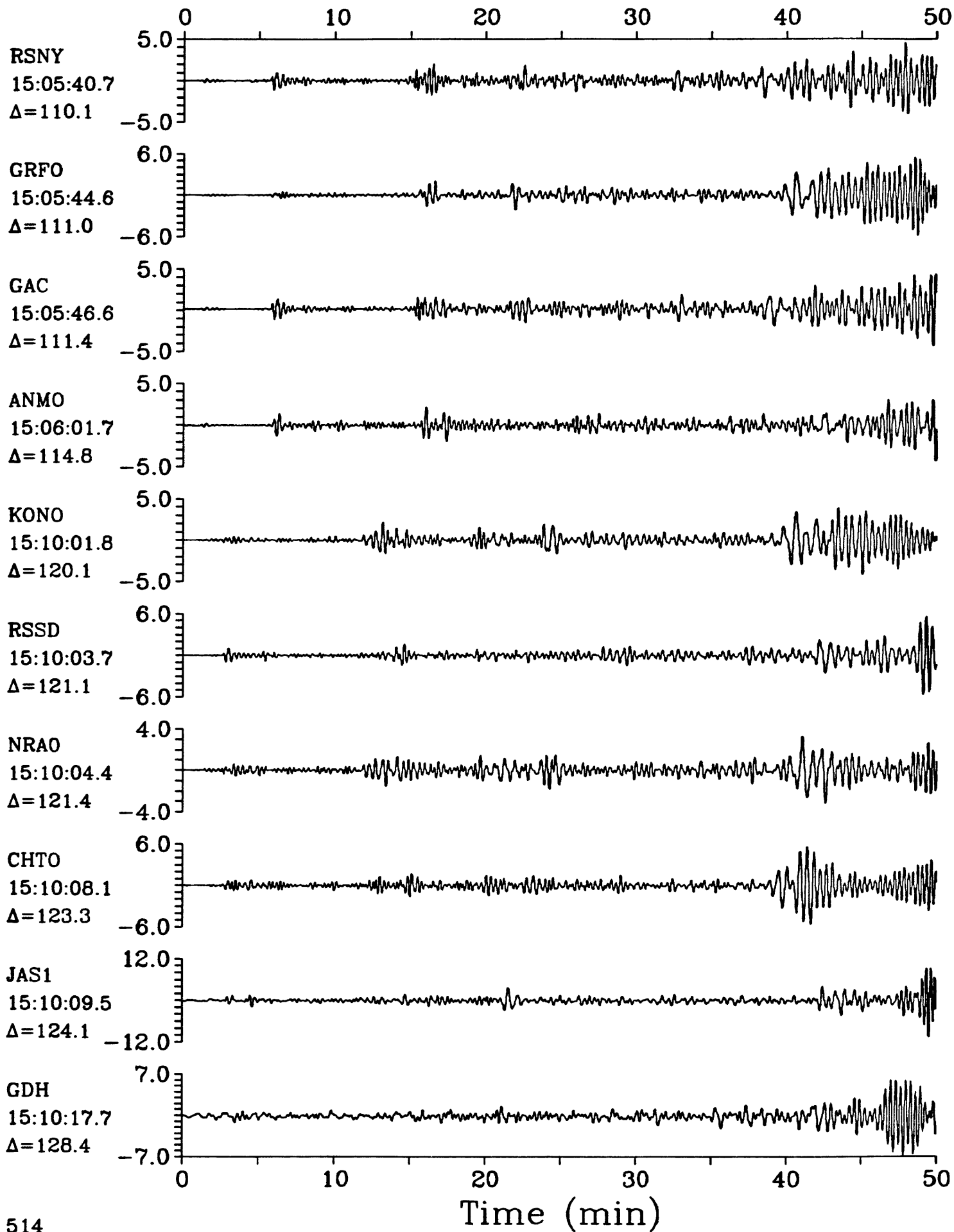
LPZ

South Sandwich Islands Region $h=33.0$ $m_b=5.7$ $M_{sz}=6.2$ 

LPZ

14 April 1986 14:52:13.75

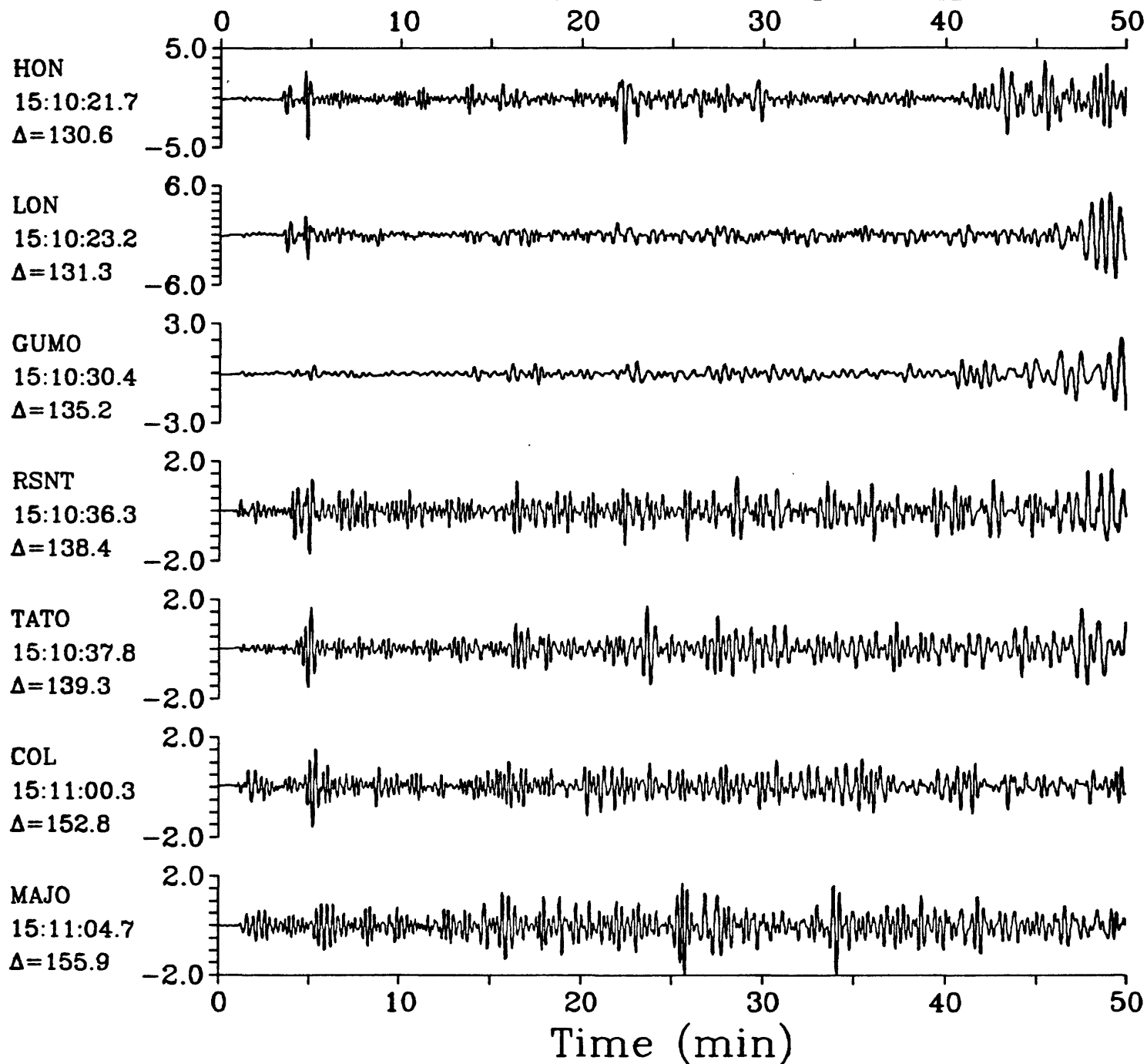
LPZ

South Sandwich Islands Region $h=33.0$ $m_b=5.7$ $M_{sz}=6.2$ 

LPZ

14 April 1986 14:52:13.75

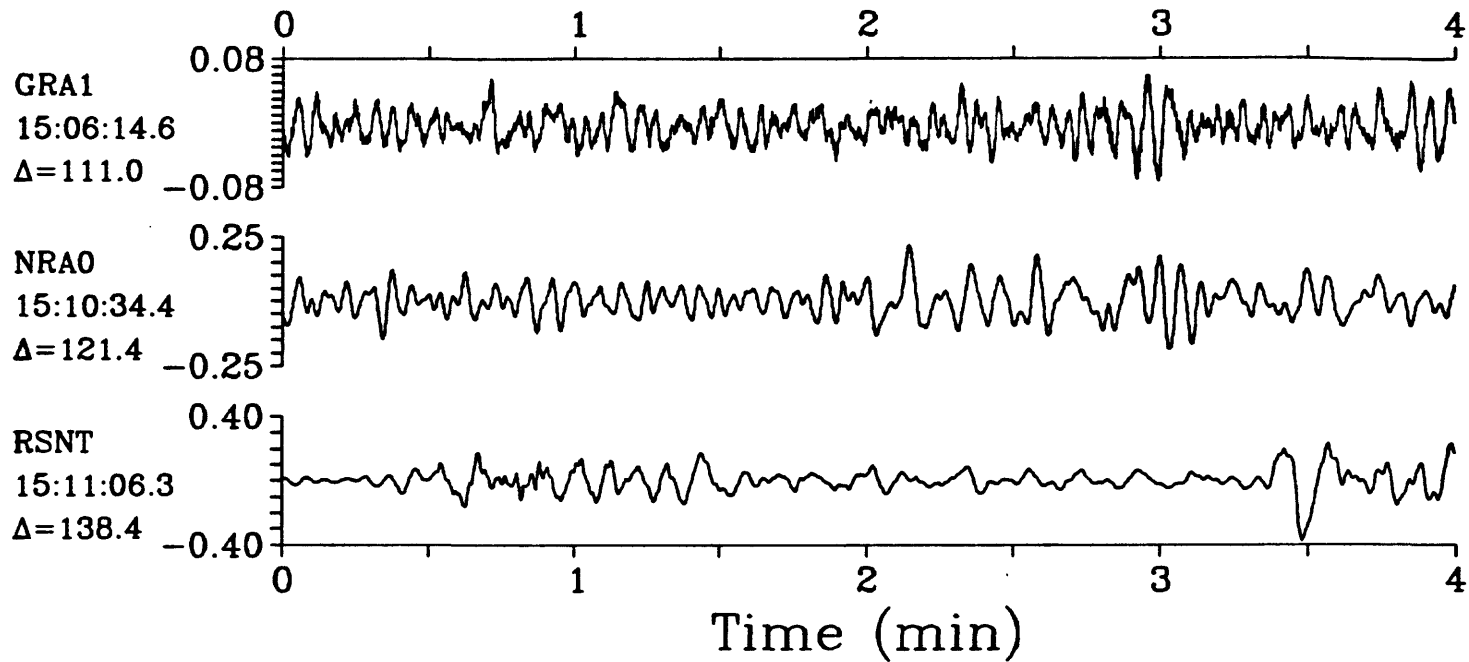
LPZ

South Sandwich Islands Region $h=33.0$ $m_b=5.7$ $M_{sz}=6.2$ 

IPZ

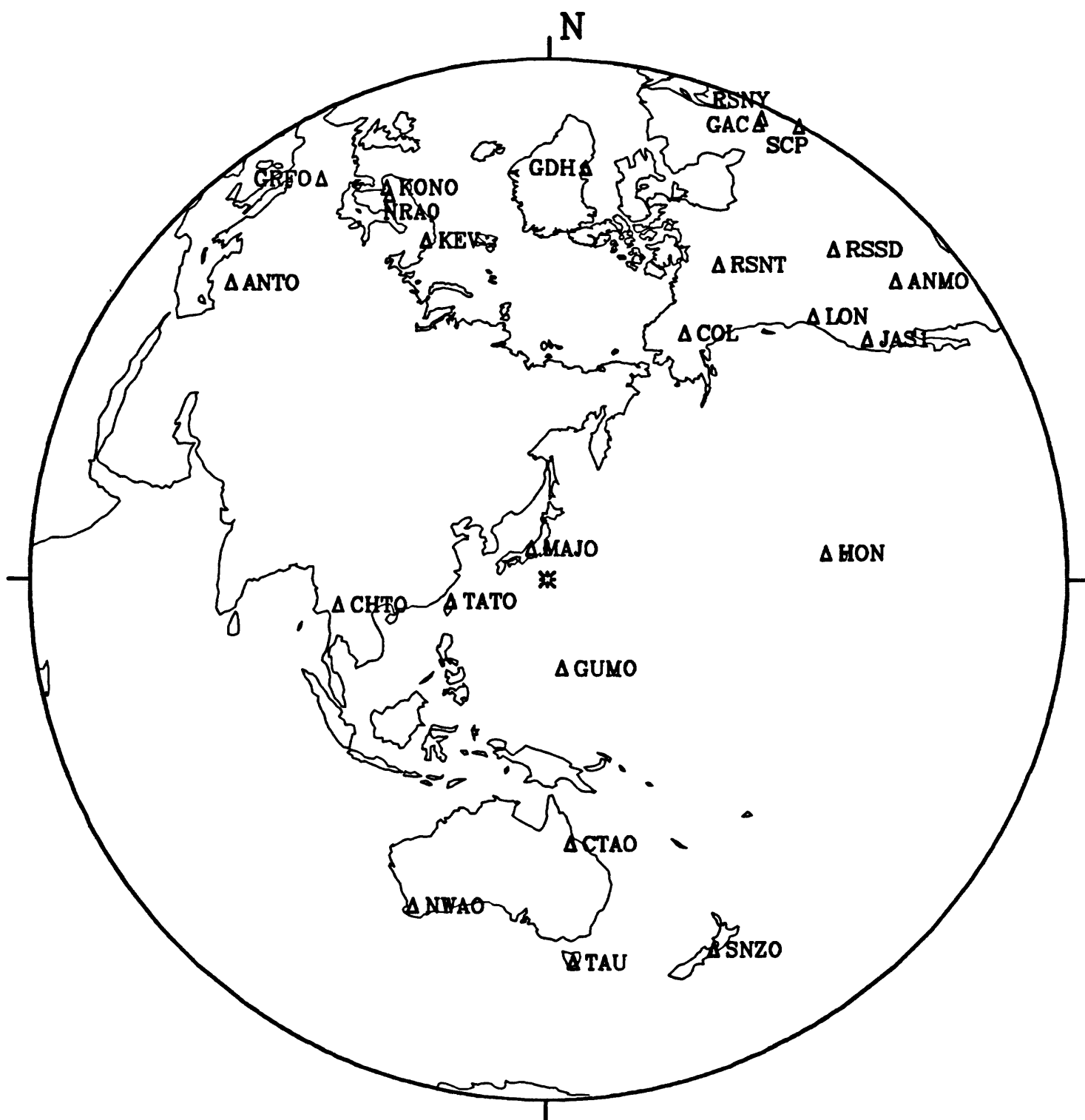
14 April 1986 14:52:13.75

IPZ

South Sandwich Islands Region $h=33.0$ $m_b=5.7$ $M_{sz}=6.2$ 

16 April 1986 01:31:44.51

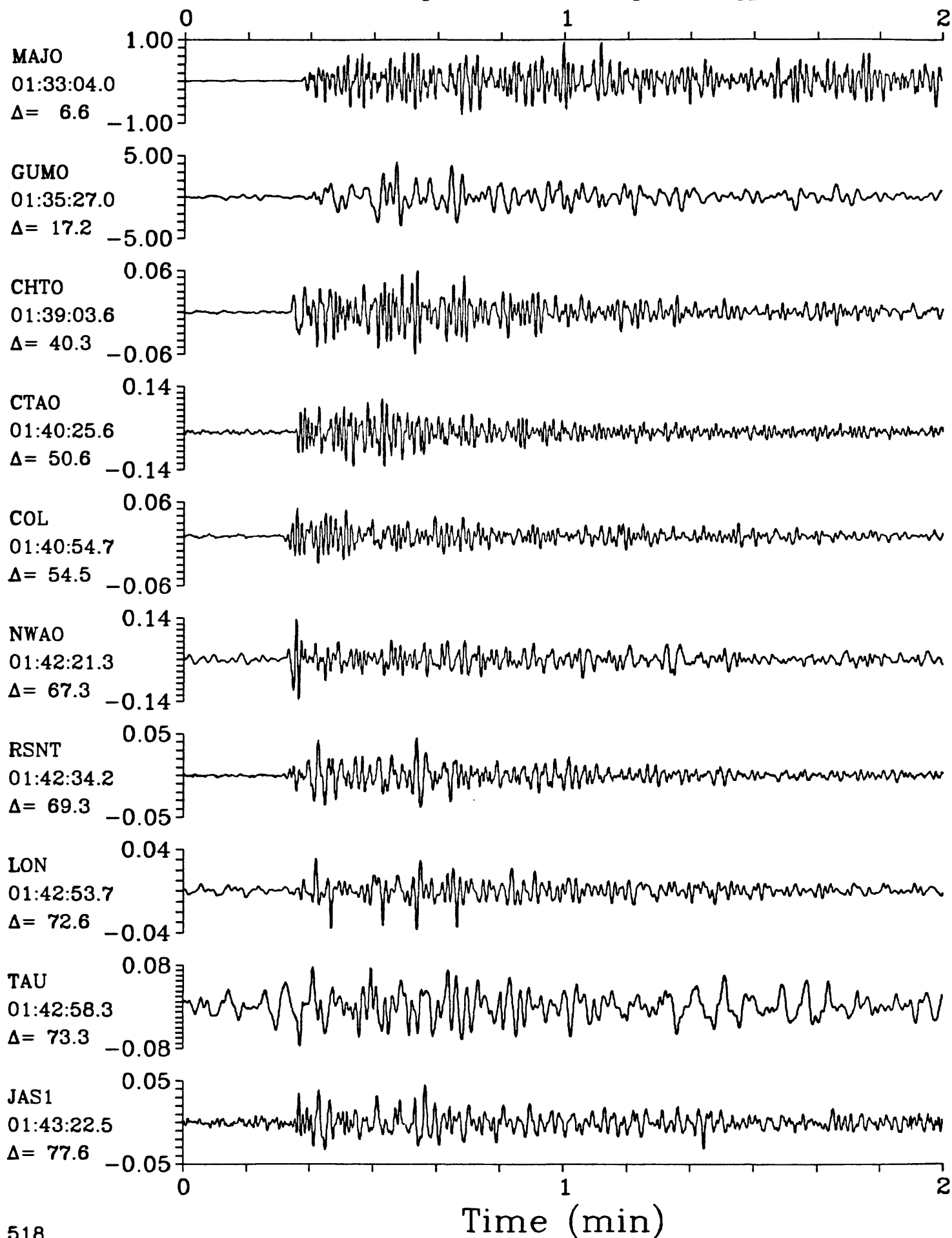
South of Honshu, Japan



SPZ

16 April 1986 01:31:44.51

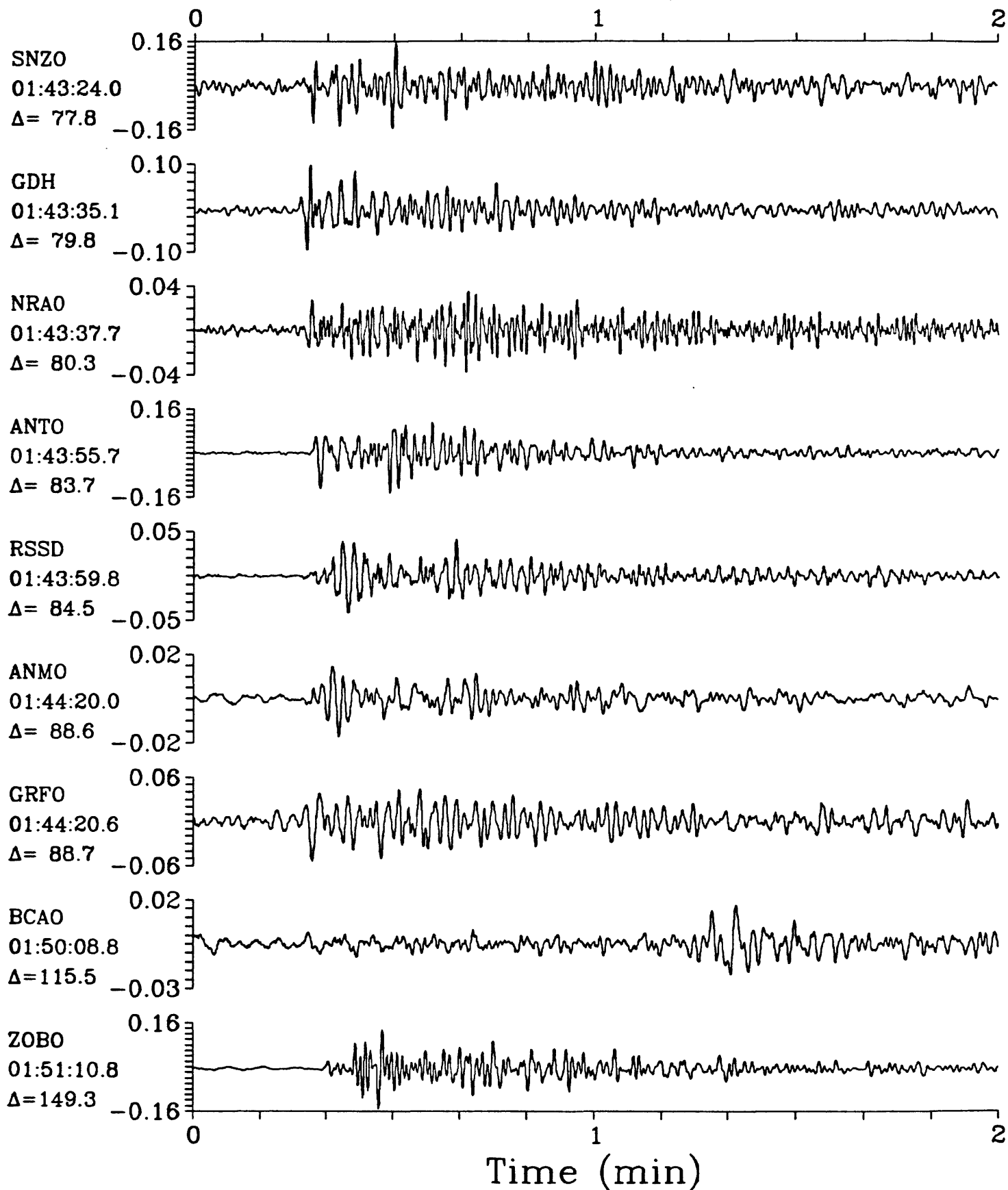
SPZ

South of Honshu, Japan $h=33.0$ $m_b=5.7$ $M_{sz}=5.6$ 

SPZ

16 April 1986 01:31:44.51

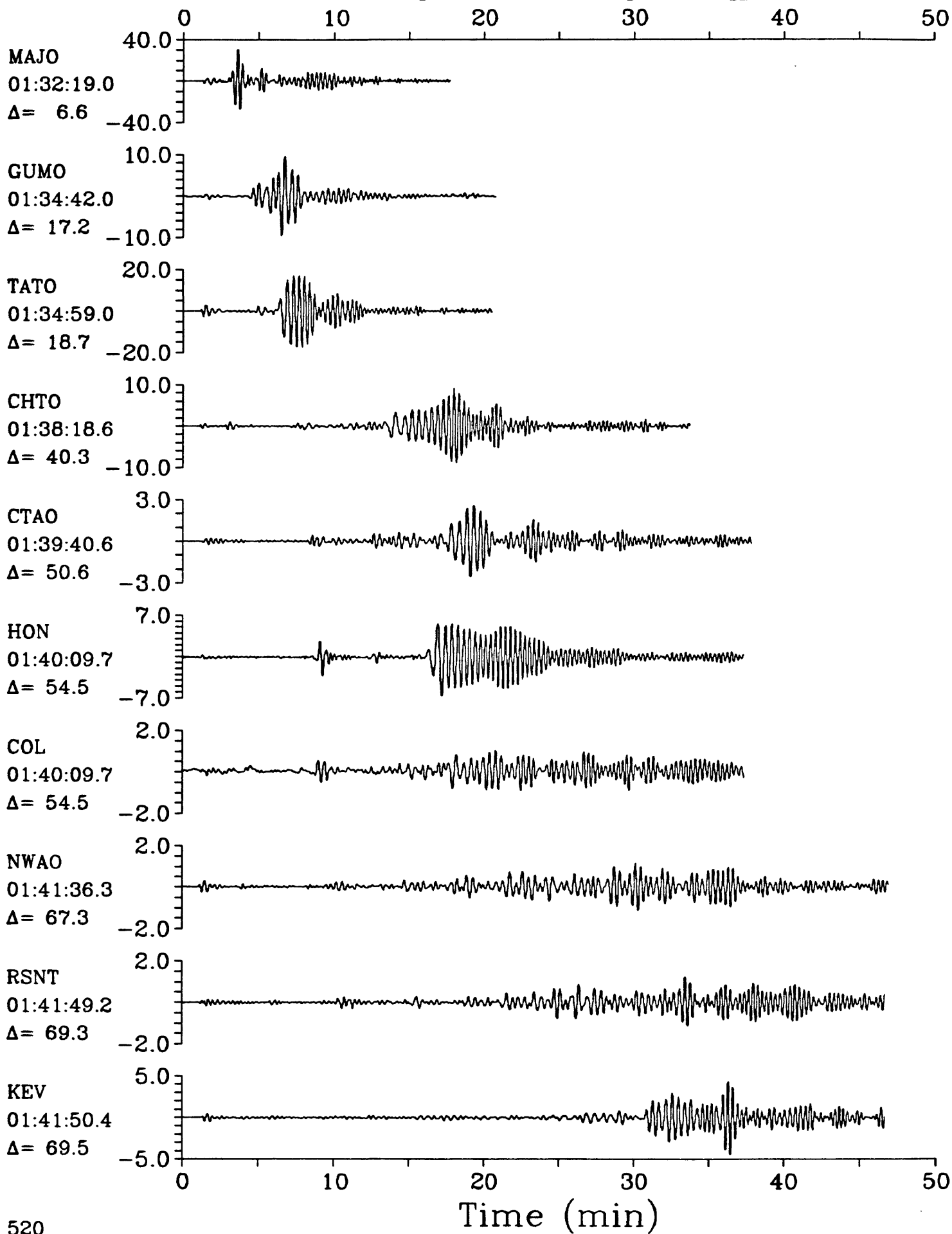
SPZ

South of Honshu, Japan $h=33.0$ $m_b=5.7$ $M_{sz}=5.6$ 

LPZ

16 April 1986 01:31:44.51

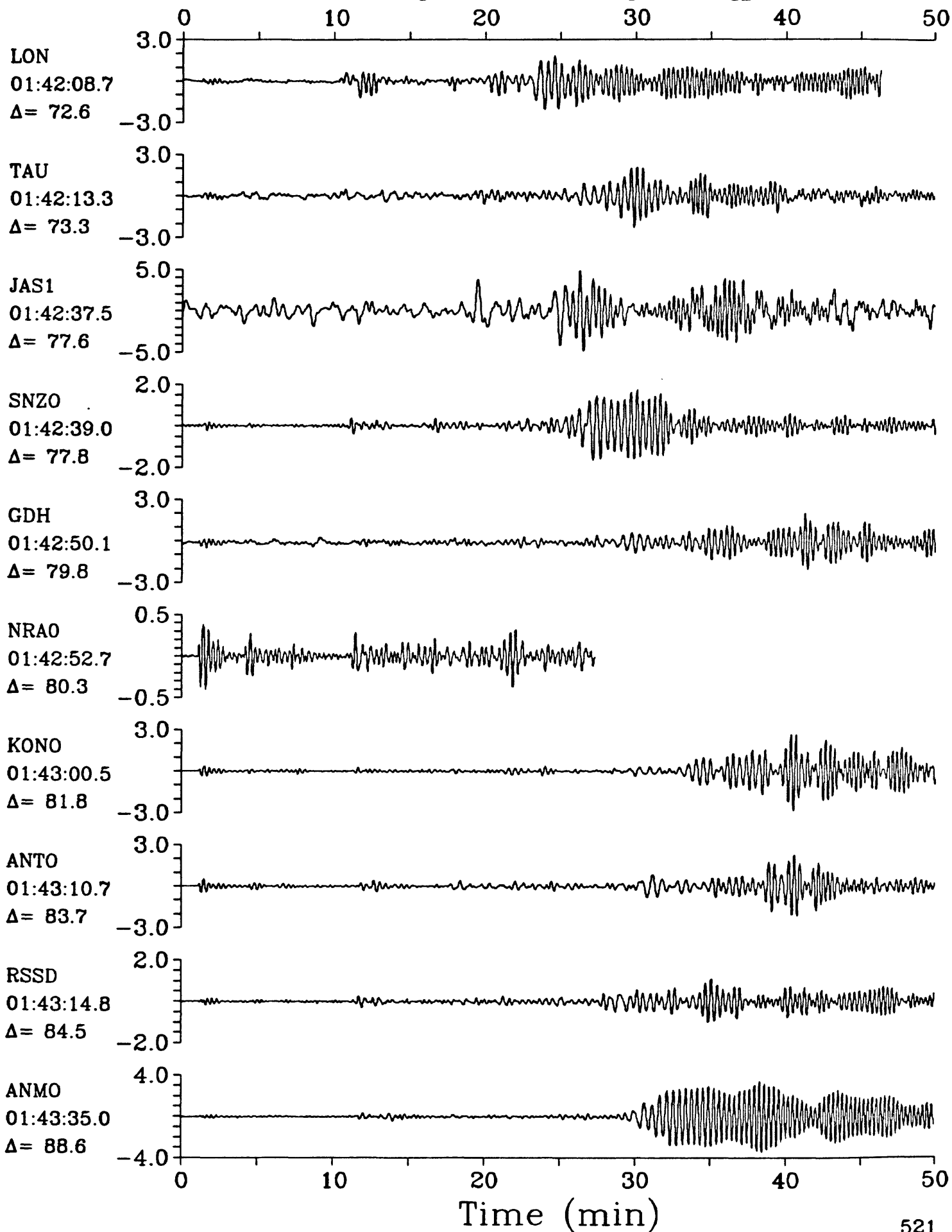
LPZ

South of Honshu, Japan $h=33.0$ $m_b=5.7$ $M_{sz}=5.6$ 

LPZ

16 April 1986 01:31:44.51

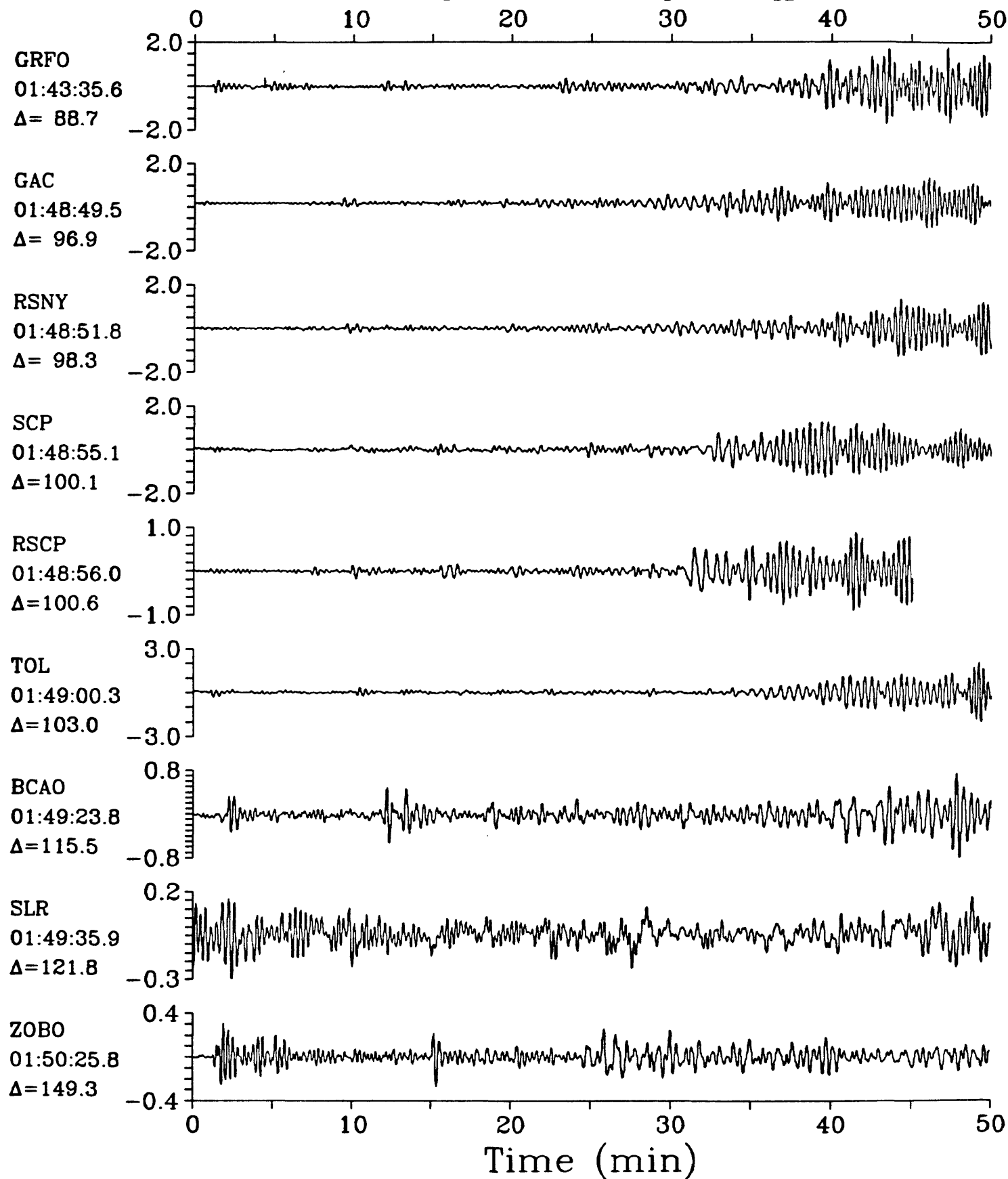
LPZ

South of Honshu, Japan $h=33.0$ $m_b=5.7$ $M_{sz}=5.6$ 

LPZ

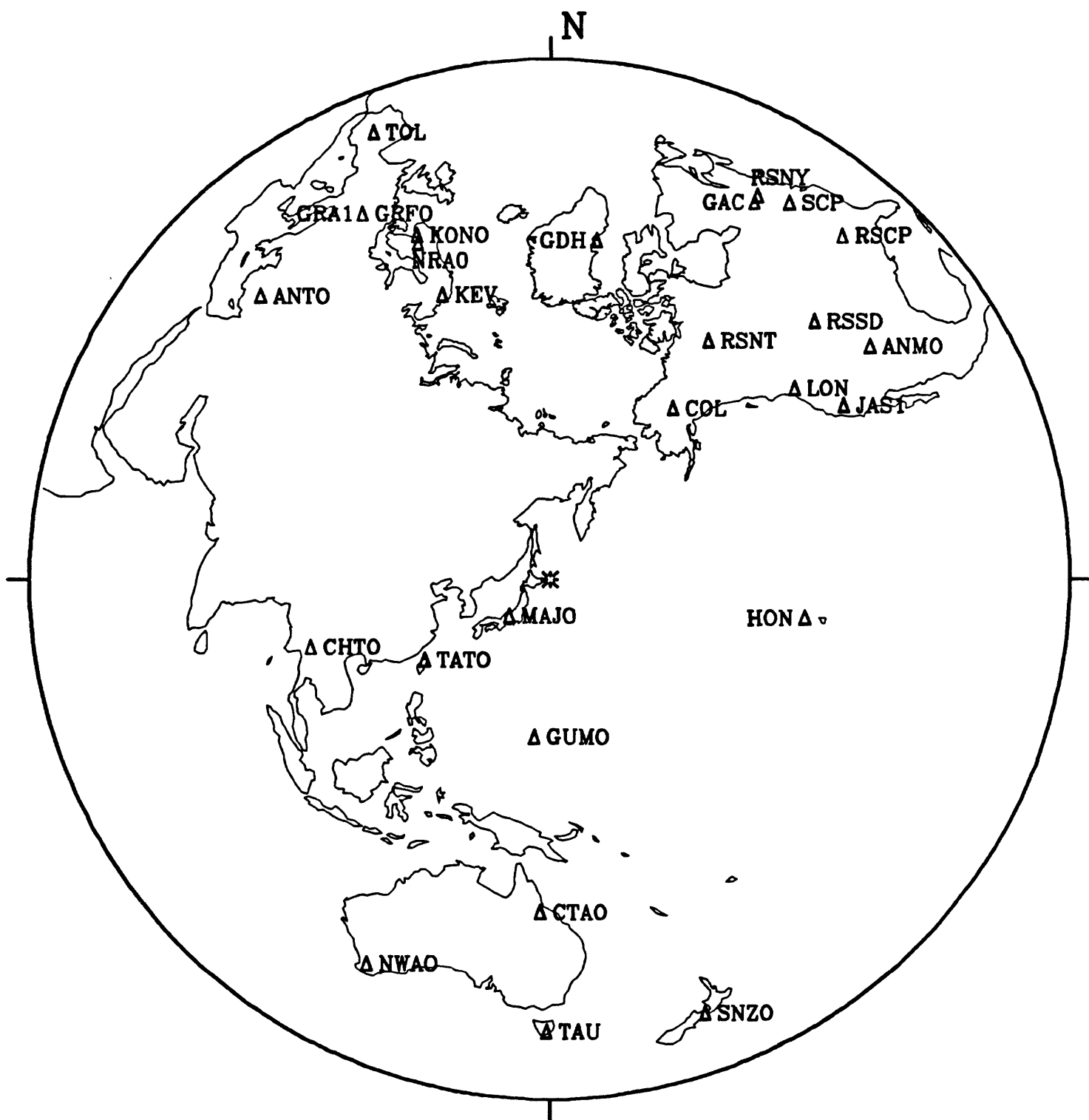
16 April 1986 01:31:44.51

LPZ

South of Honshu, Japan $h=33.0$ $m_b=5.7$ $M_{sz}=5.6$ 

16 April 1986 12:52:19.75

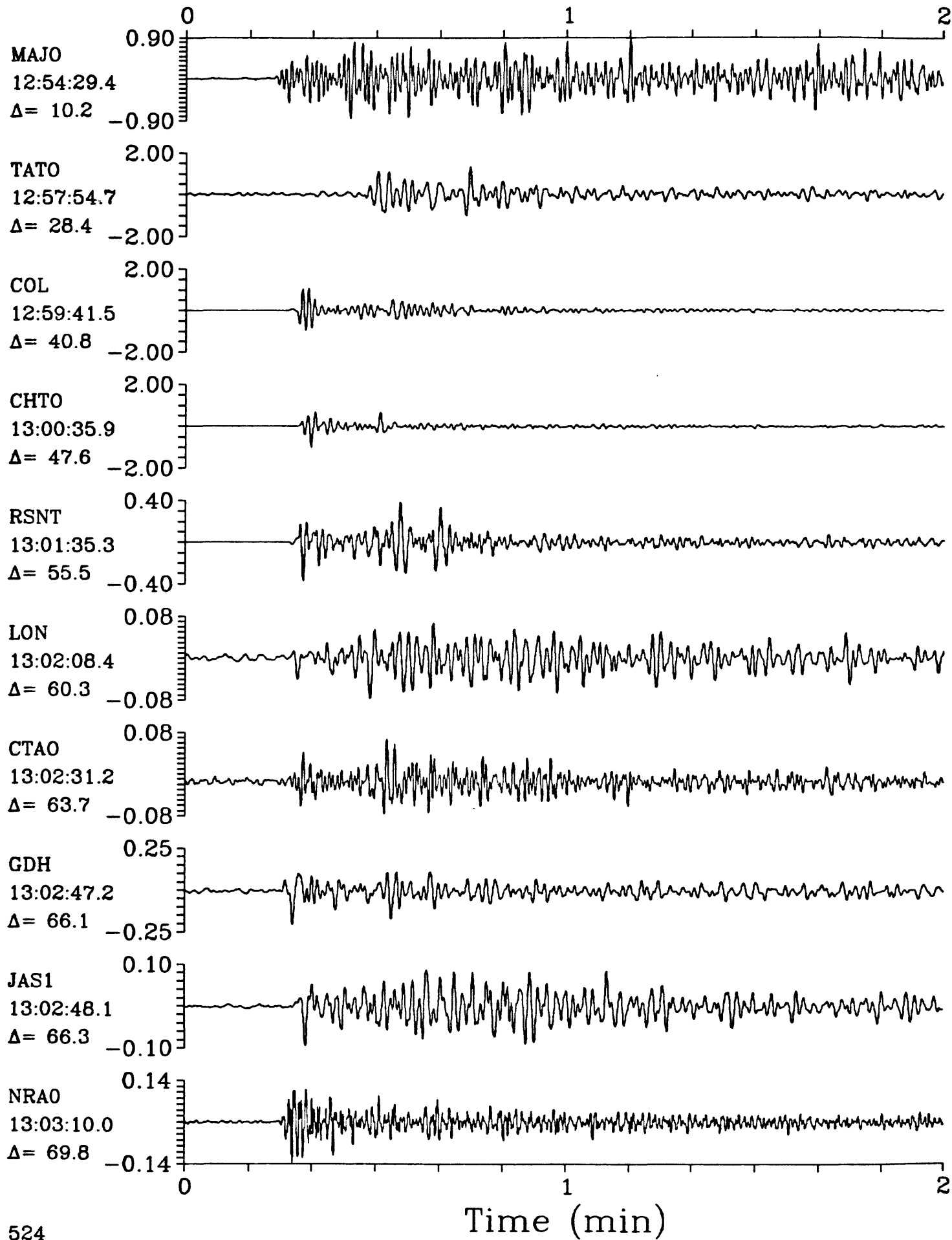
Kuril Islands



SPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

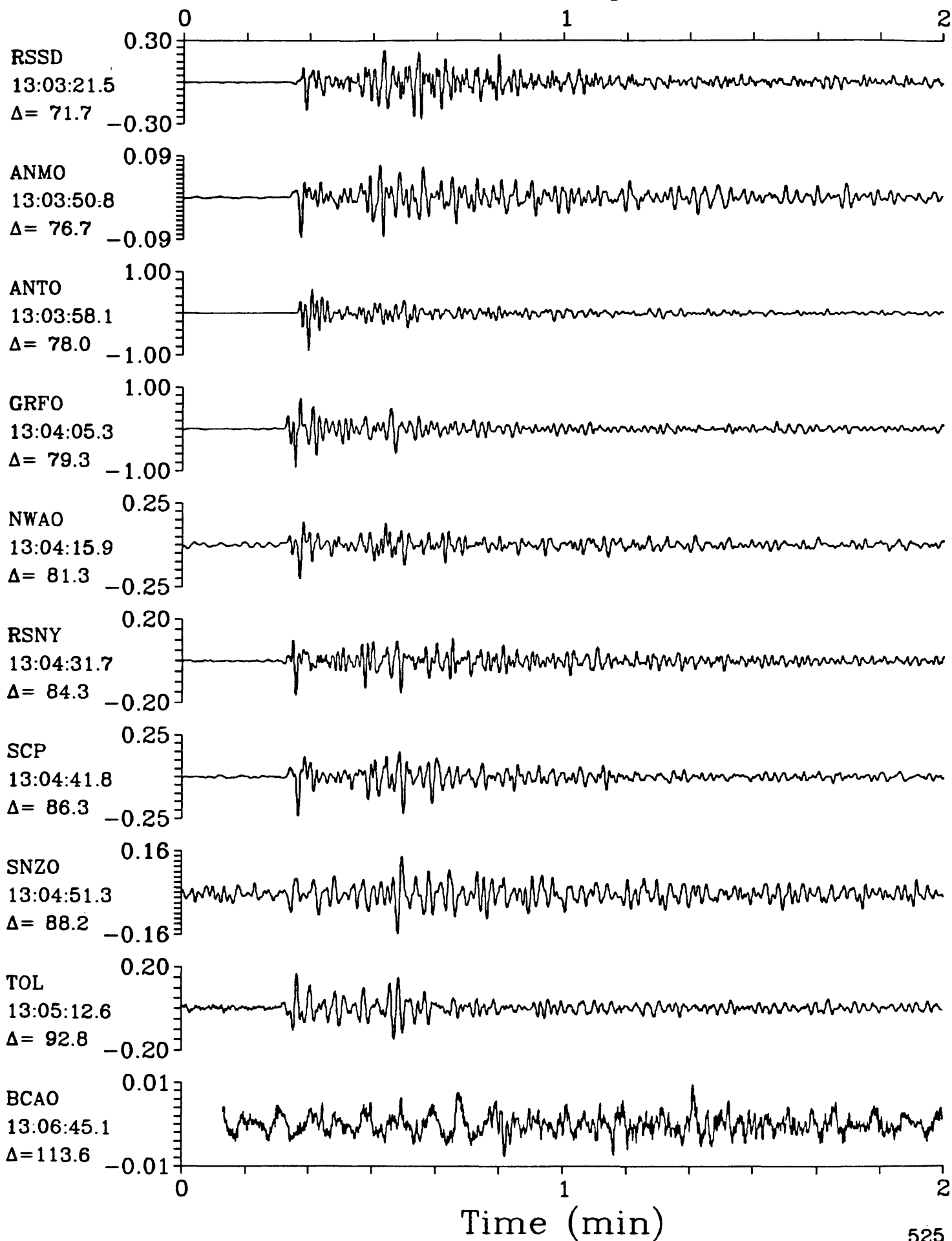
SPZ



SPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

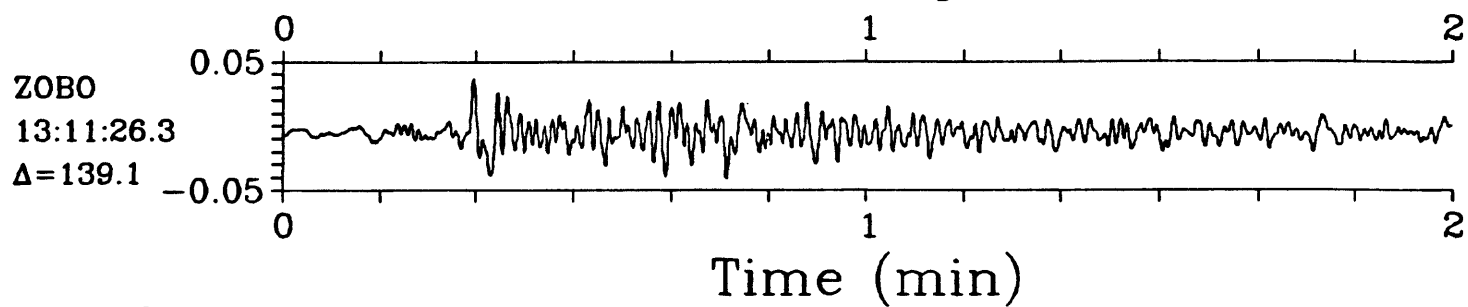
SPZ



SPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

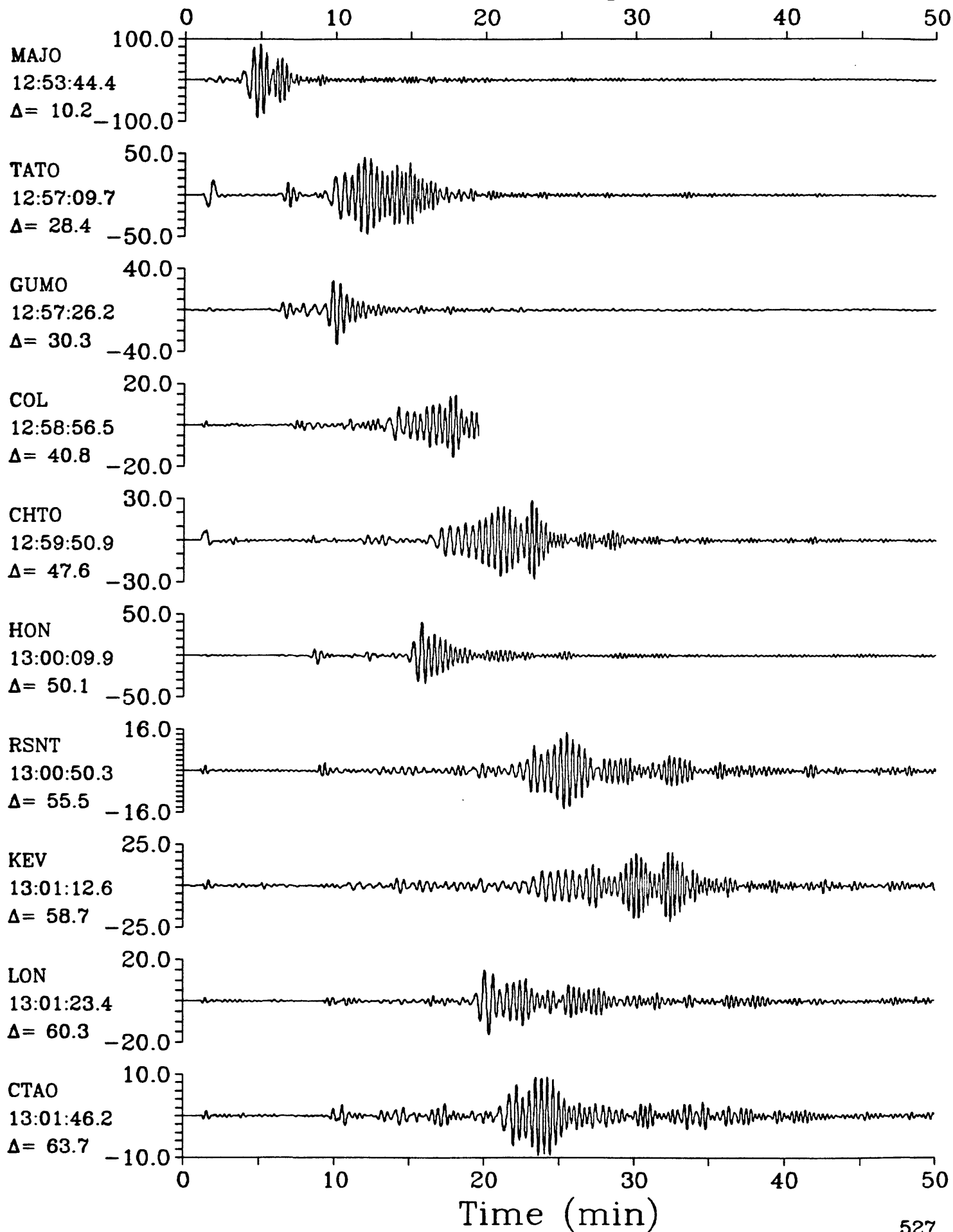
SPZ



LPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

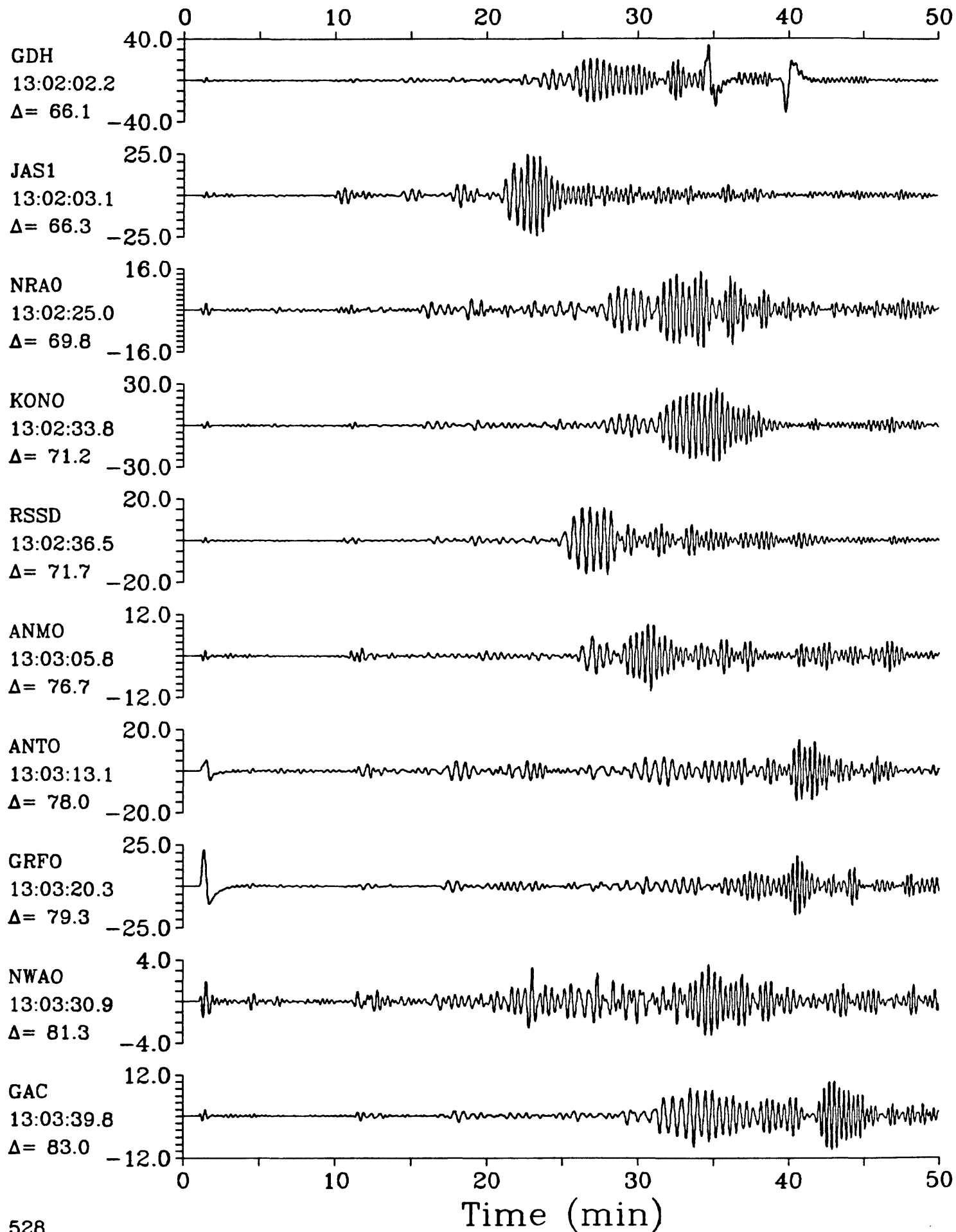
LPZ



LPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

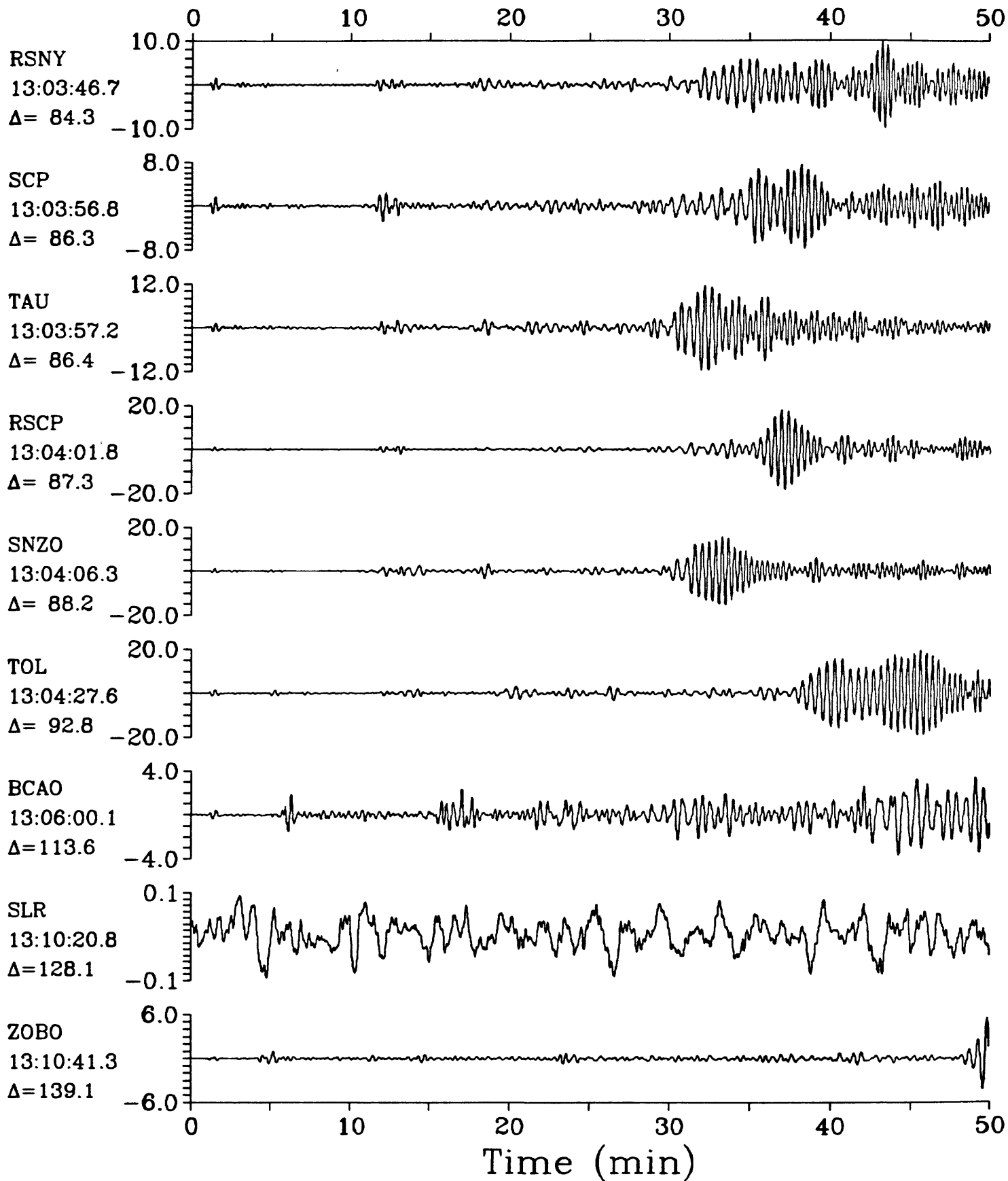
LPZ



LPZ

16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

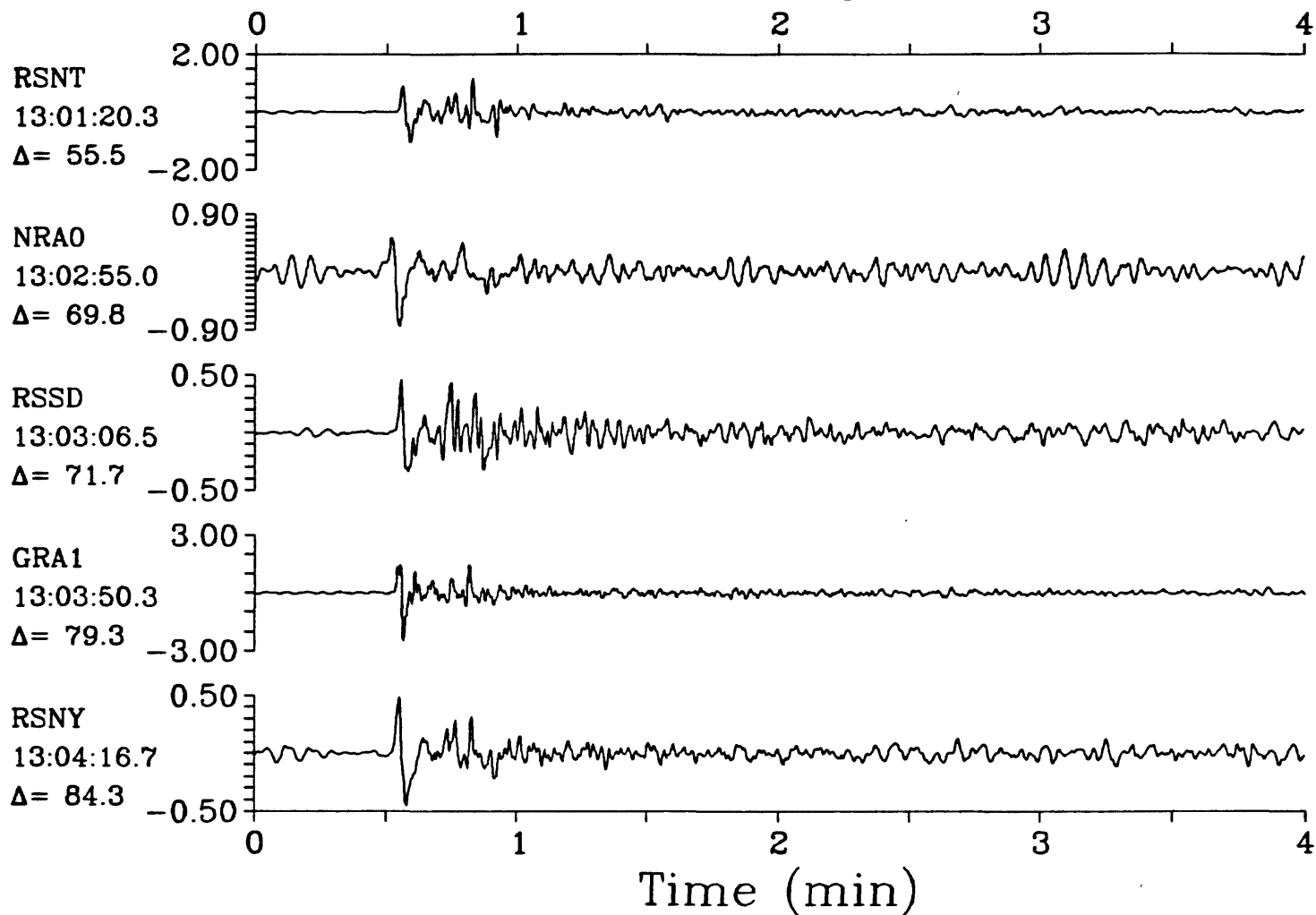
LPZ



IPZ

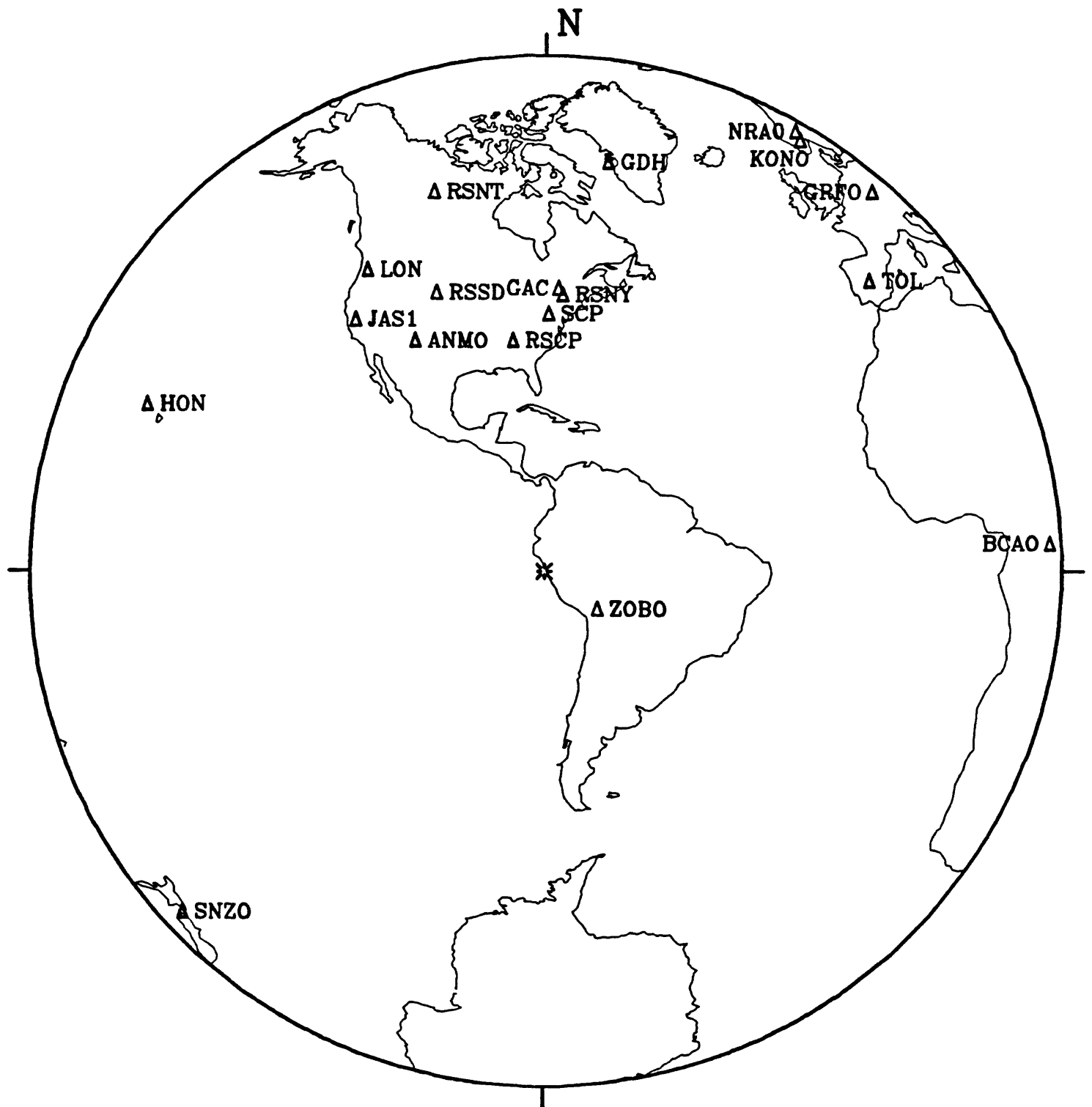
16 April 1986 12:52:19.75
Kuril Islands $h=51.7$ $m_b=6.3$

IPZ



19 April 1986 23:28:11.39

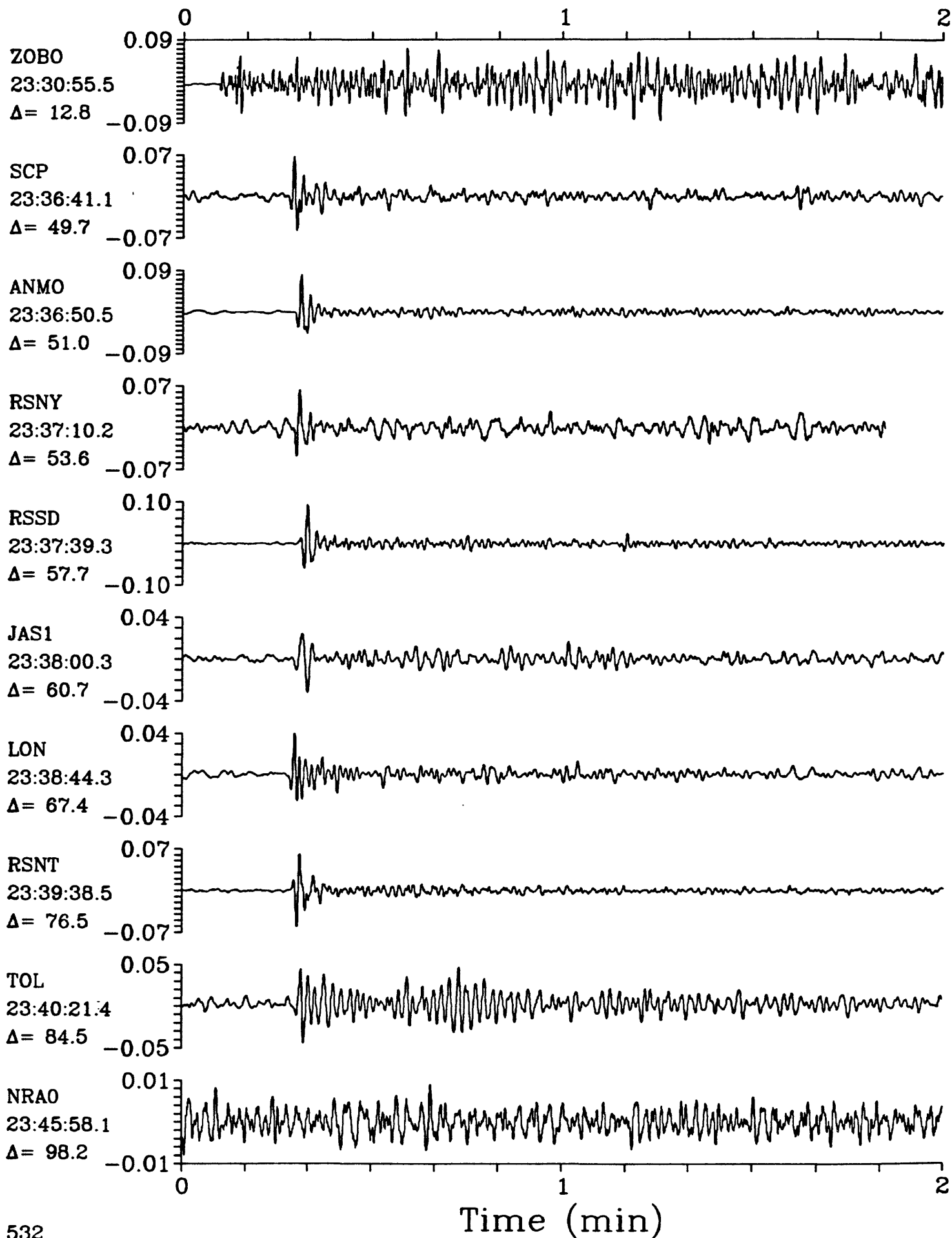
Off Coast of Northern Peru



SPZ

19 April 1986 23:28:11.39

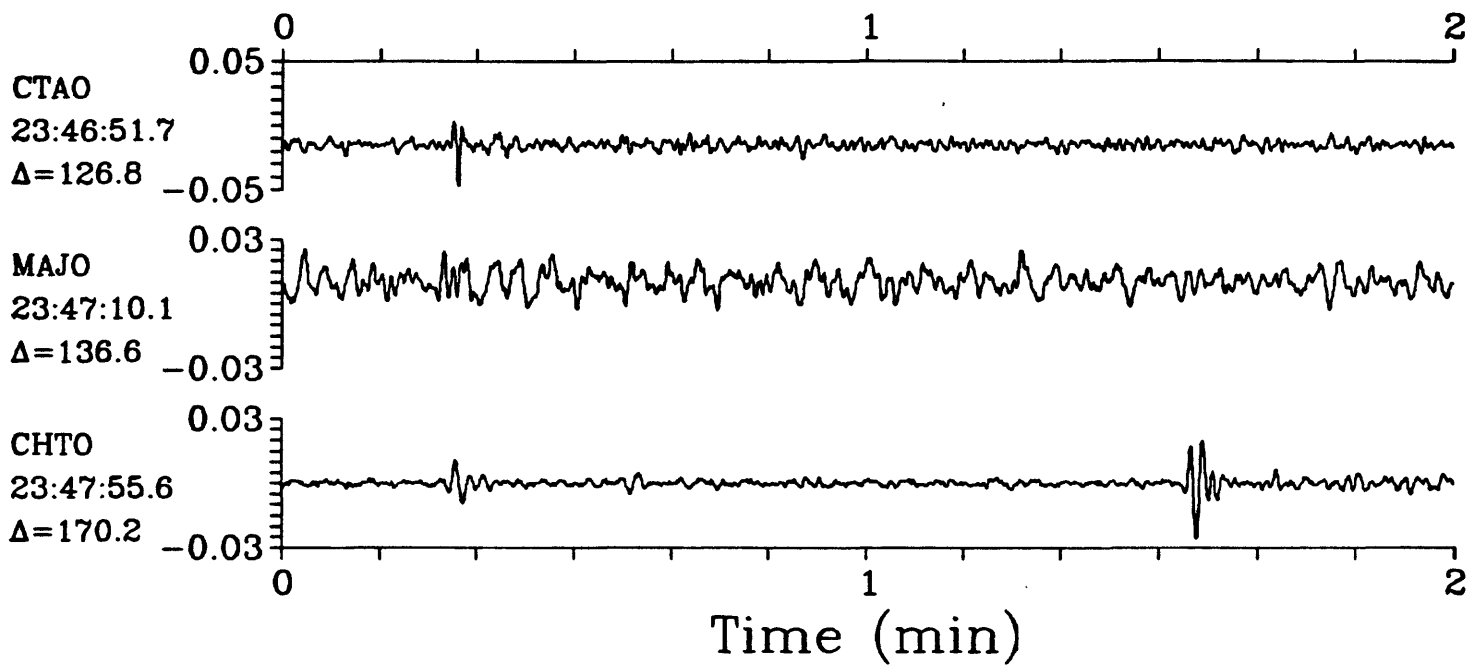
SPZ

Off Coast of Northern Peru $h=77.4$ $m_b=5.5$ 

SPZ

19 April 1986 23:28:11.39

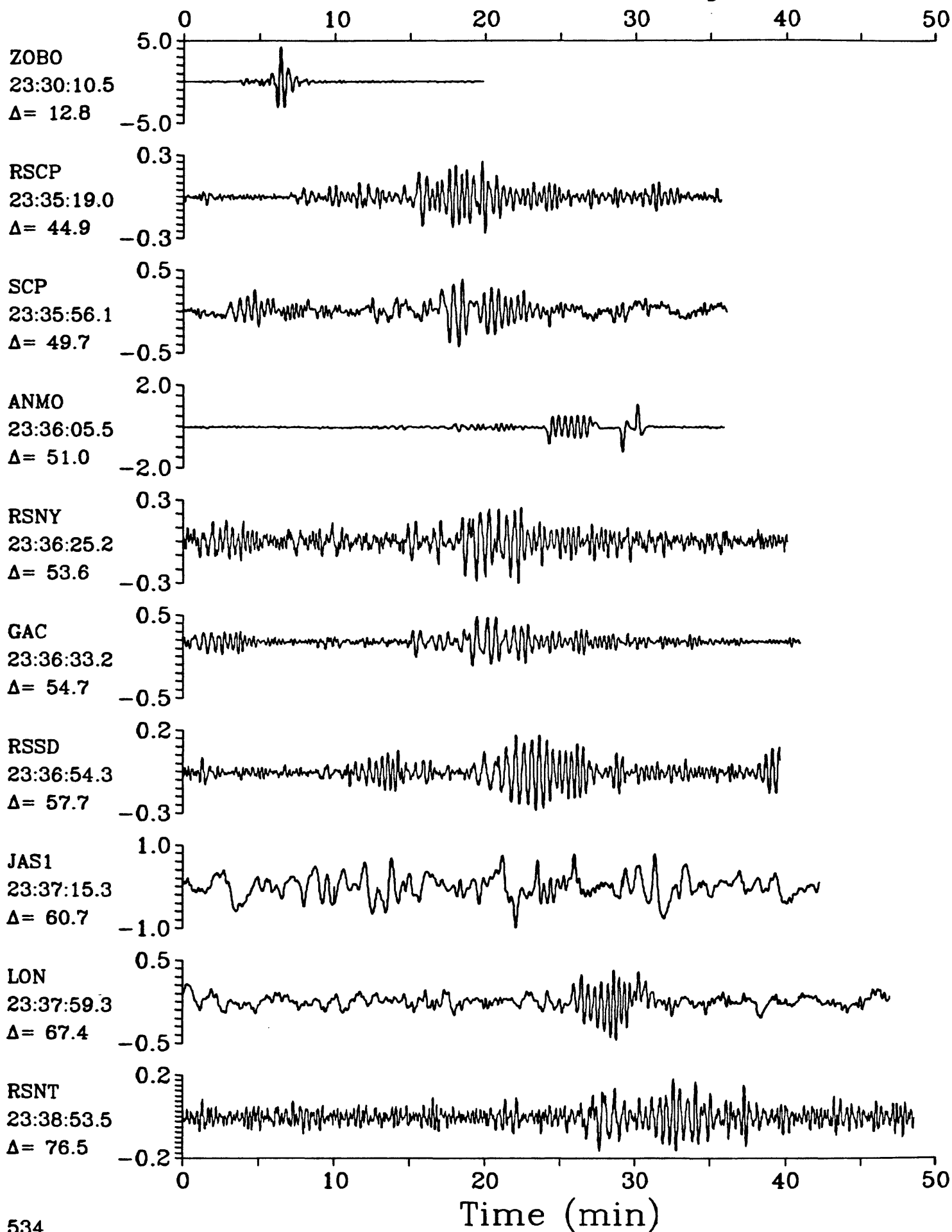
SPZ

Off Coast of Northern Peru $h=77.4$ $m_b=5.5$ 

LPZ

19 April 1986 23:28:11.39

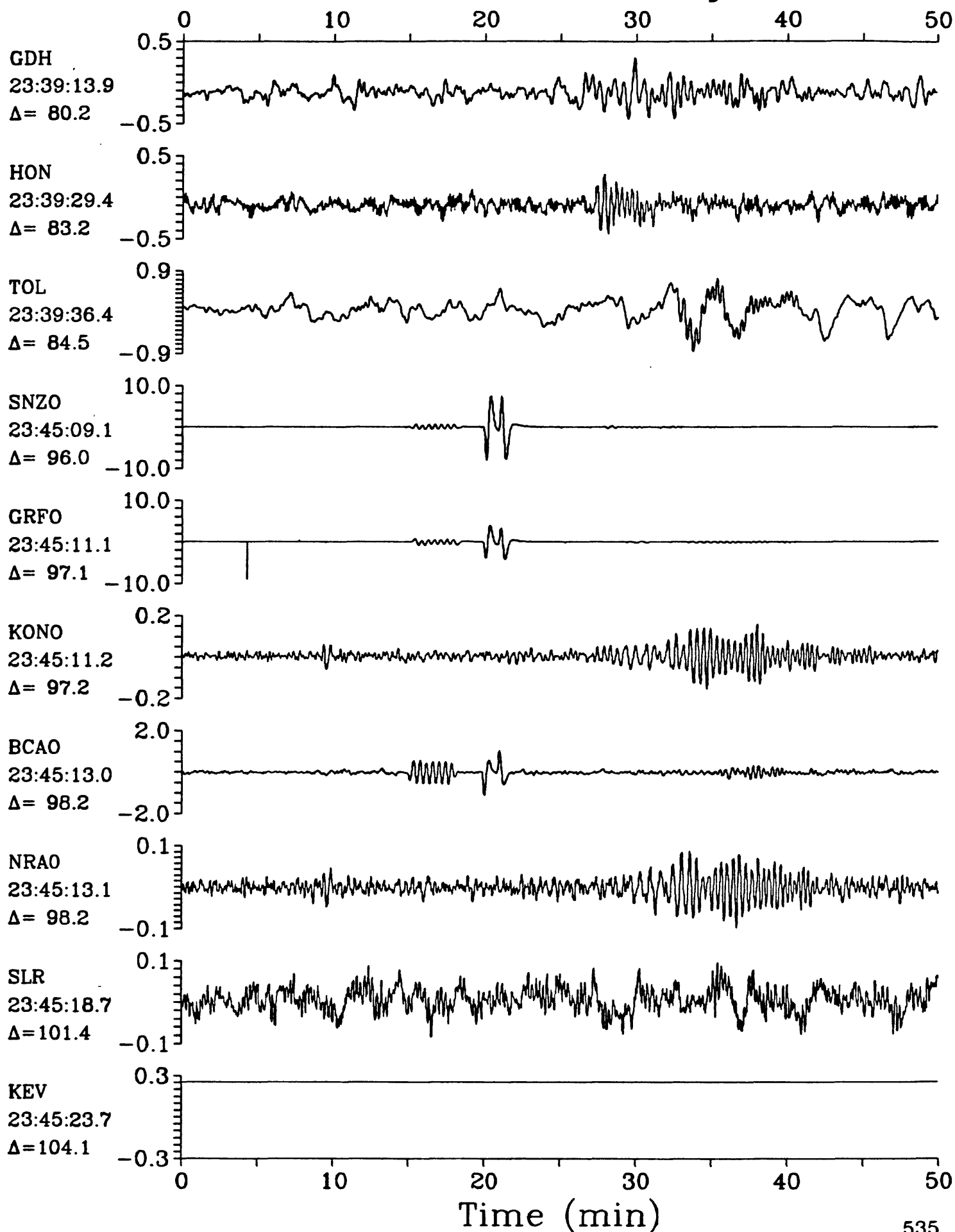
LPZ

Off Coast of Northern Peru $h=77.4$ $m_b=5.5$ 

LPZ

19 April 1986 23:28:11.39

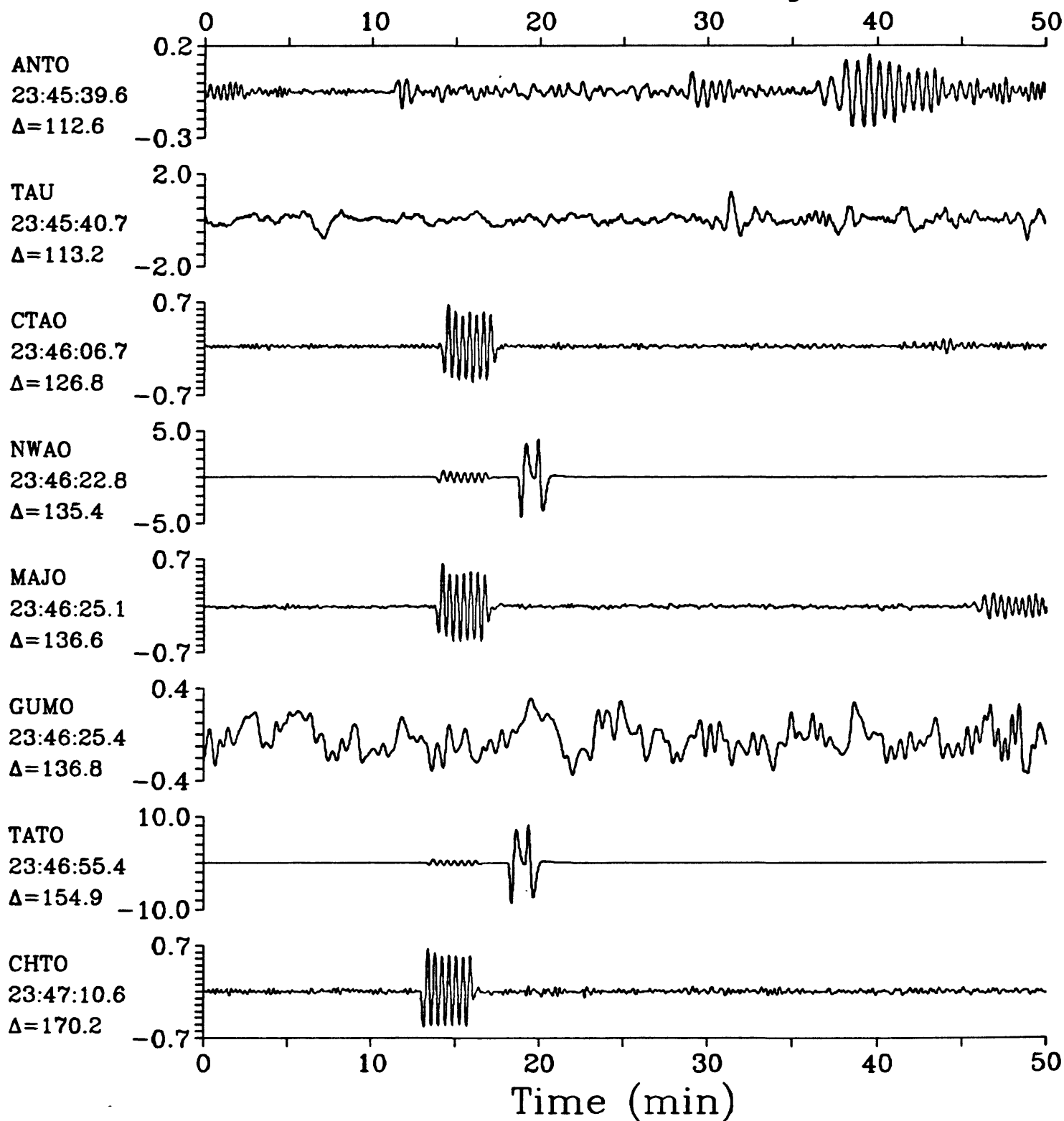
LPZ

Off Coast of Northern Peru $h=77.4$ $m_b=5.5$ 

LPZ

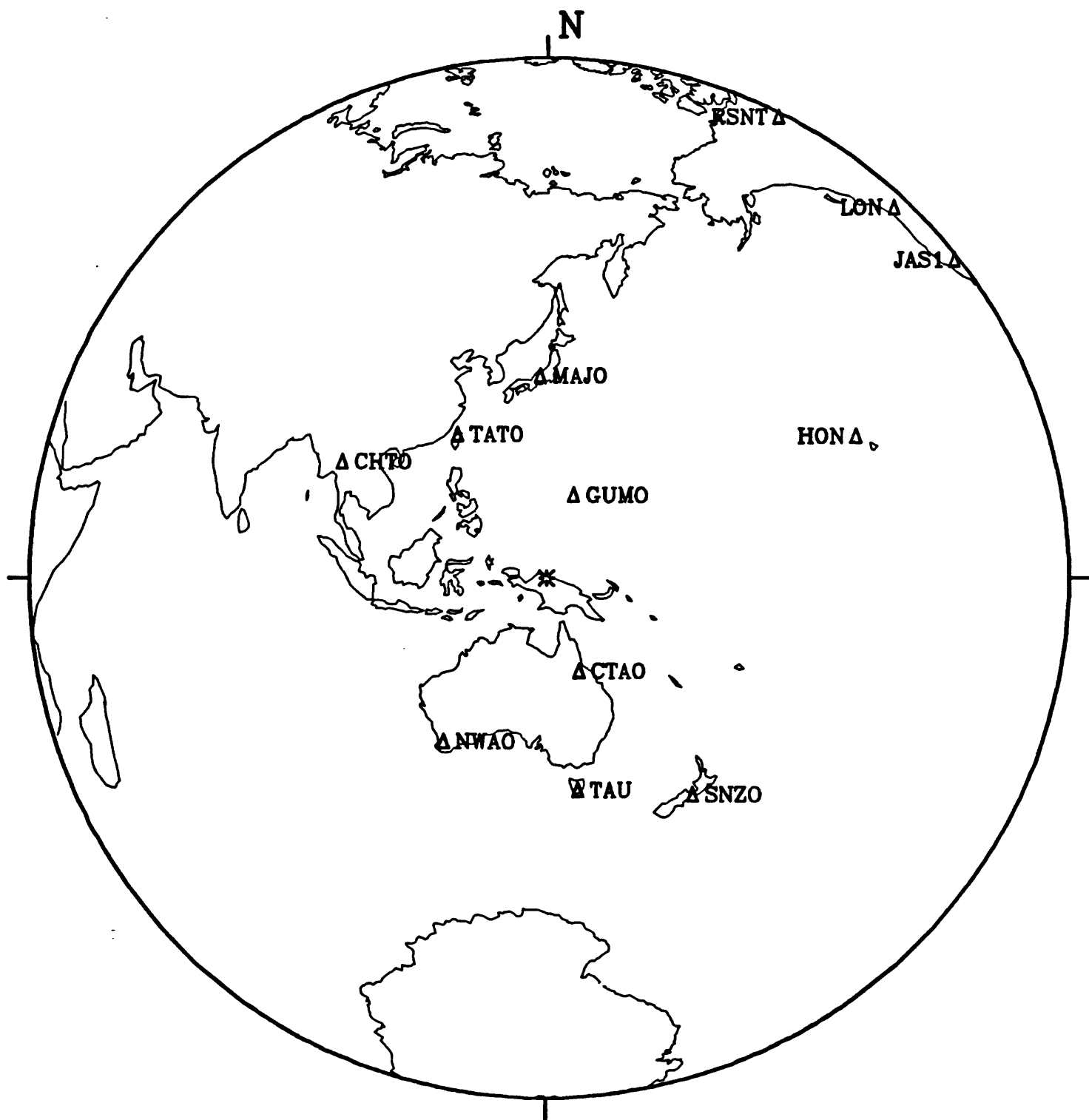
19 April 1986 23:28:11.39

LPZ

Off Coast of Northern Peru $h=77.4$ $m_b=5.5$ 

20 April 1986 07:03:30.84

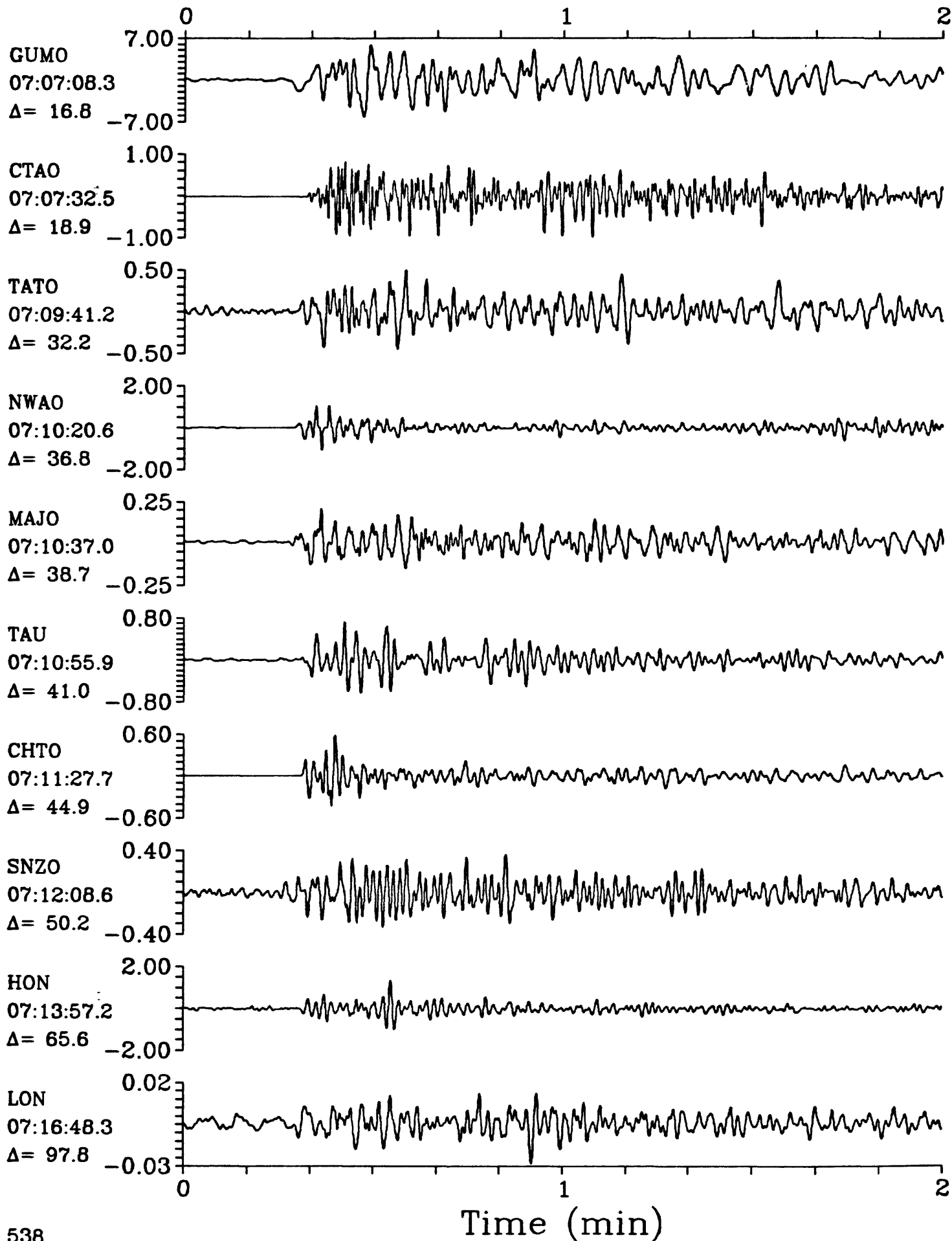
Near N. Coast of West Irian



SPZ

20 April 1986 07:03:30.84

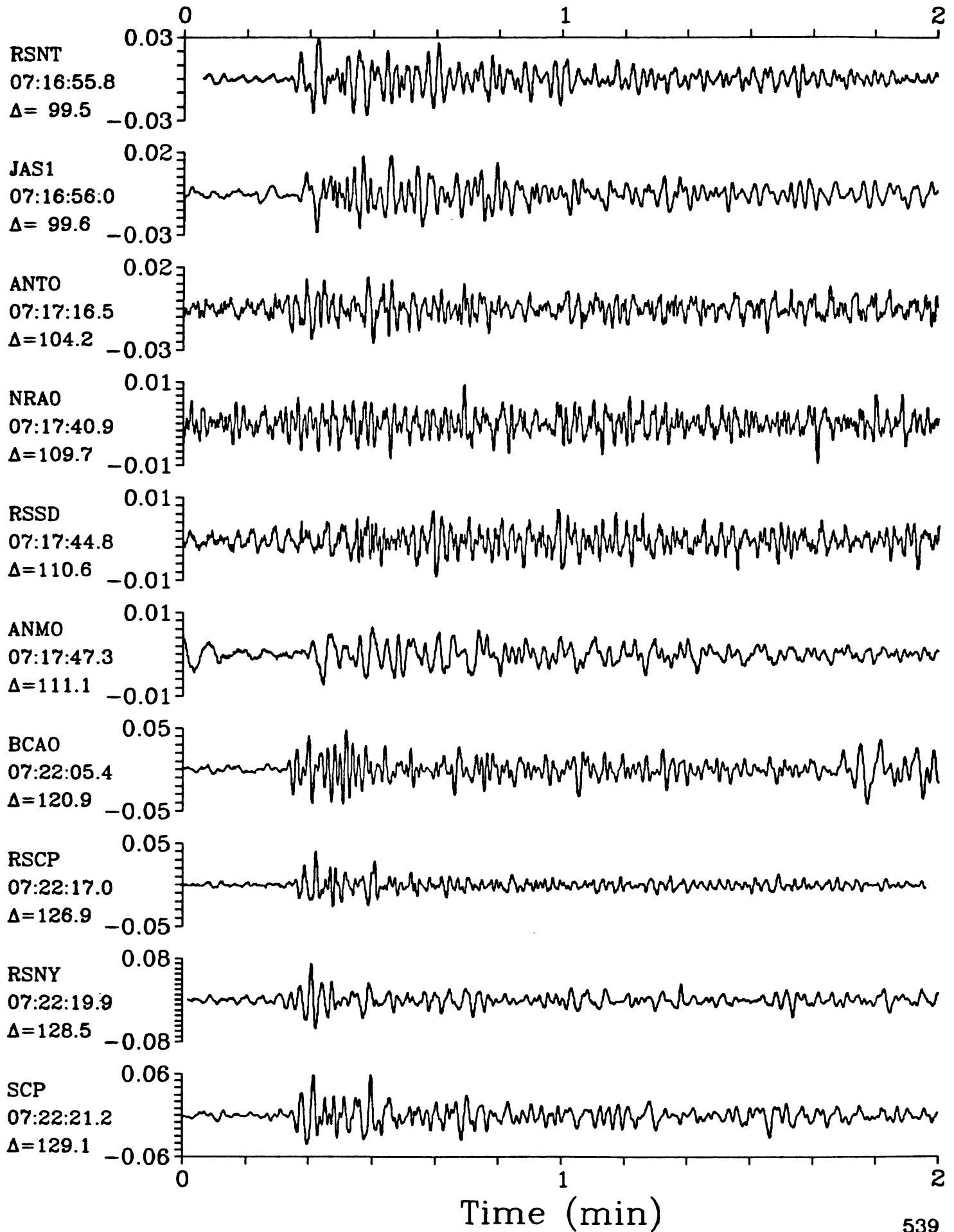
SPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

SPZ

20 April 1986 07:03:30.84

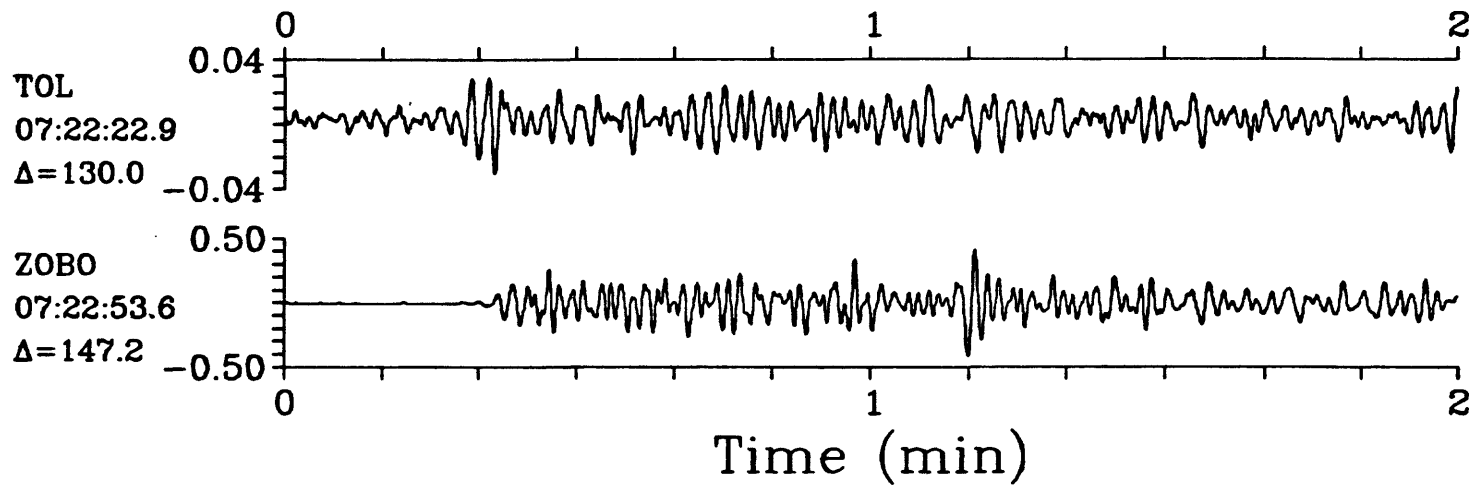
SPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

SPZ

20 April 1986 07:03:30.84

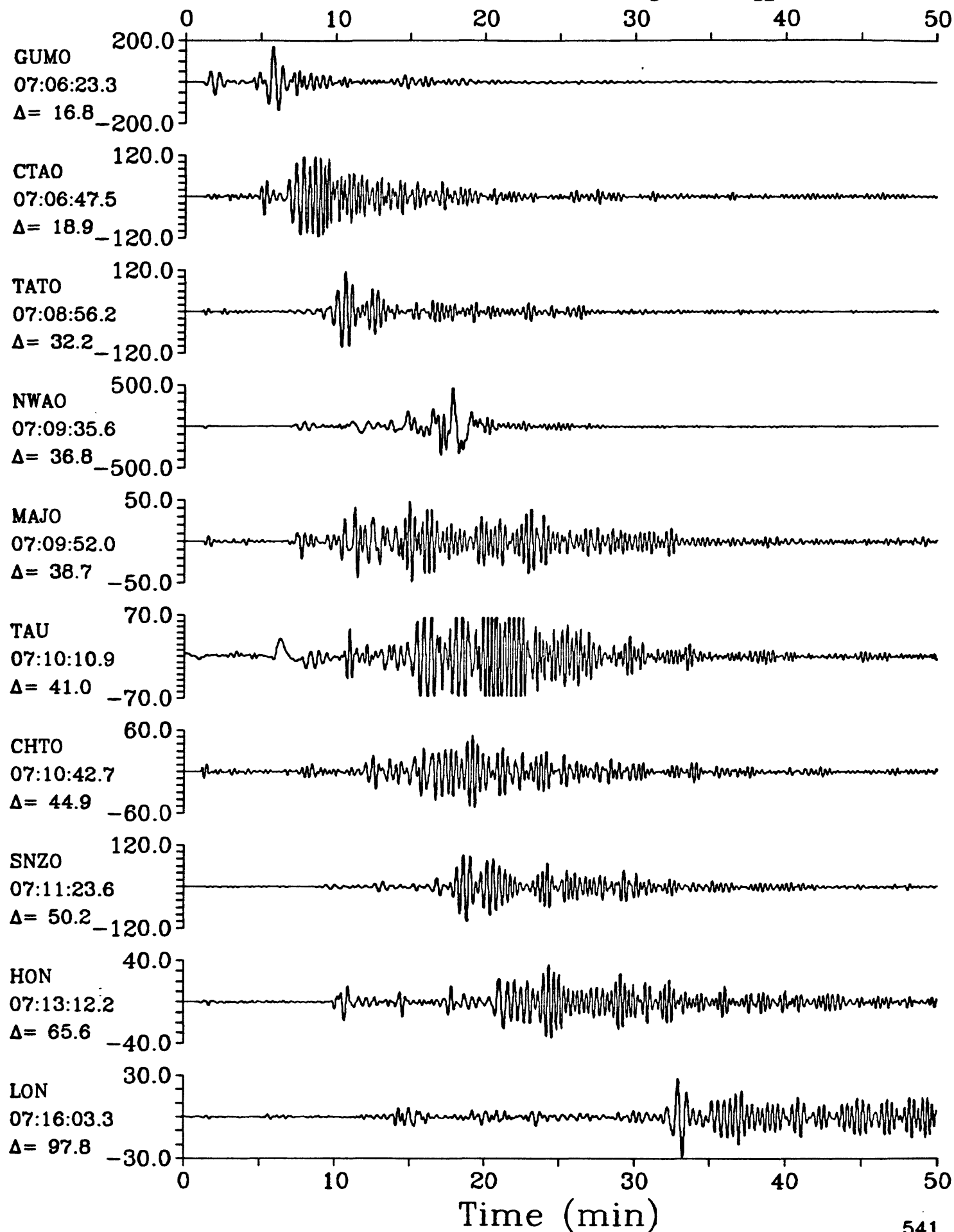
SPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

LPZ

20 April 1986 07:03:30.84

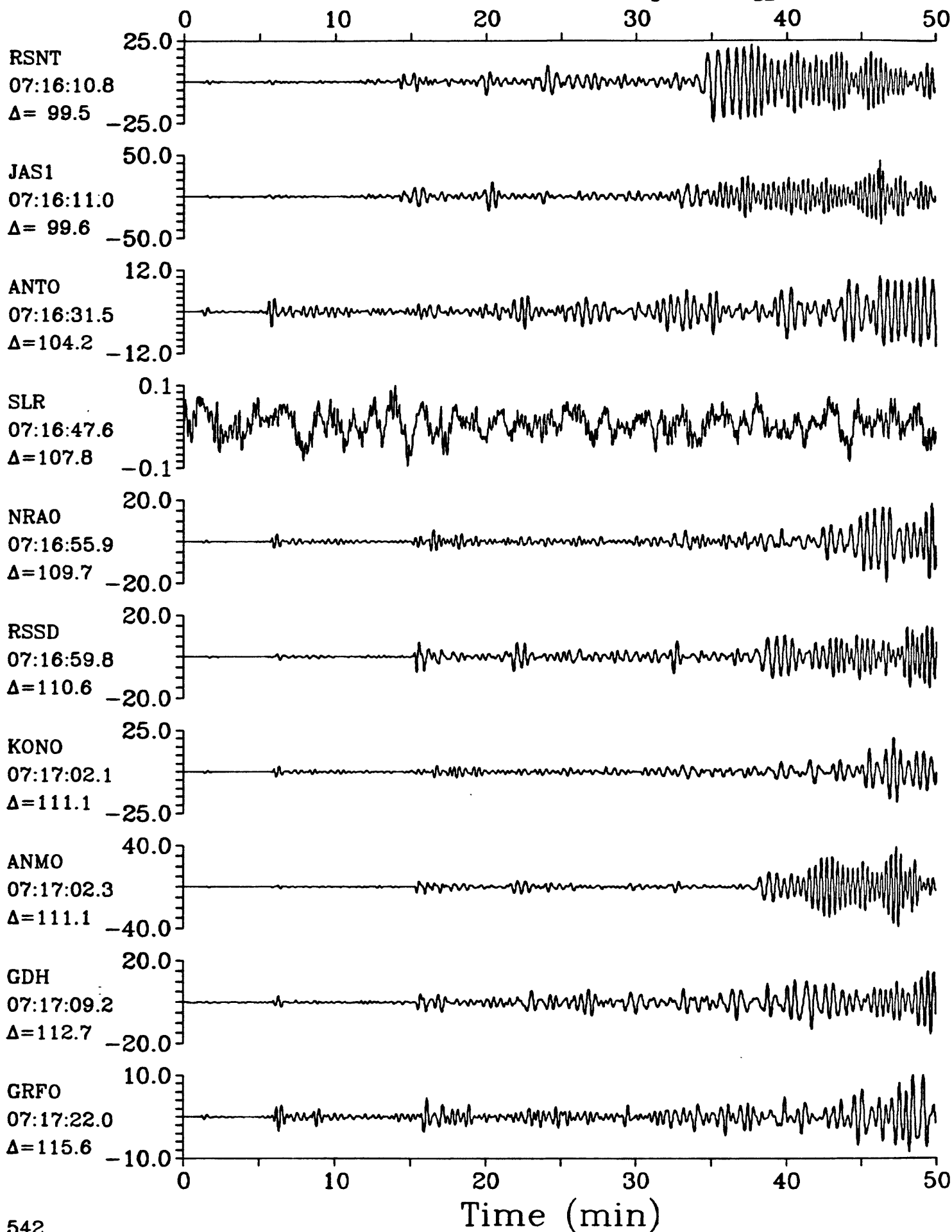
LPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

LPZ

20 April 1986 07:03:30.84

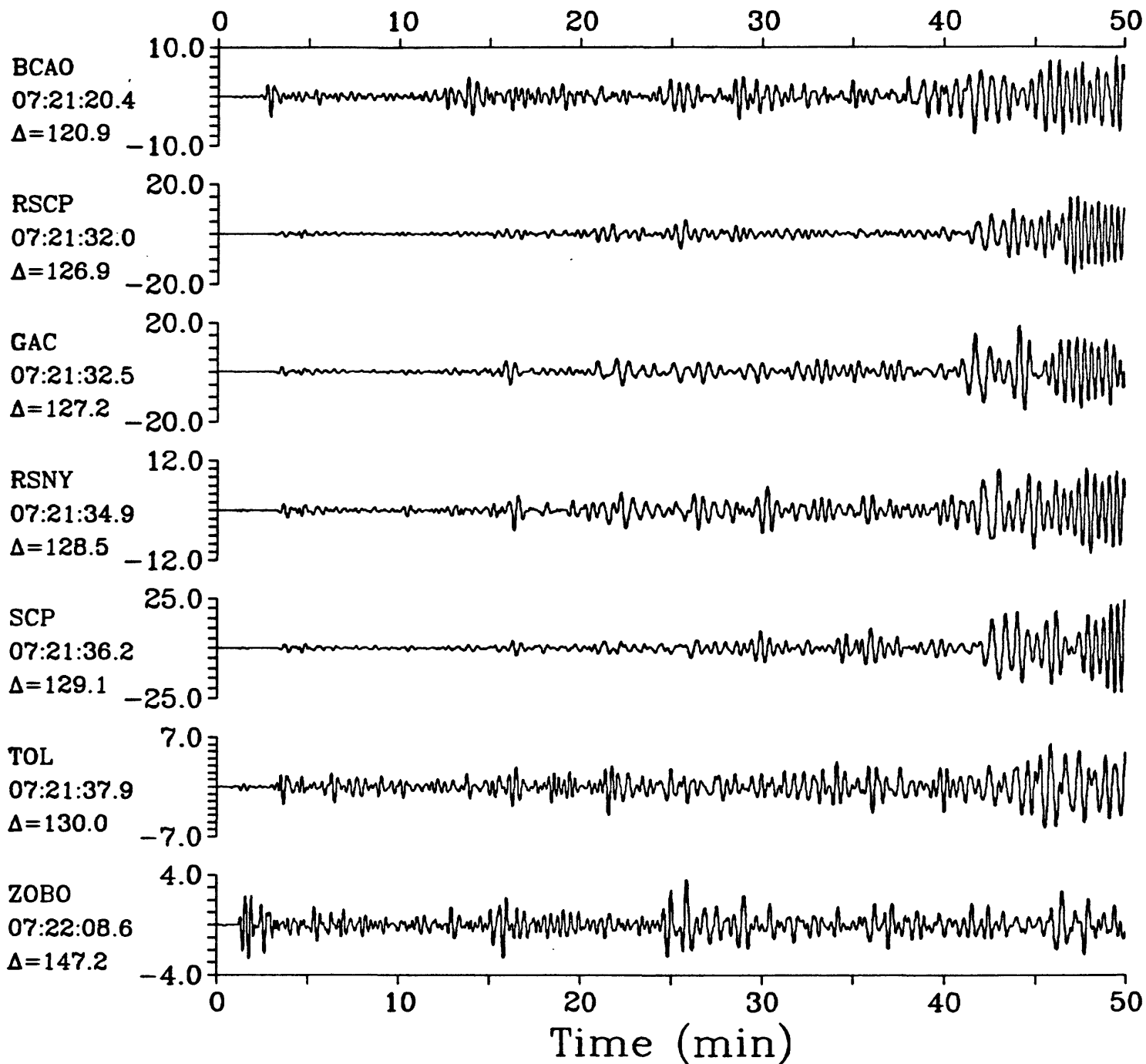
LPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

LPZ

20 April 1986 07:03:30.84

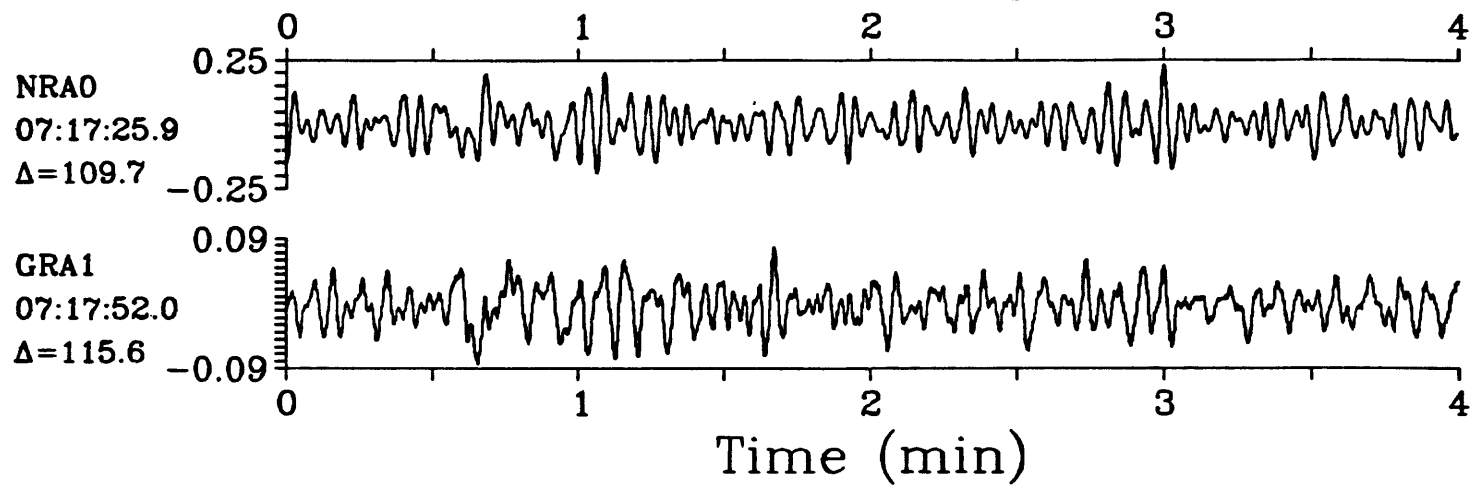
LPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

IPZ

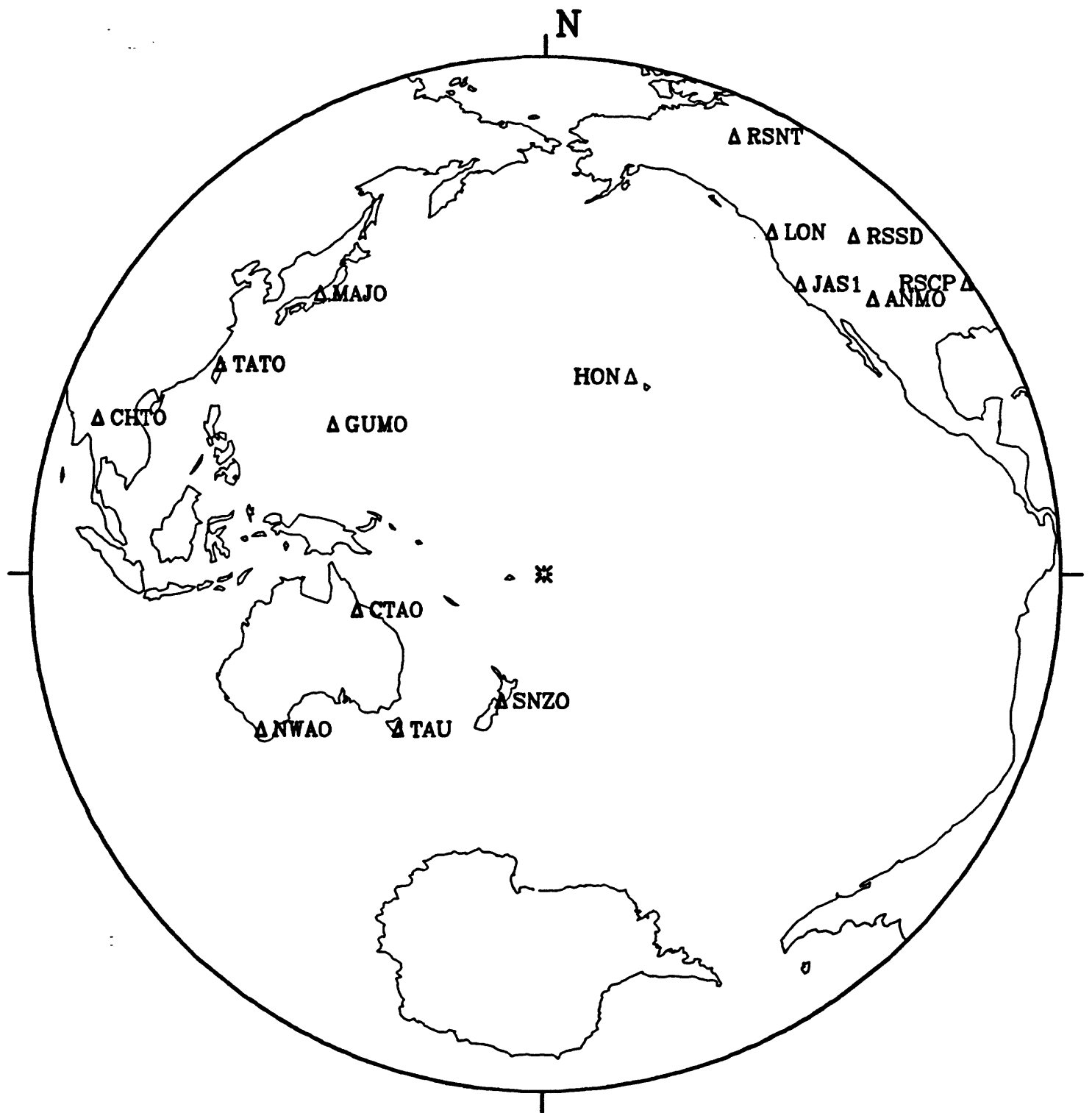
20 April 1986 07:03:30.84

IPZ

Near N. Coast of West Irian $h=33.0$ $m_b=6.2$ $M_{sz}=6.7$ 

20 April 1986 09:32:09.49

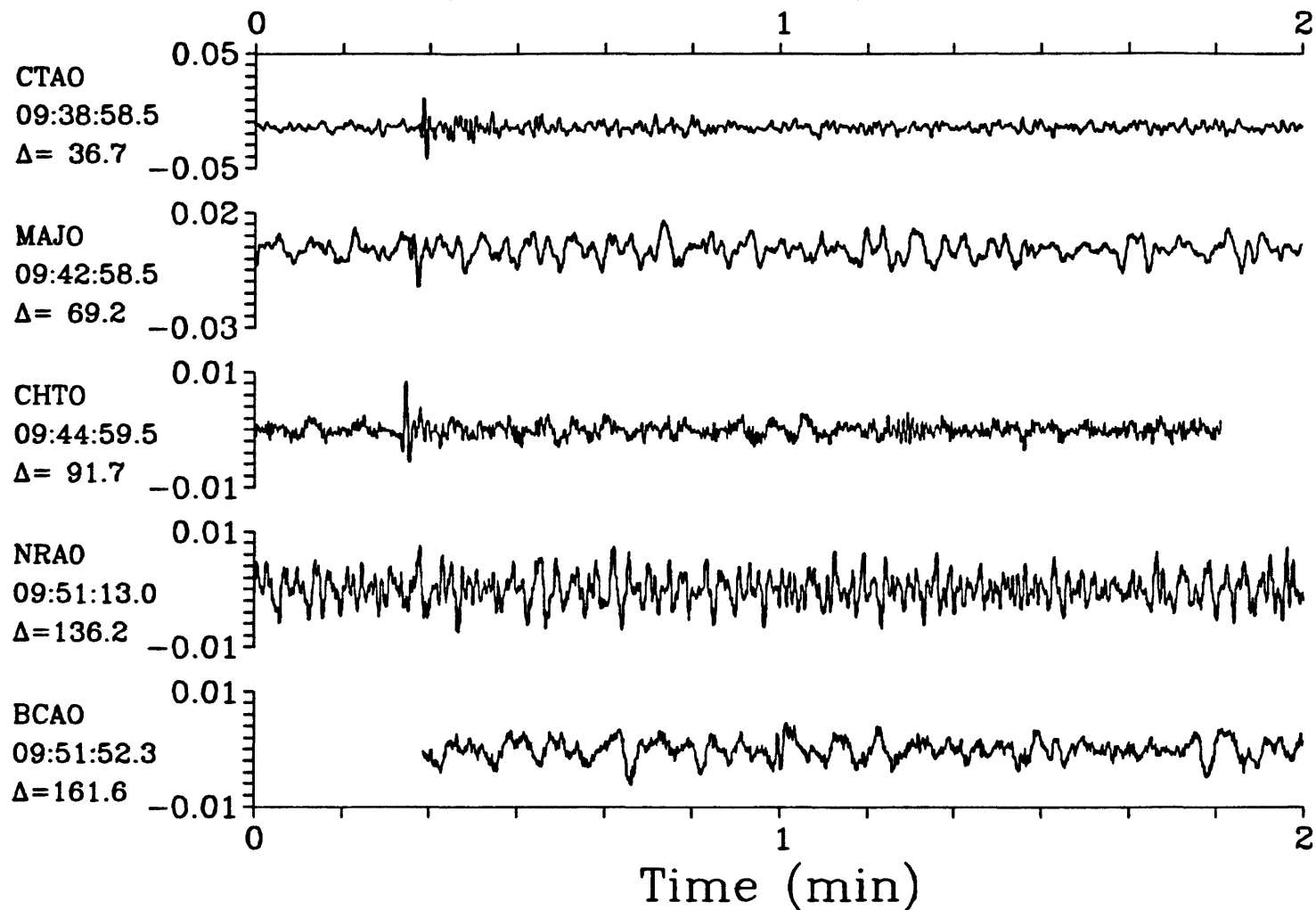
Tonga Islands



SPZ

20 April 1986 09:32:09.49
Tonga Islands $h=33.0$ $m_b=5.7$

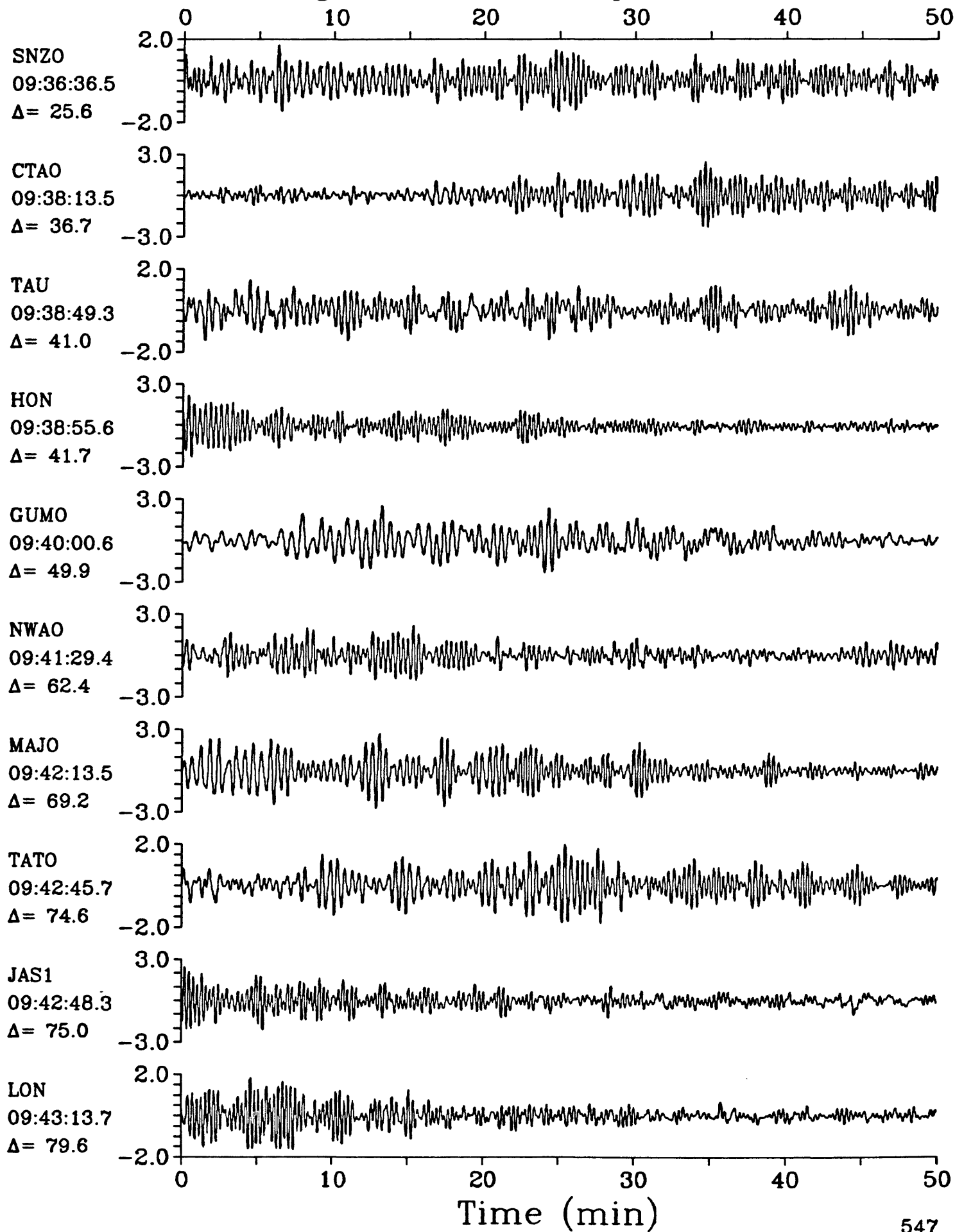
SPZ



LPZ

20 April 1986 09:32:09.49
Tonga Islands $h=33.0$ $m_b=5.7$

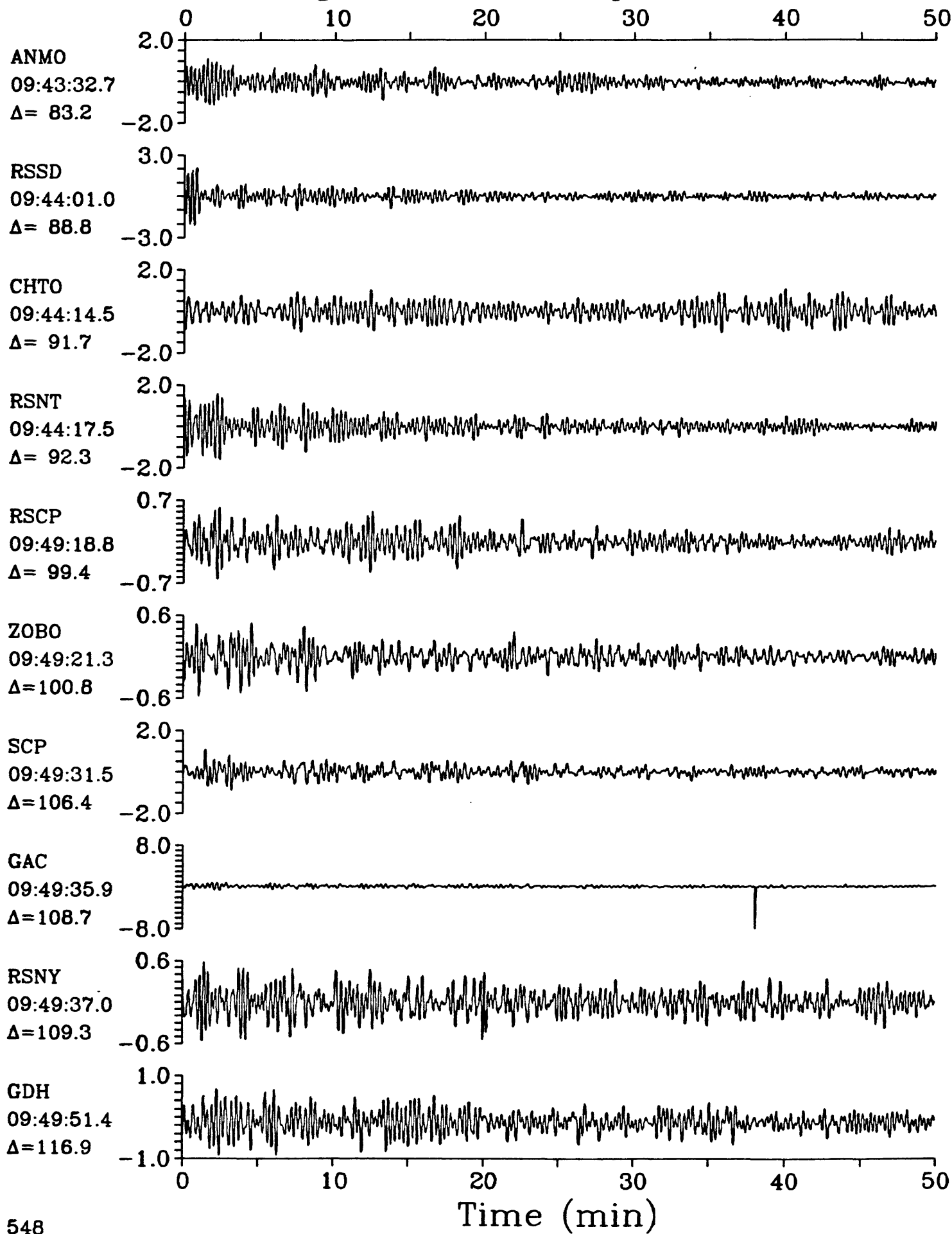
LPZ



LPZ

20 April 1986 09:32:09.49
Tonga Islands $h=33.0$ $m_b=5.7$

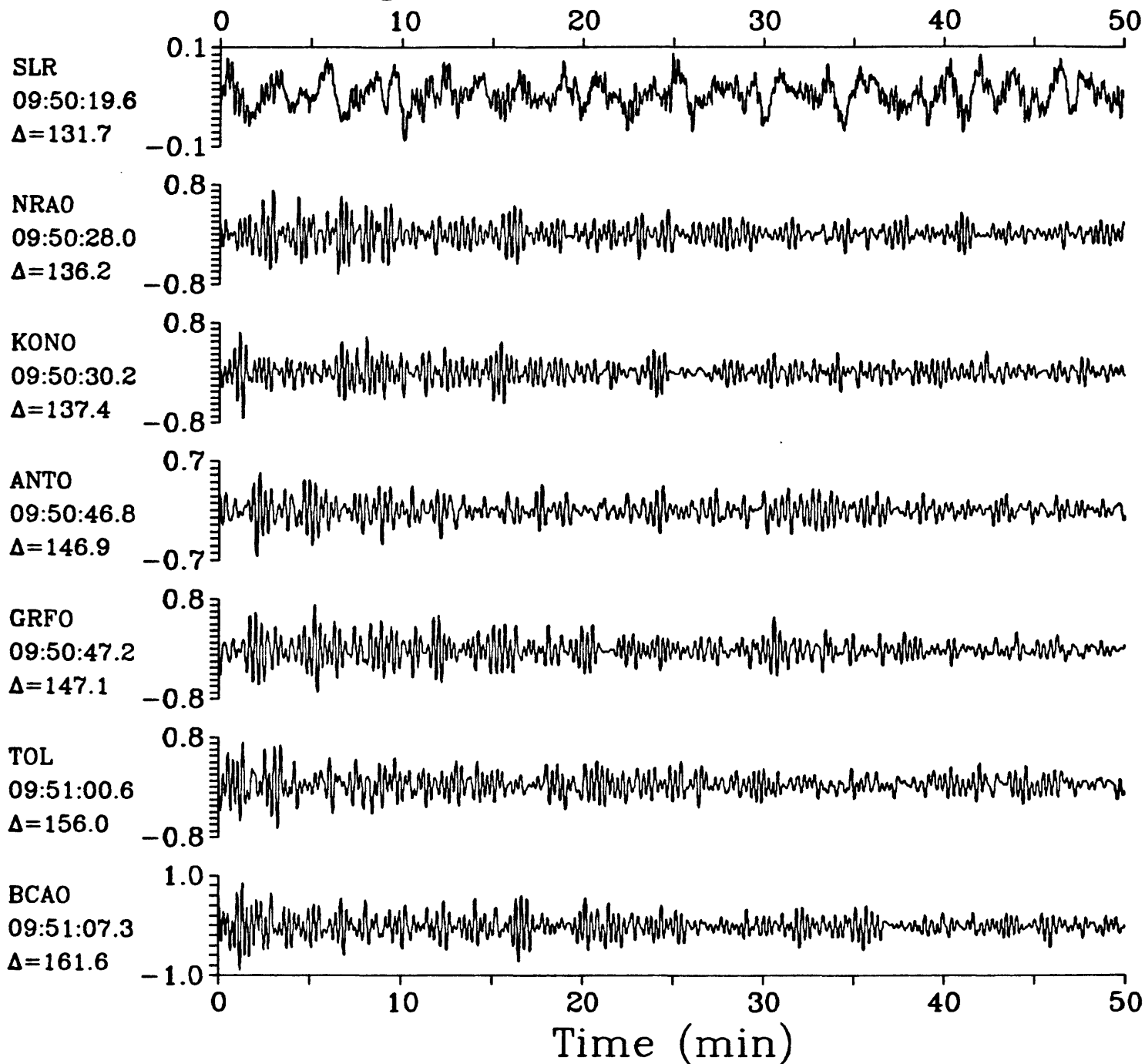
LPZ



LPZ

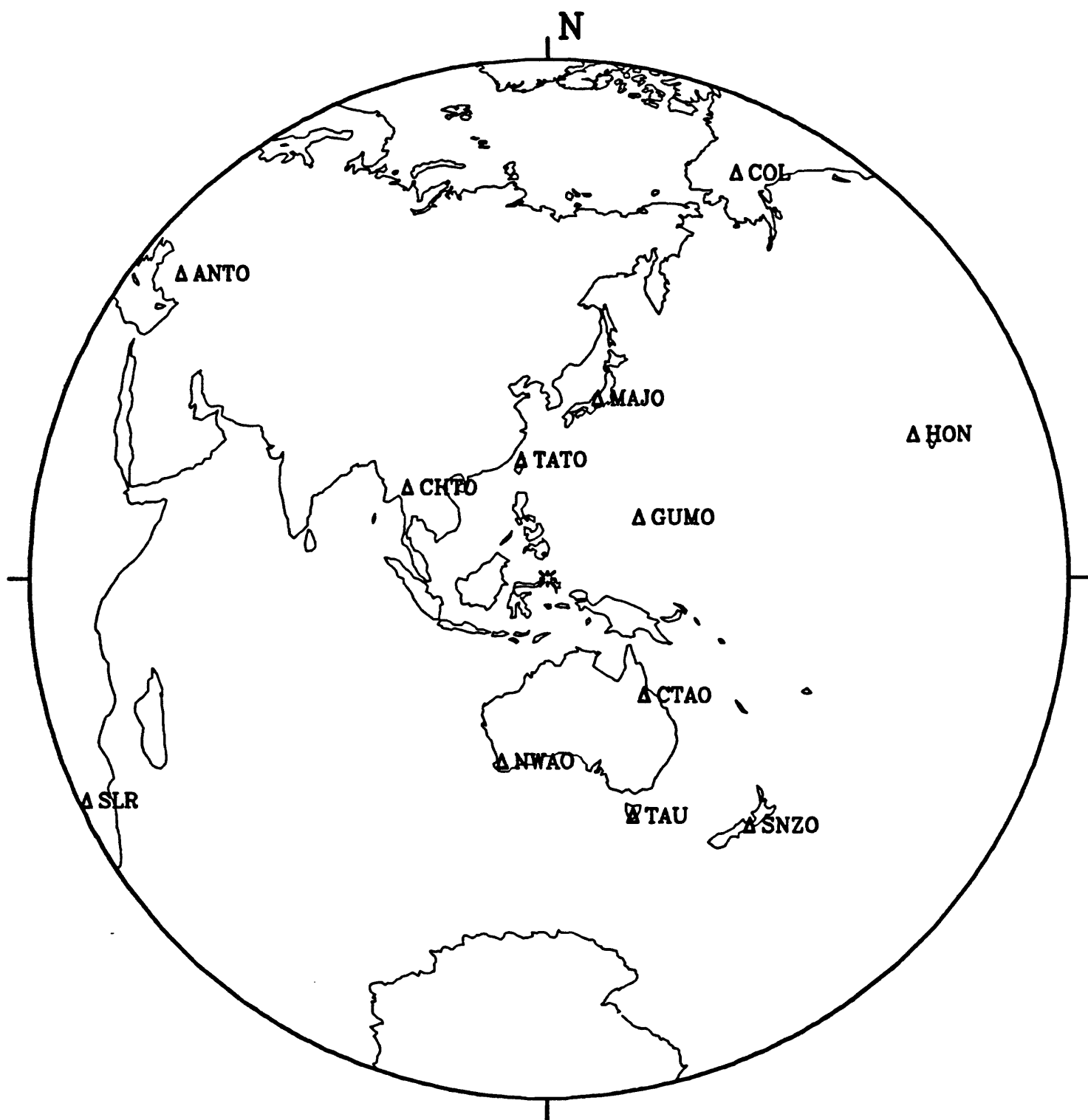
20 April 1986 09:32:09.49
Tonga Islands $h=33.0$ $m_b=5.7$

LPZ



21 April 1986 23:36:17.39

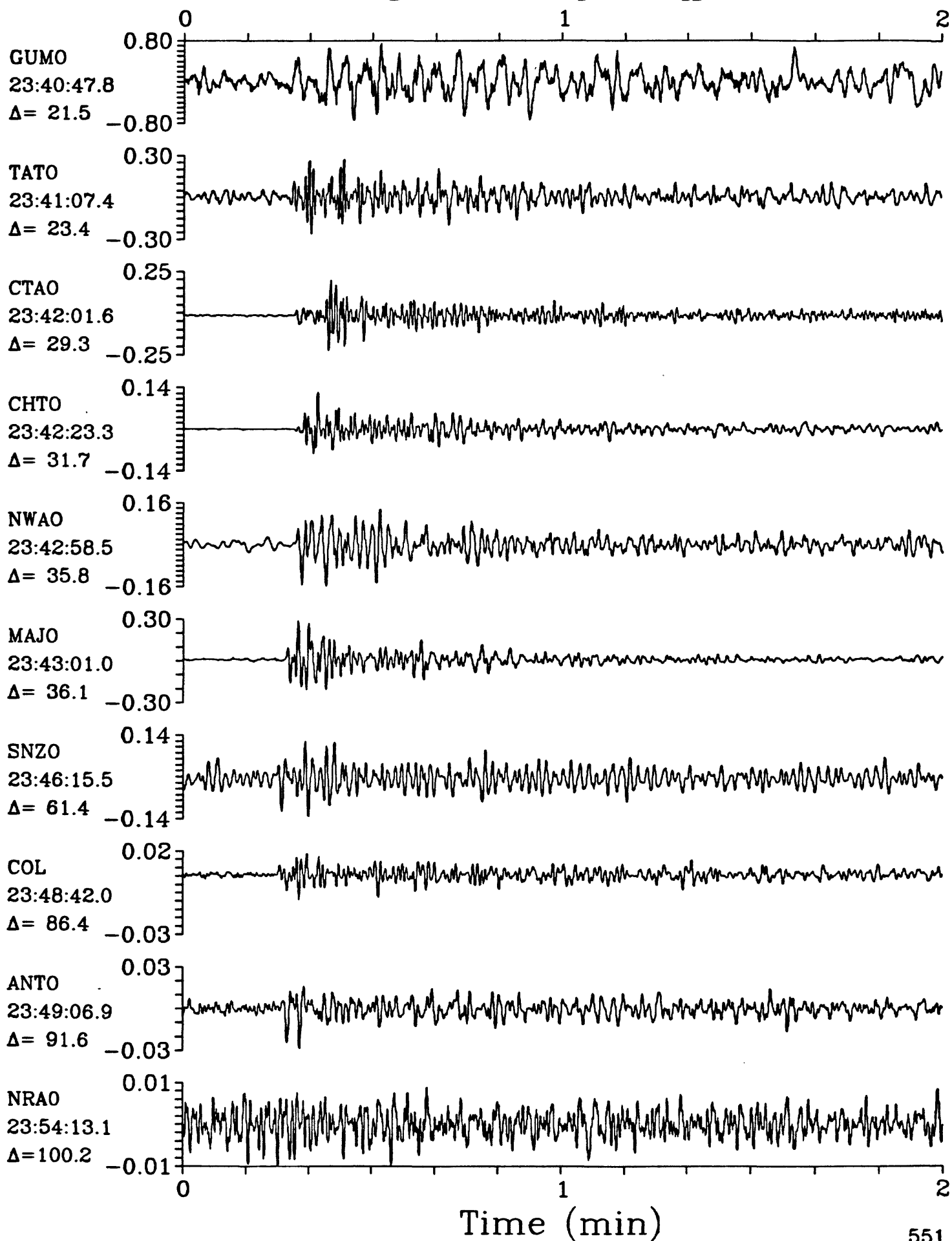
Molucca Passage



SPZ

21 April 1986 23:36:17.39

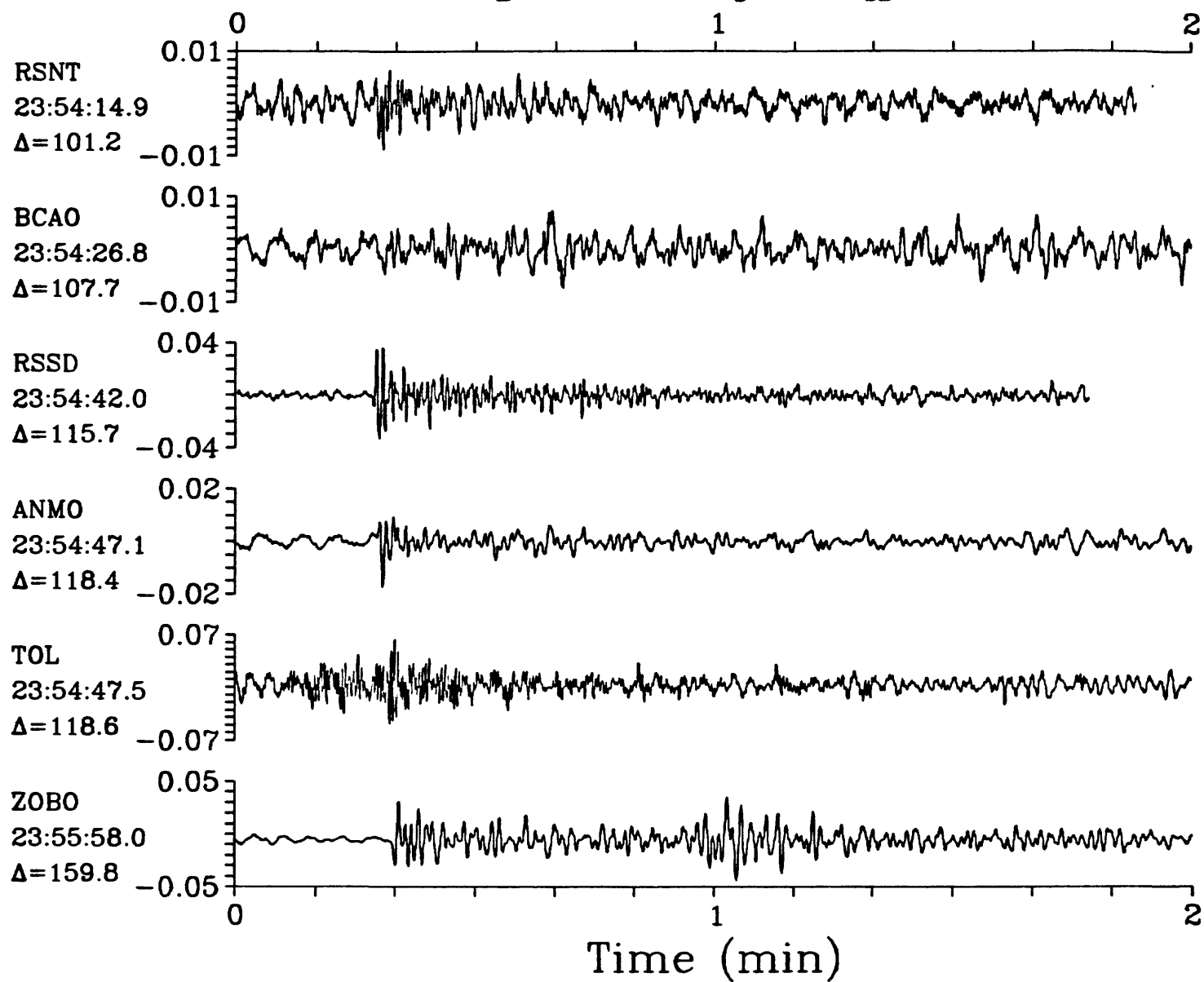
SPZ

Molucca Passage $h=33.8$ $m_b=5.6$ $M_{sz}=5.2$ 

SPZ

21 April 1986 23:36:17.39

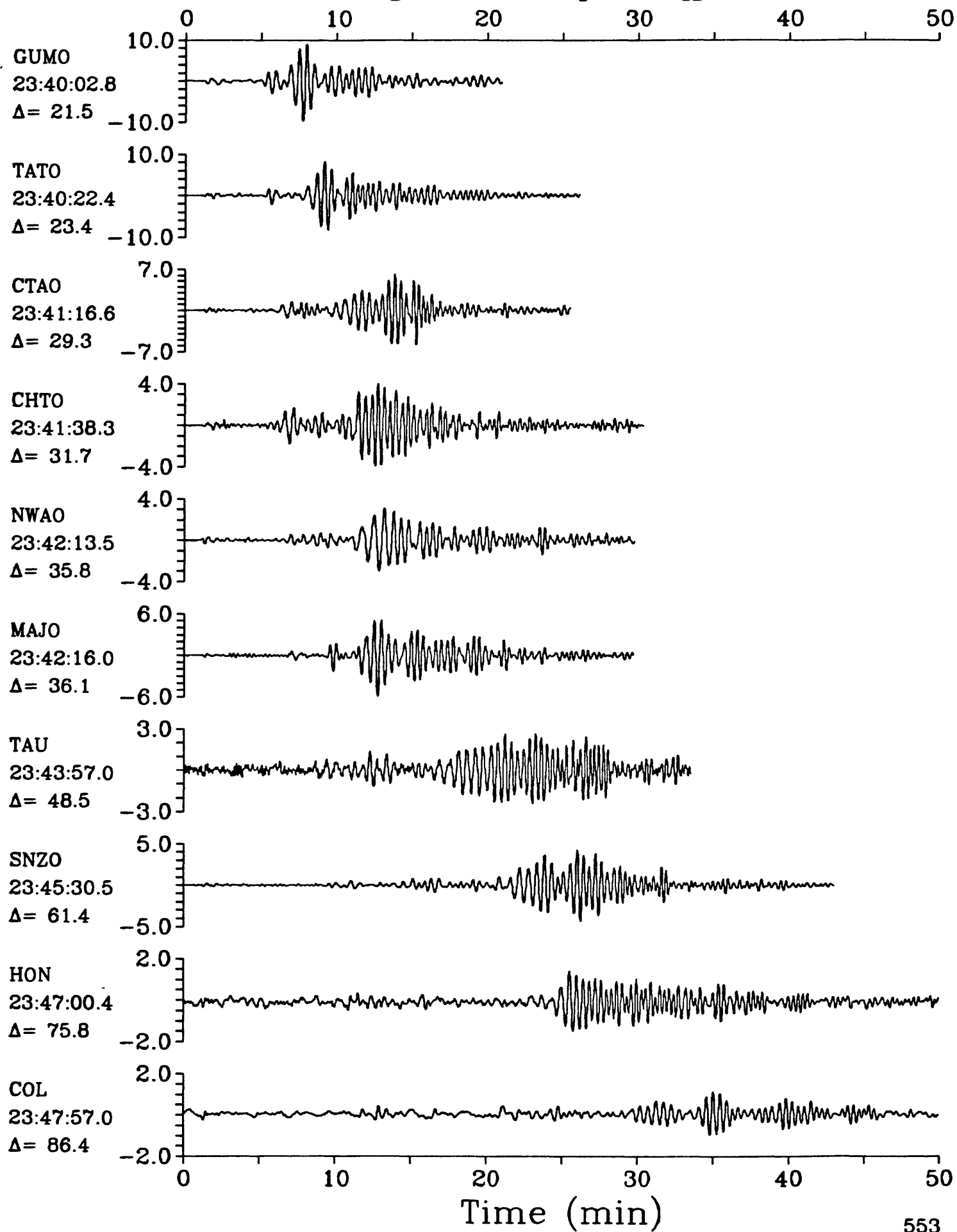
SPZ

Molucca Passage $h=33.8$ $m_b=5.6$ $M_{sz}=5.2$ 

LPZ

21 April 1986 23:36:17.39

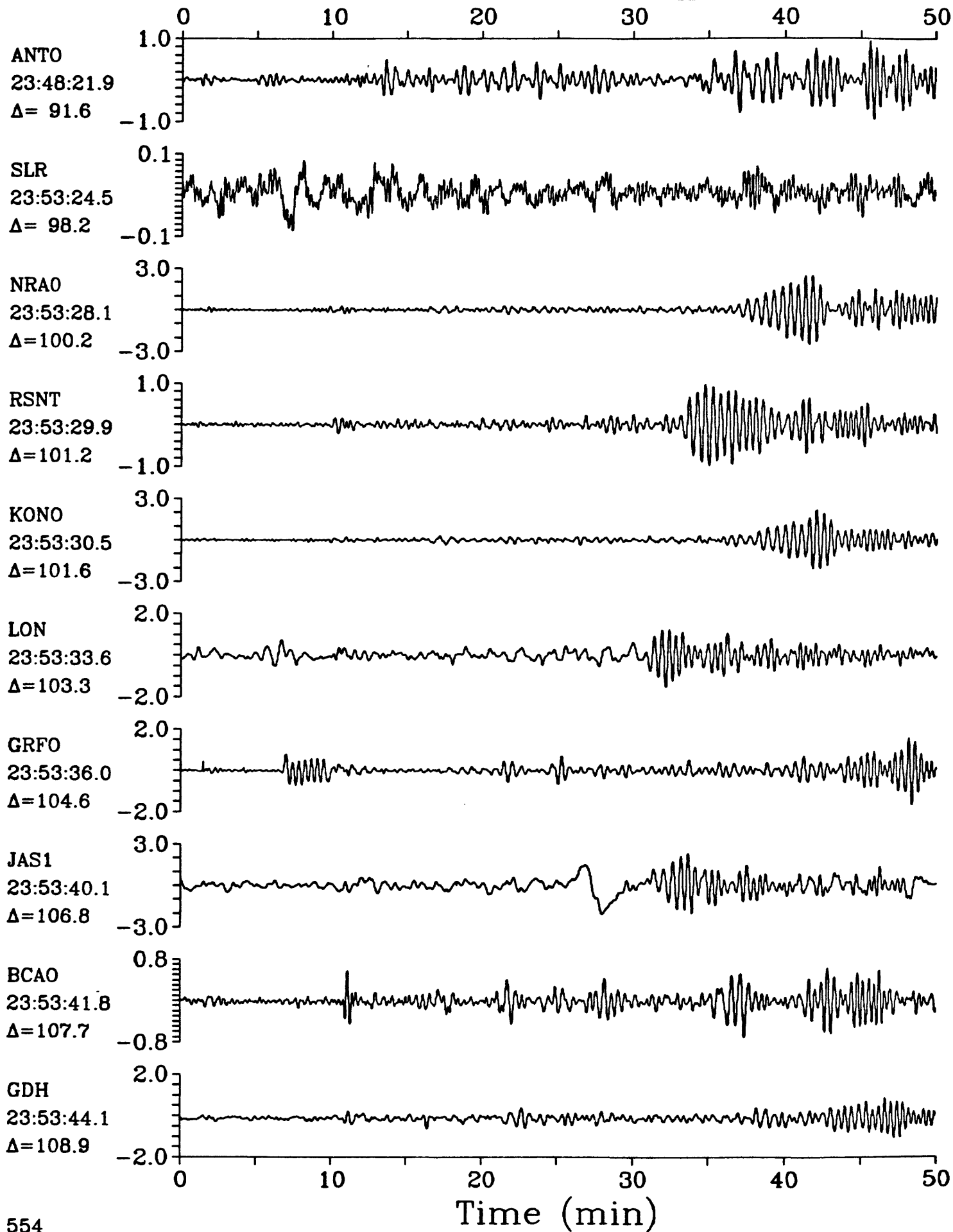
LPZ

Molucca Passage $h=33.8$ $m_b=5.6$ $M_{sz}=5.2$ 

LPZ

21 April 1986 23:36:17.39

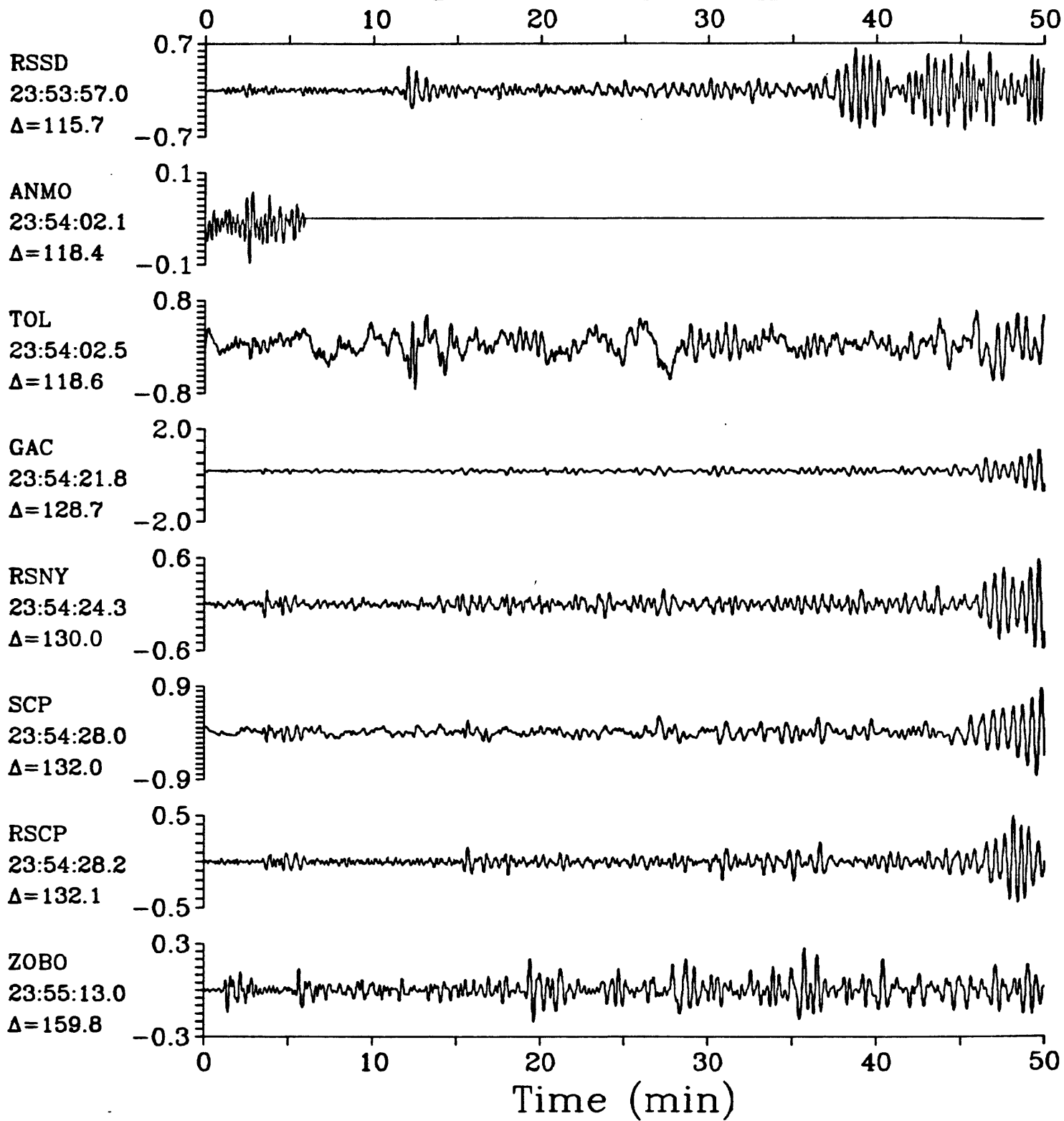
LPZ

Molucca Passage $h=33.8$ $m_b=5.6$ $M_{SZ}=5.2$ 

LPZ

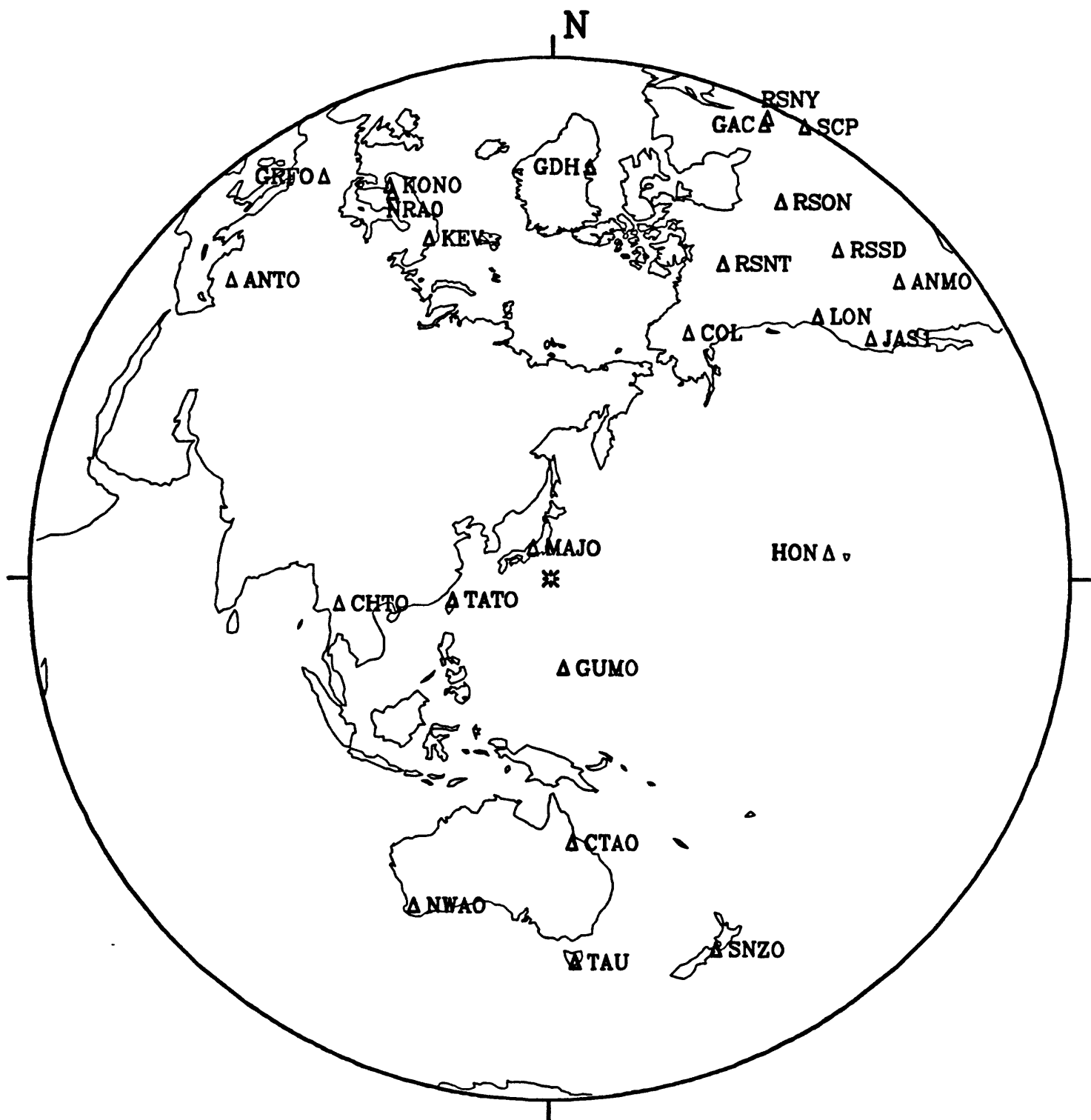
21 April 1986 23:36:17.39

LPZ

Molucca Passage $h=33.8$ $m_b=5.6$ $M_{SZ}=5.2$ 

23 April 1986 09:11:55.85

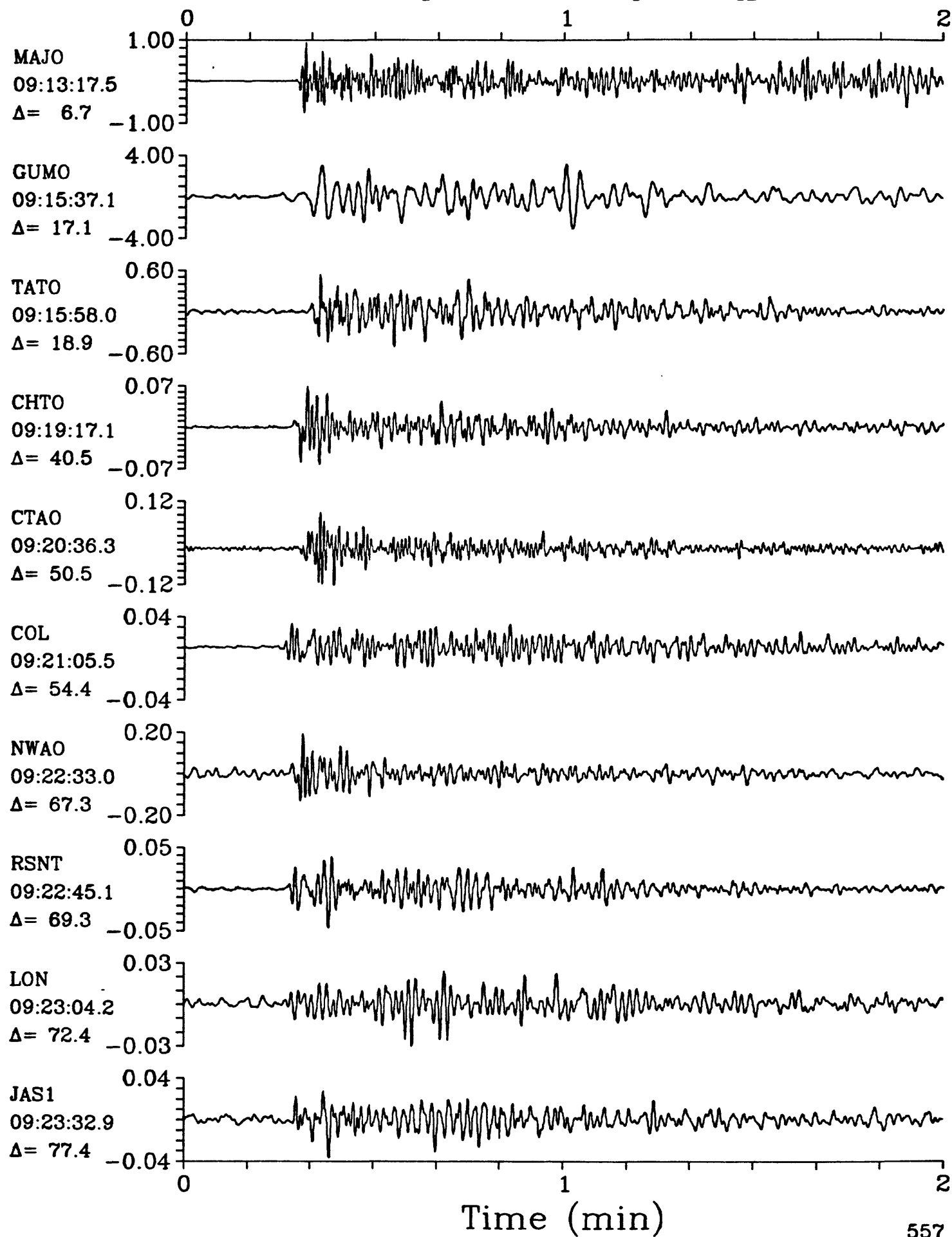
South of Honshu, Japan



SPZ

23 April 1986 09:11:55.85

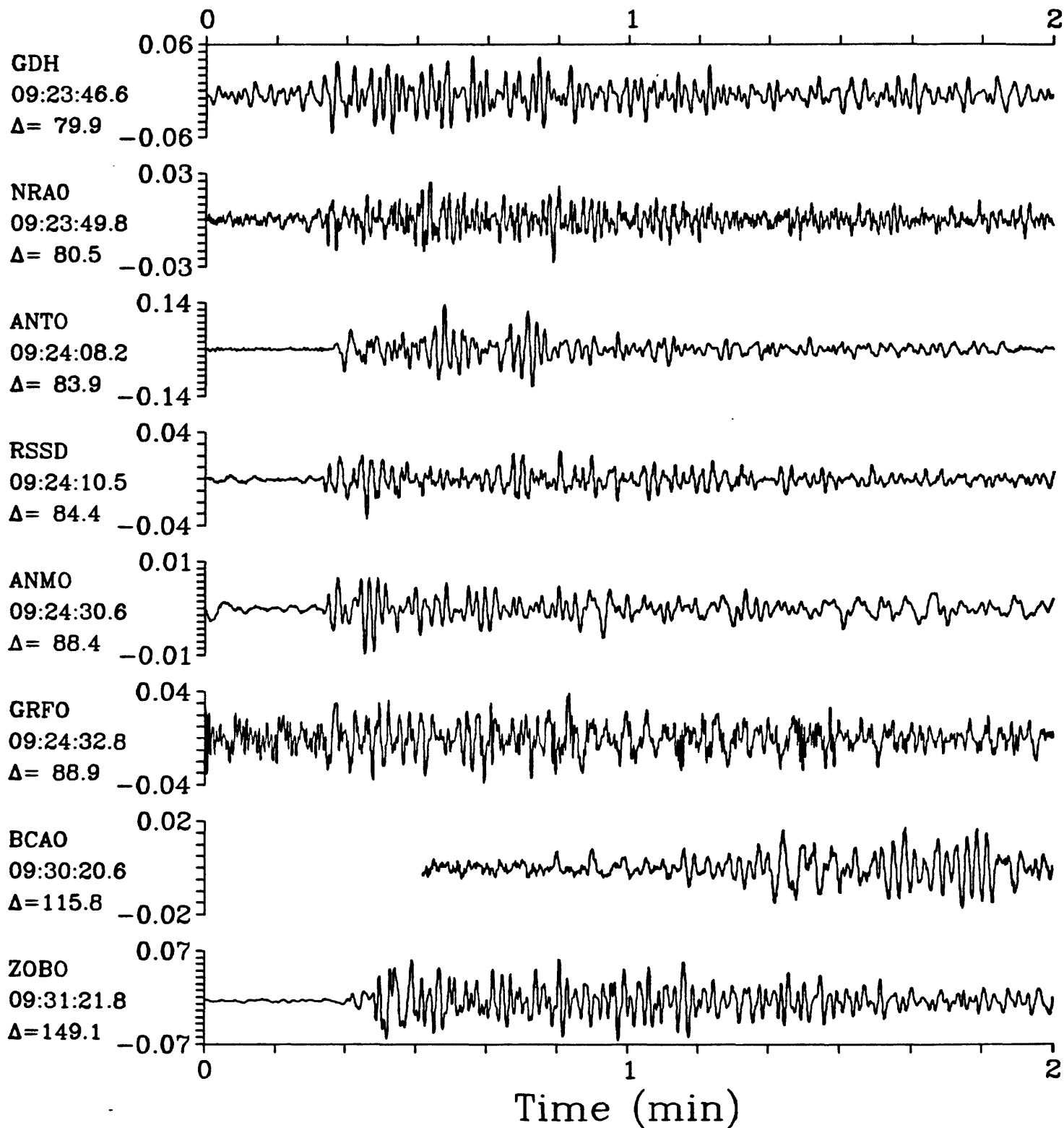
SPZ

South of Honshu, Japan $h=33.0$ $m_b=5.6$ $M_{sz}=5.6$ 

SPZ

23 April 1986 09:11:55.85

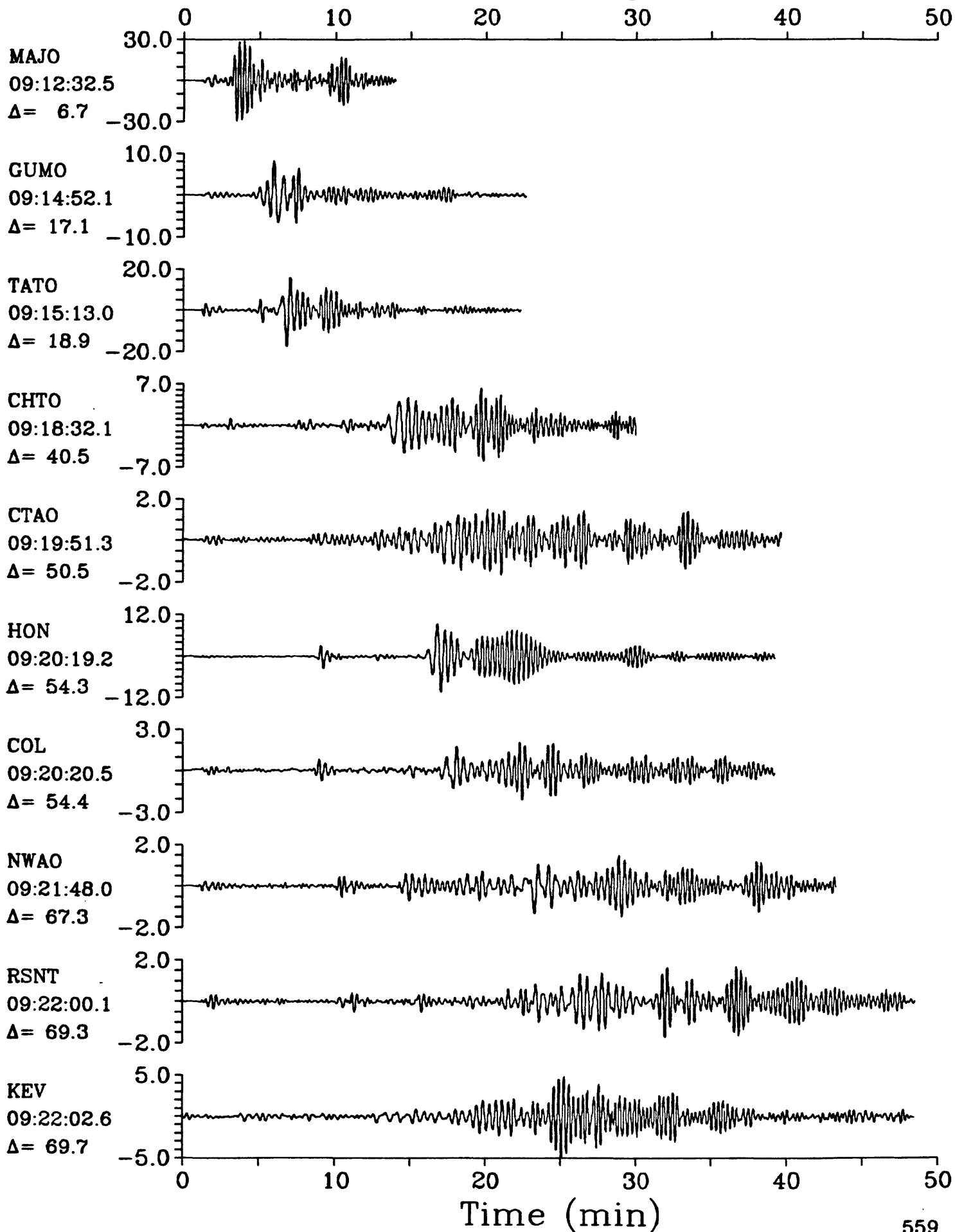
SPZ

South of Honshu, Japan $h=33.0$ $m_b=5.6$ $M_{sz}=5.6$ 

LPZ

23 April 1986 09:11:55.85

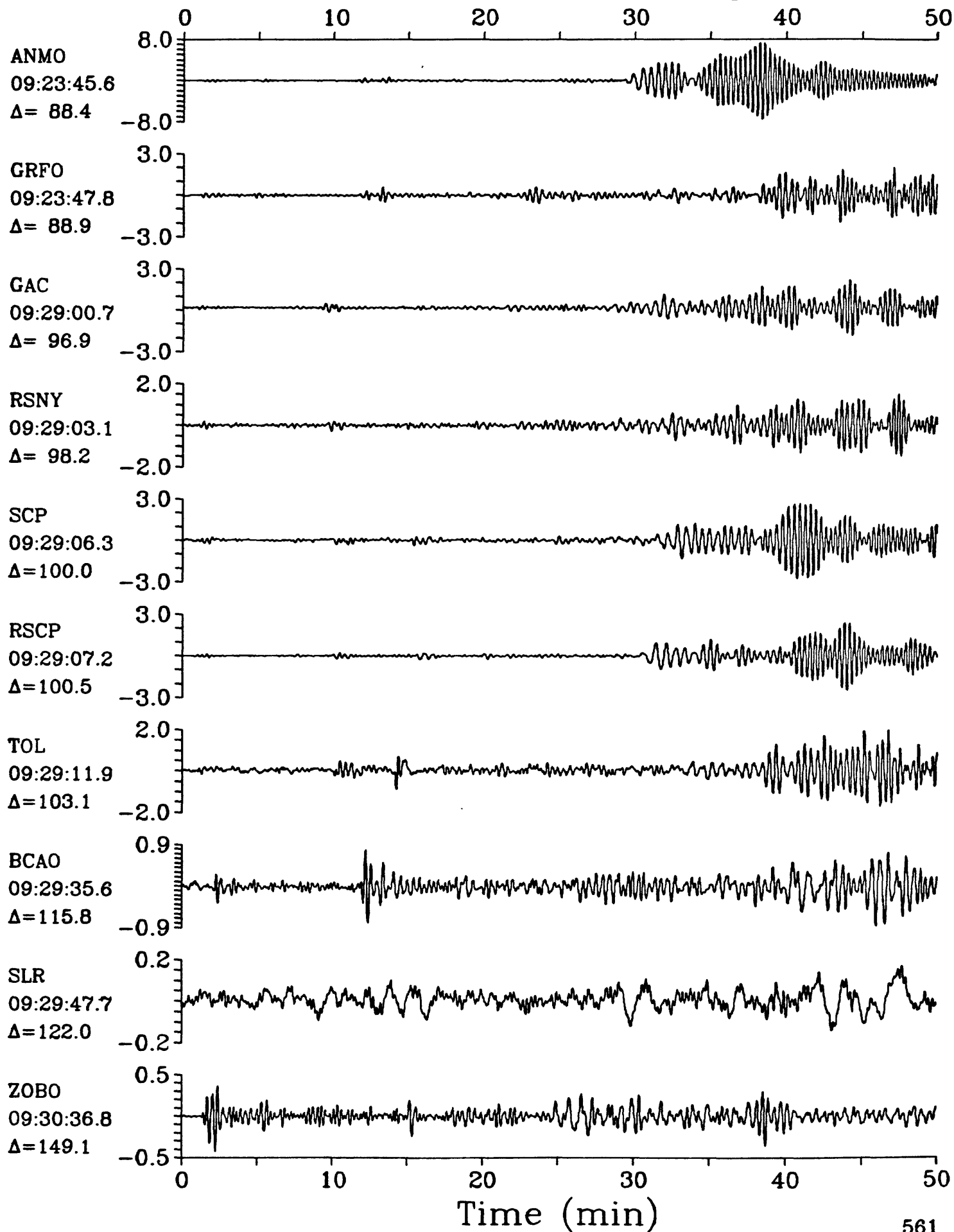
LPZ

South of Honshu, Japan $h=33.0$ $m_b=5.6$ $M_{sz}=5.6$ 

LPZ

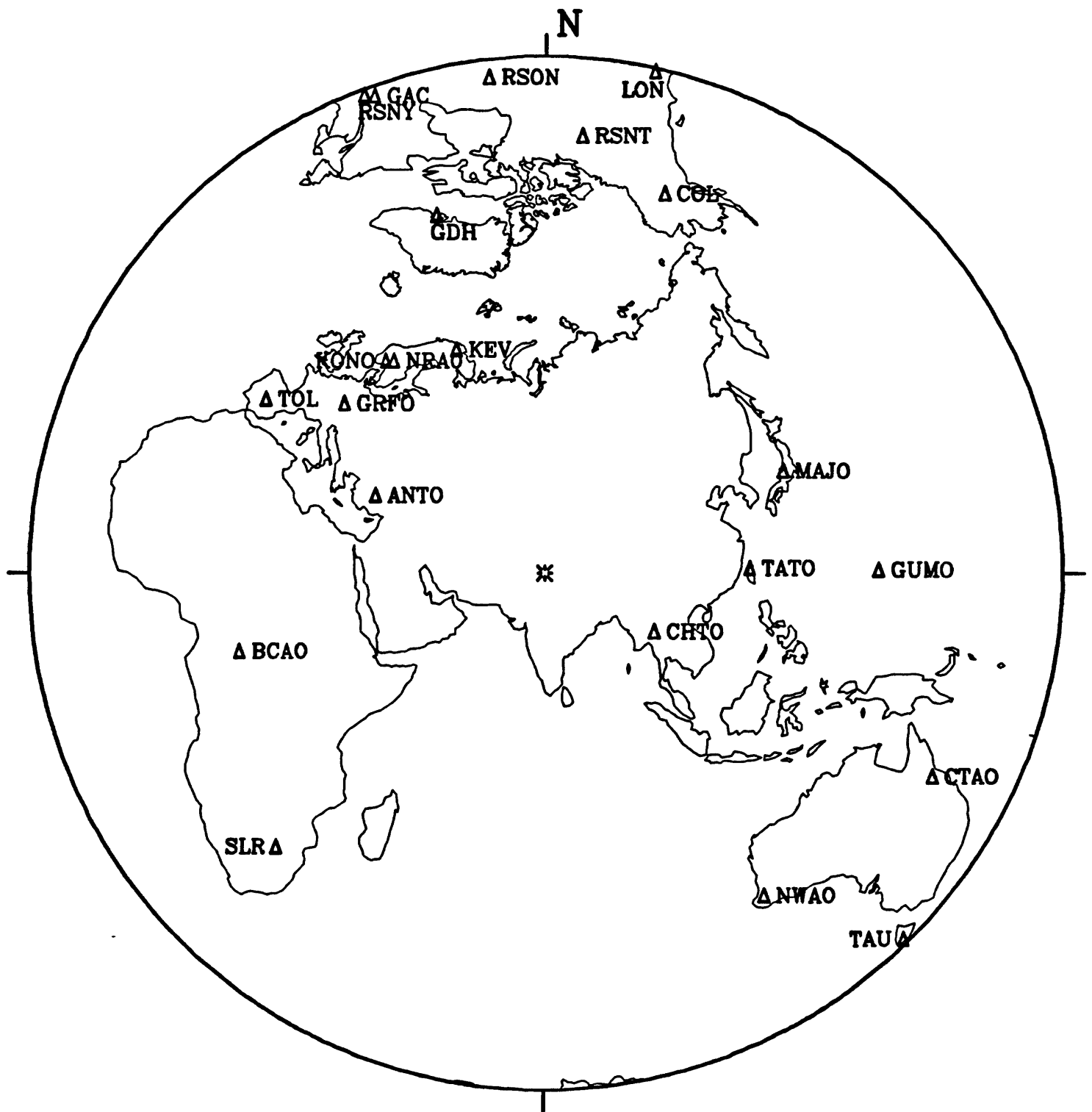
23 April 1986 09:11:55.85

LPZ

South of Honshu, Japan $h=33.0$ $m_b=5.6$ $M_{sz}=5.6$ 

26 April 1986 07:35:16.08

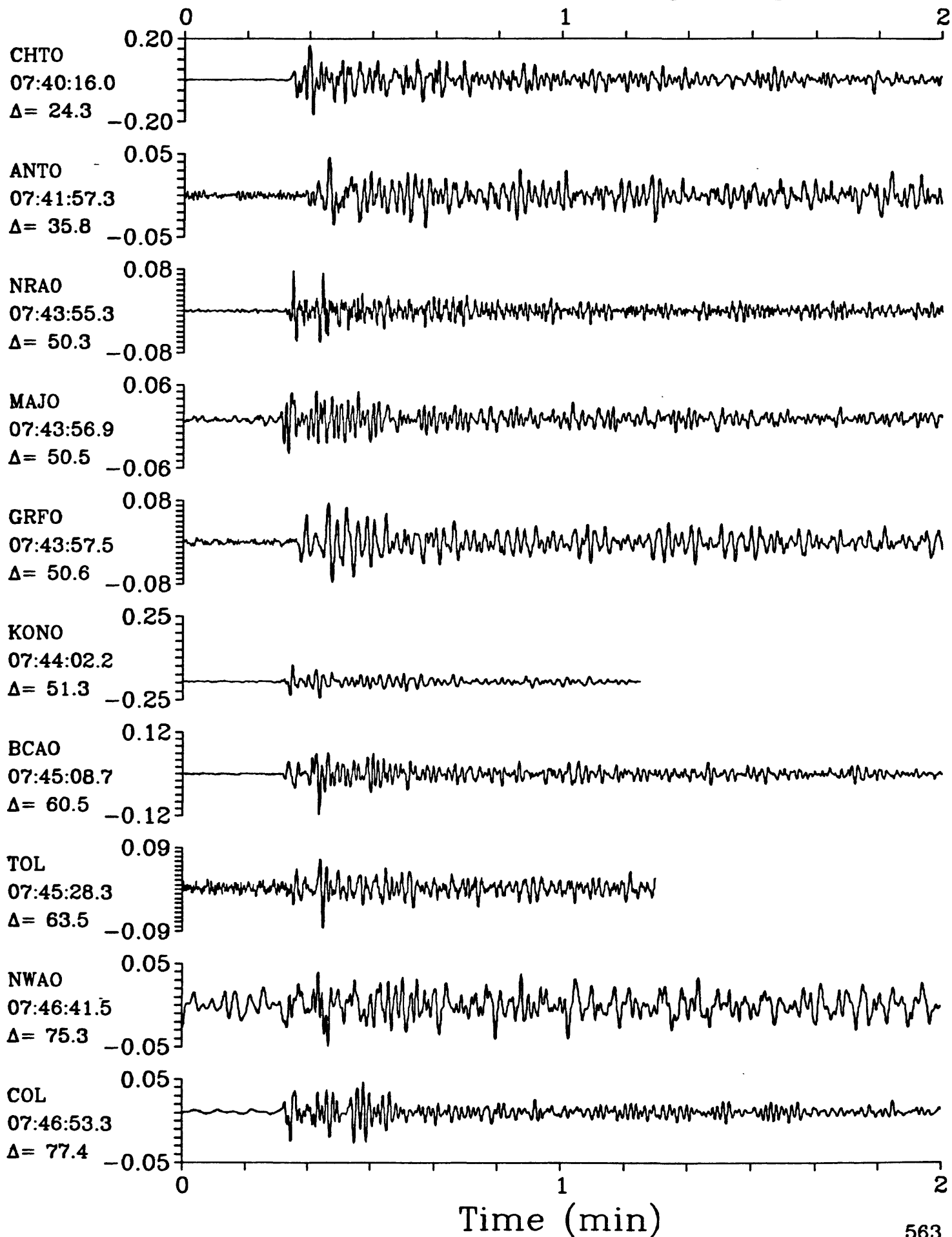
Kashmir-India Border Region



SPZ

26 April 1986 07:35:16.08

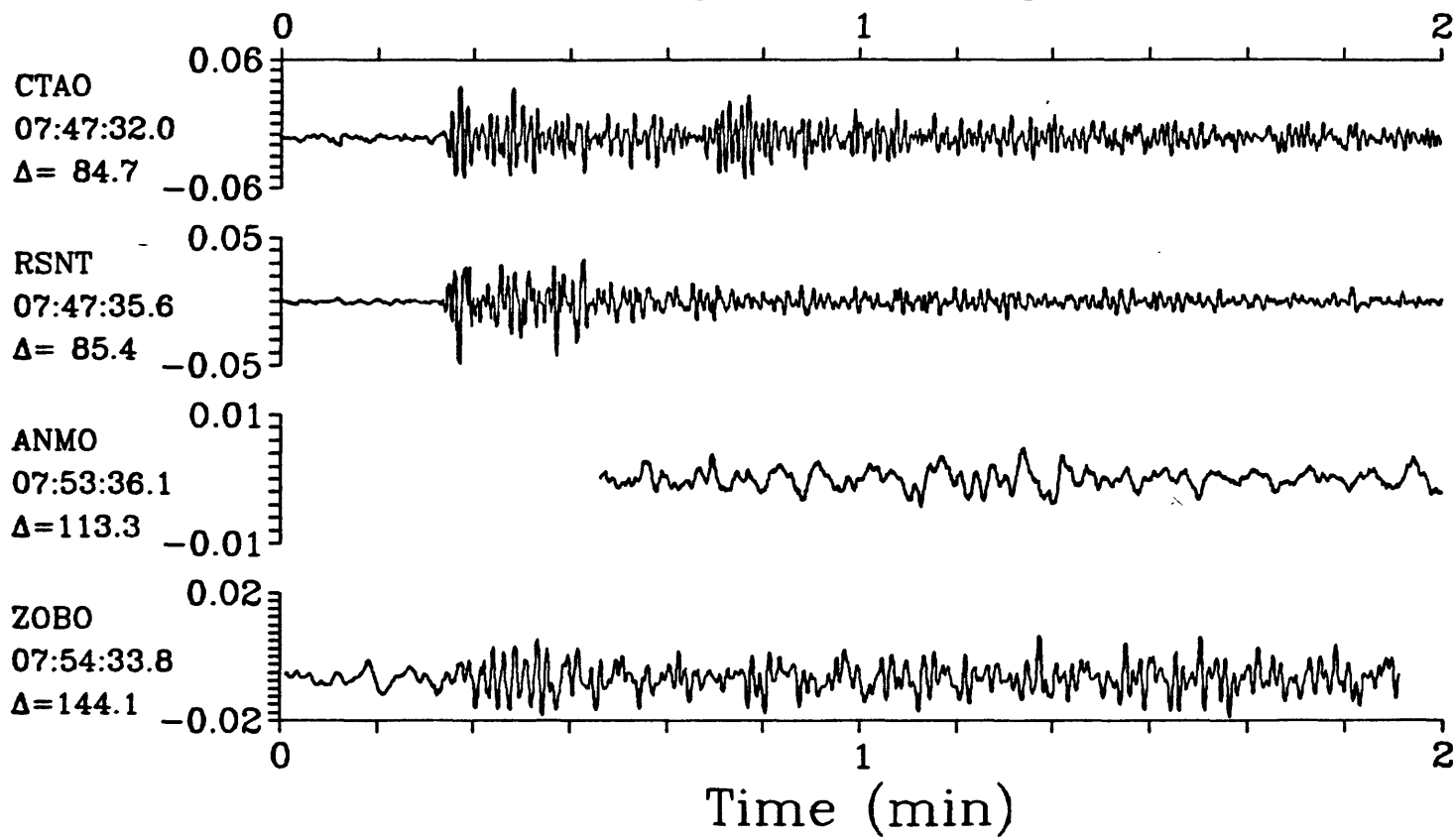
SPZ

Kashmir-India Border Region $h=33.0$ $m_b=5.5$ $M_{sz}=5.3$ 

SPZ

26 April 1986 07:35:16.08

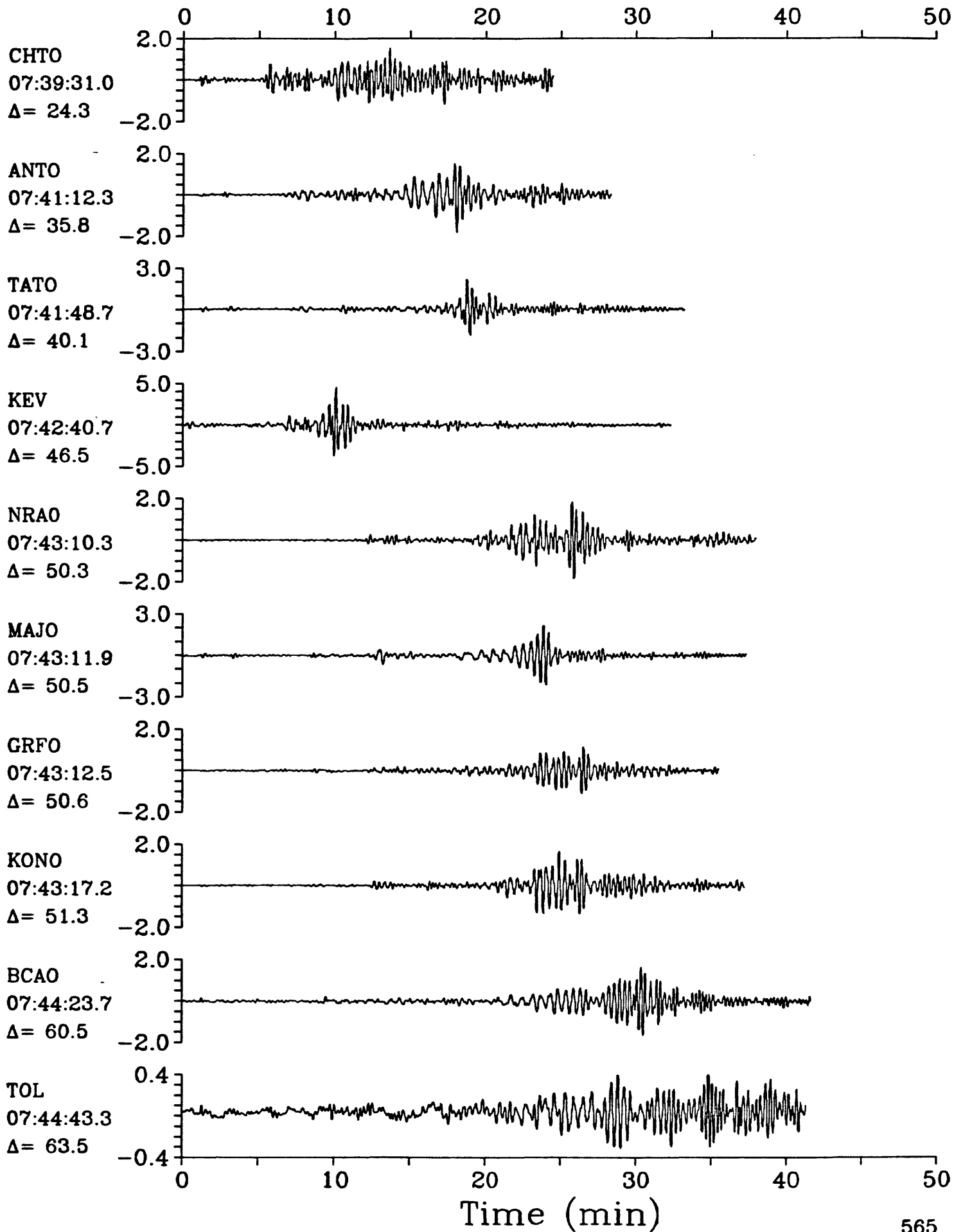
SPZ

Kashmir-India Border Region $h=33.0$ $m_b=5.5$ $M_{sz}=5.3$ 

LPZ

26 April 1986 07:35:16.08

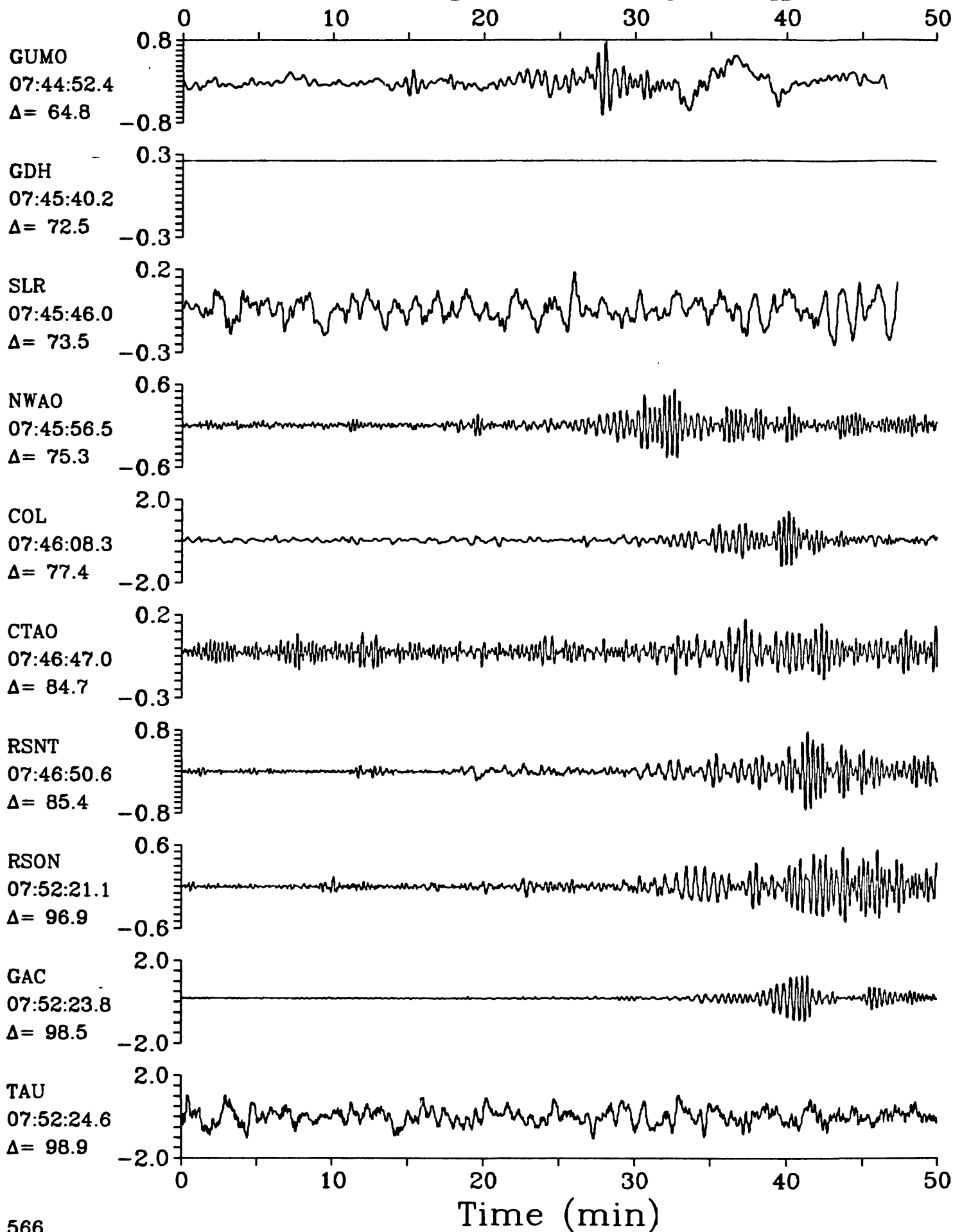
LPZ

Kashmir-India Border Region $h=33.0$ $m_b=5.5$ $M_{sz}=5.3$ 

LPZ

26 April 1986 07:35:16.08

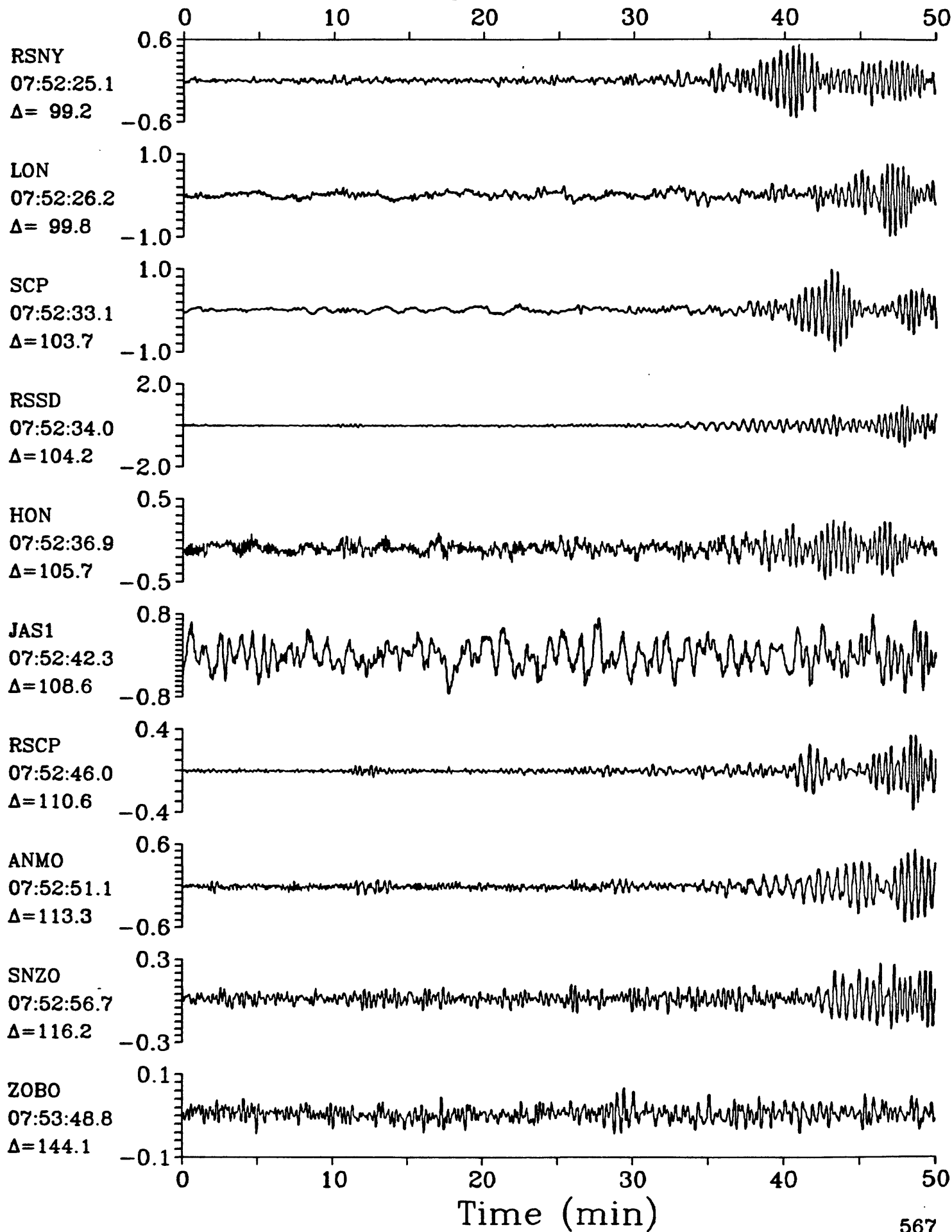
LPZ

Kashmir-India Border Region $h=33.0$ $m_b=5.5$ $M_{sz}=5.3$ 

LPZ

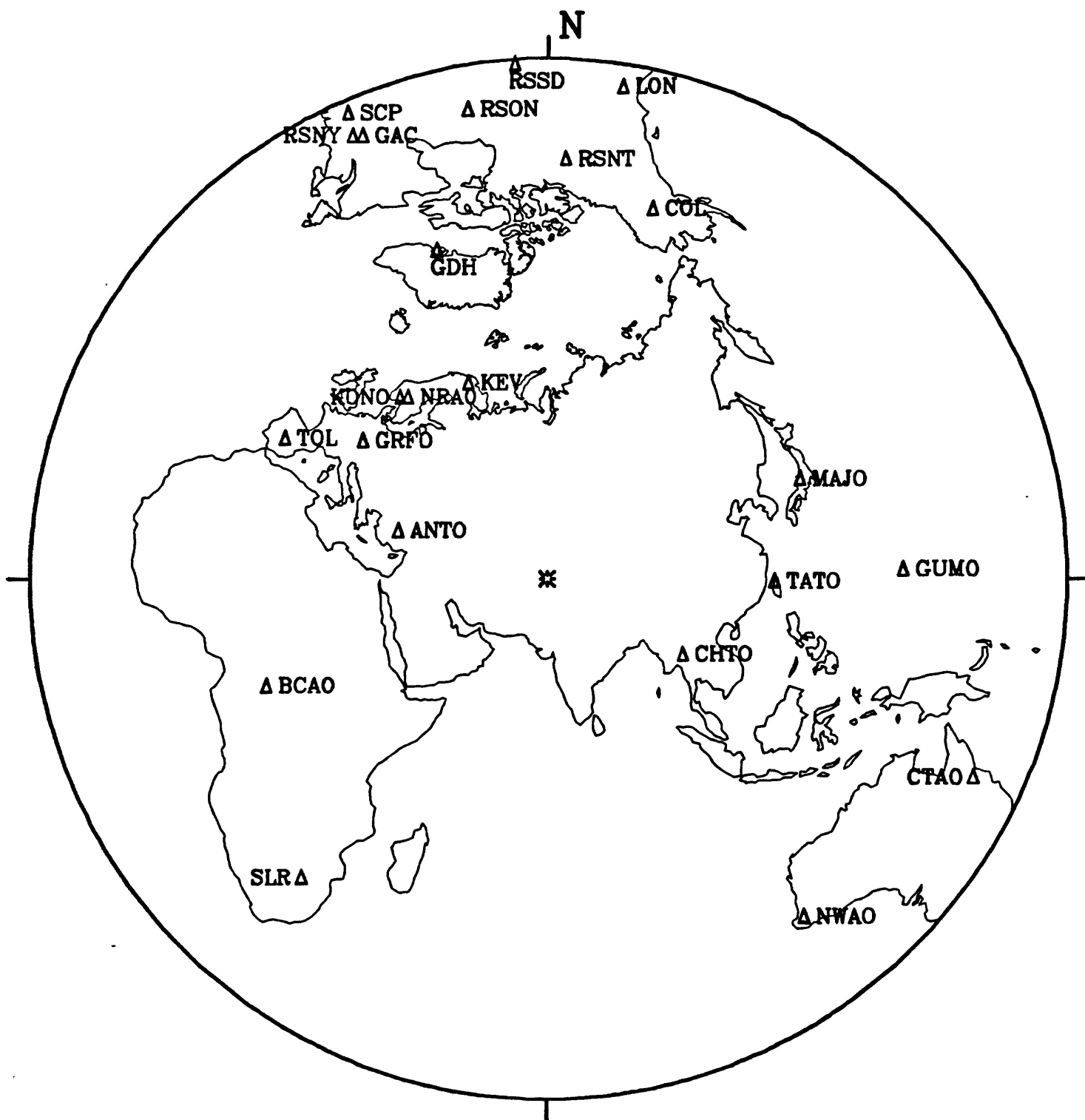
26 April 1986 07:35:16.08

LPZ

Kashmir-India Border Region $h=33.0$ $m_b=5.5$ $M_{sz}=5.3$ 

26 April 1986 14:15:07.66

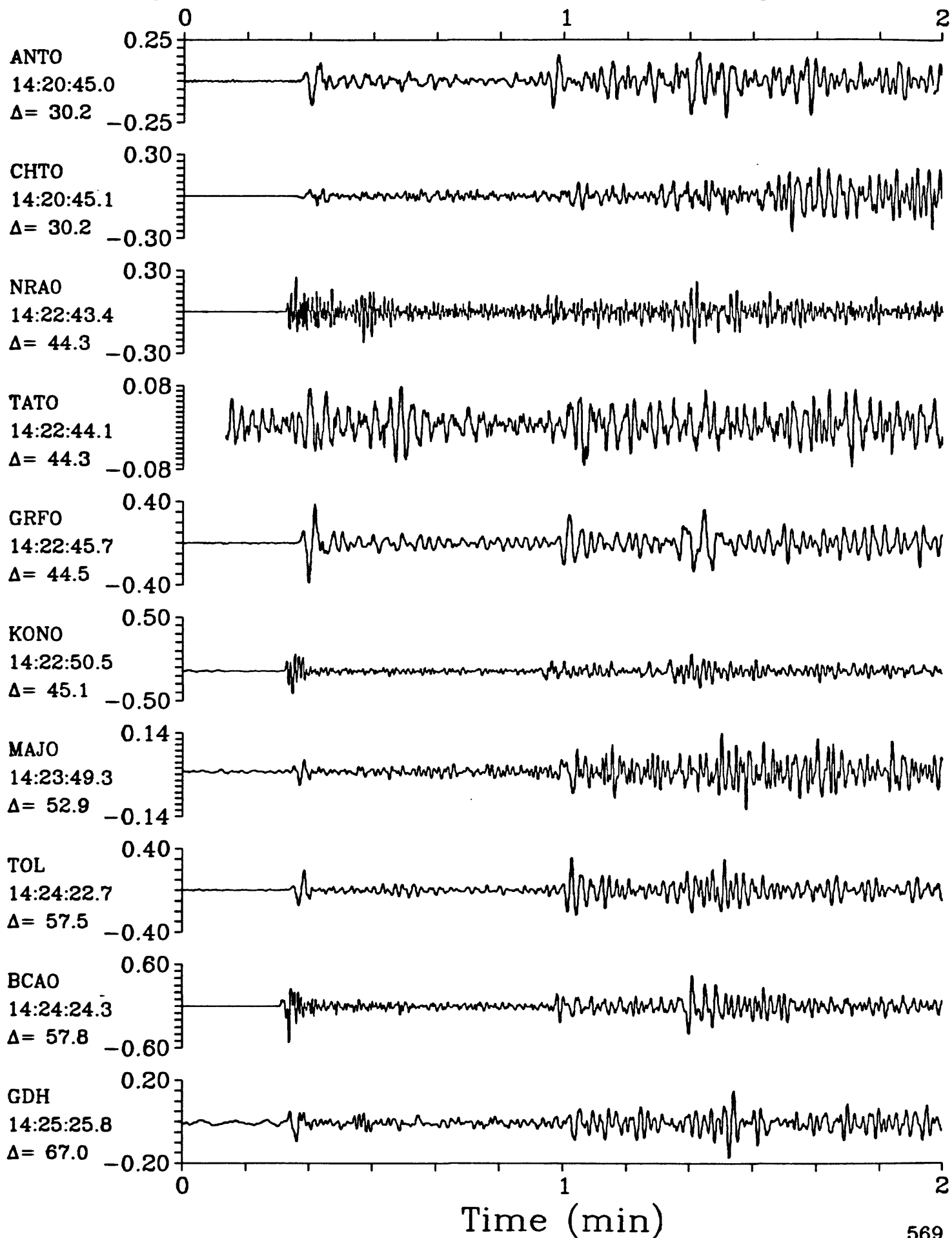
Afghanistan-USSR Border Region



SPZ

26 April 1986 14:15:07.66

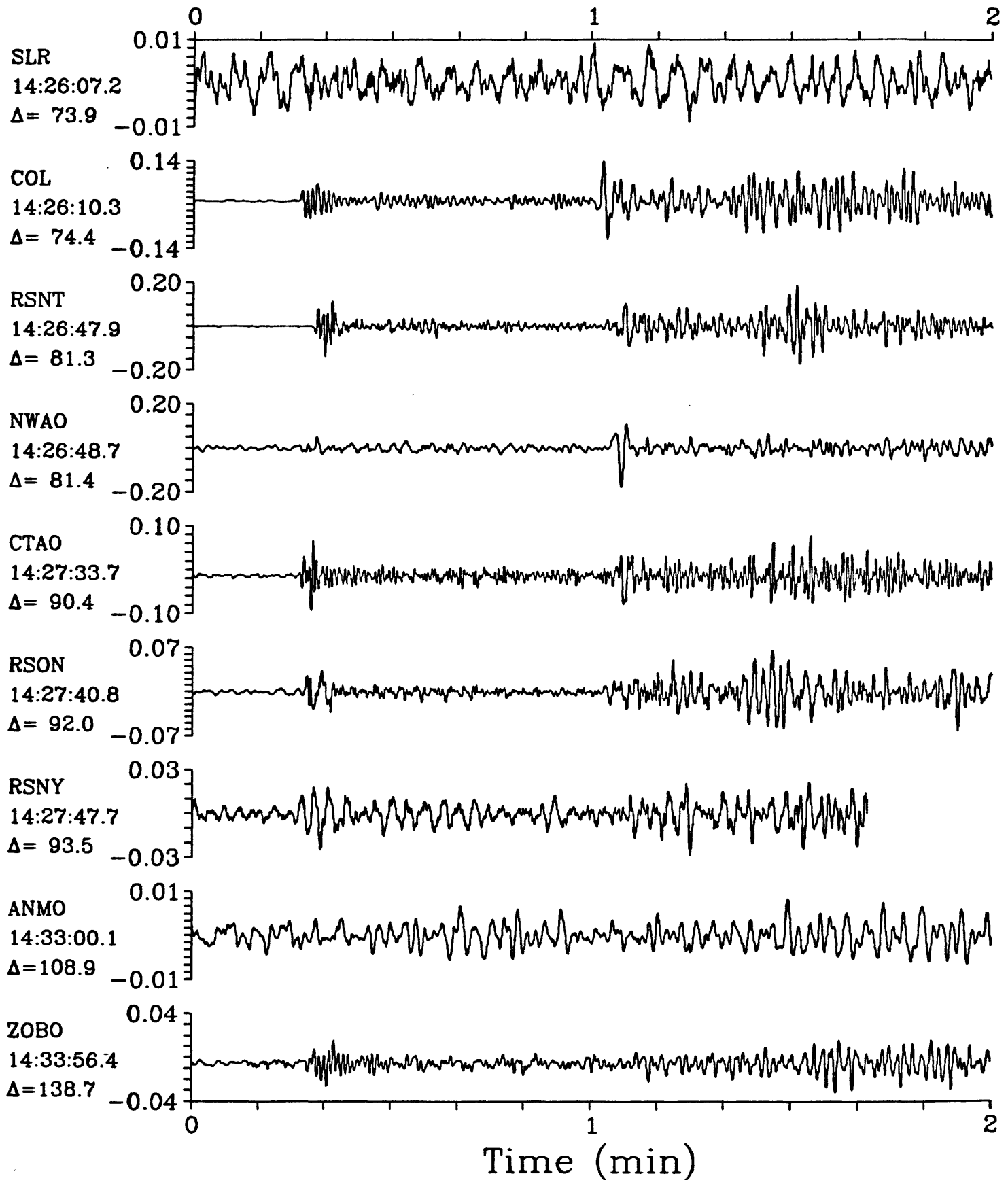
SPZ

Afghanistan-USSR Border Region $h=187.1$ $m_b=5.6$ 

SPZ

26 April 1986 14:15:07.66

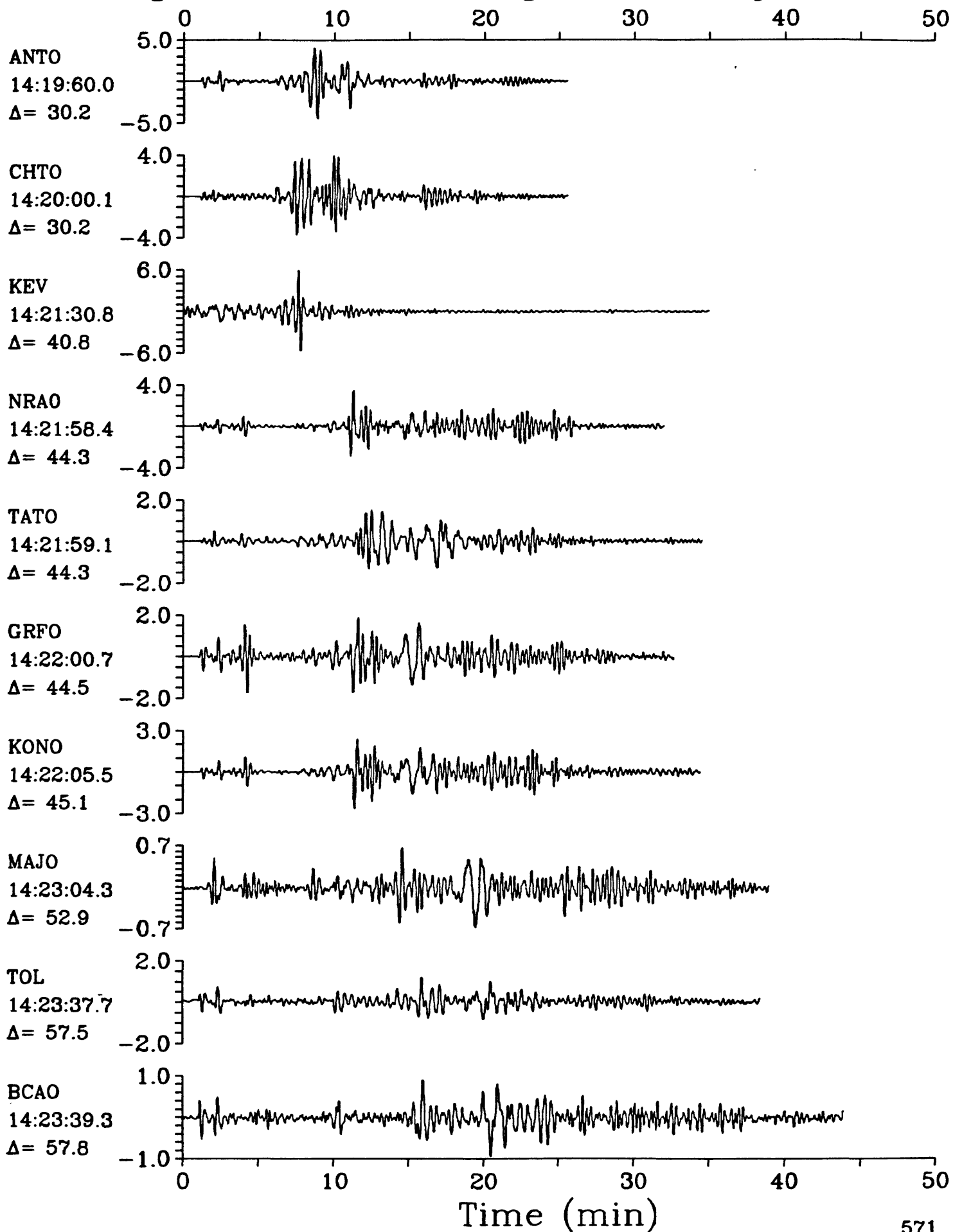
SPZ

Afghanistan-USSR Border Region $h=187.1$ $m_b=5.6$ 

LPZ

26 April 1986 14:15:07.66

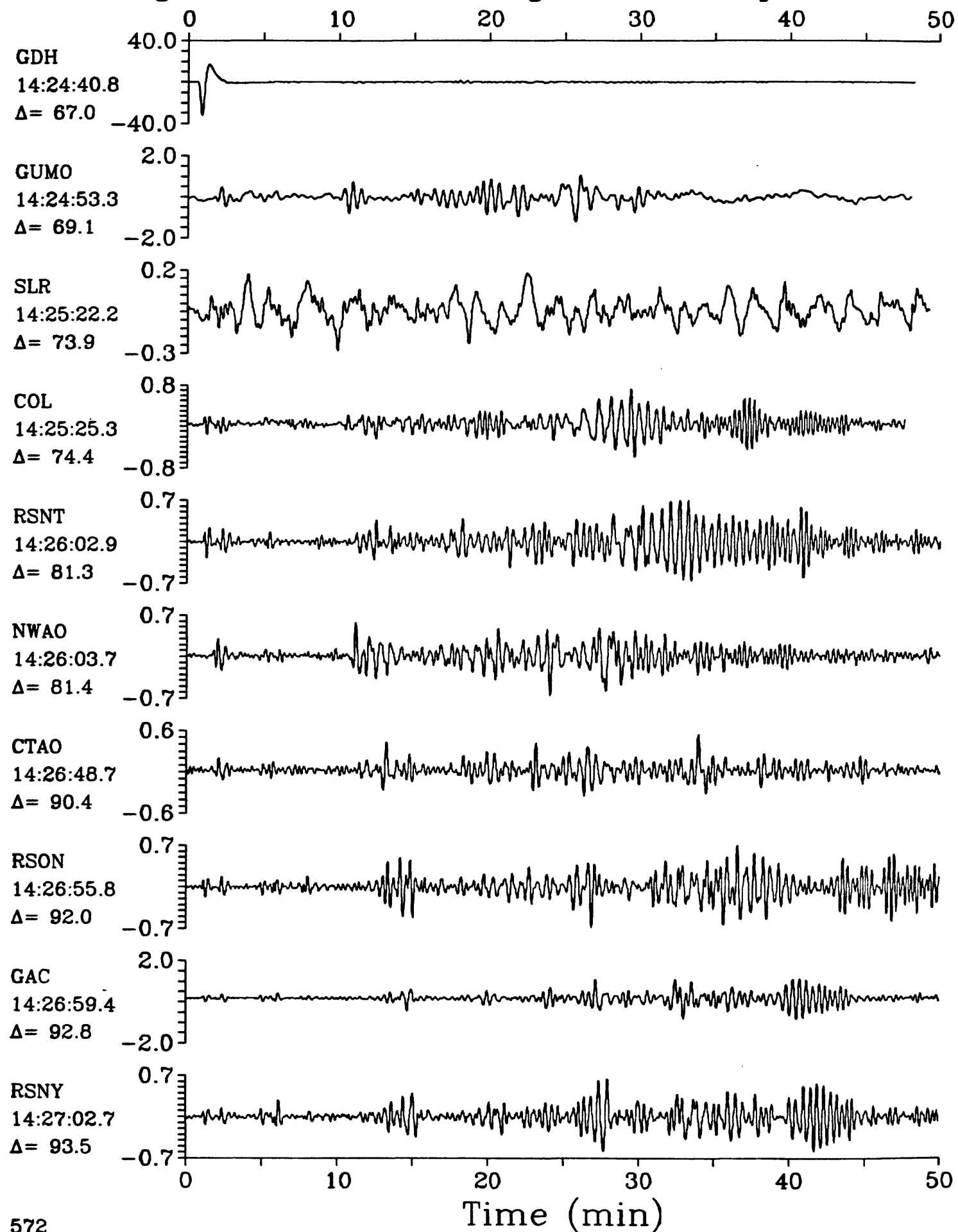
LPZ

Afghanistan-USSR Border Region $h=187.1$ $m_b=5.6$ 

LPZ

26 April 1986 14:15:07.66

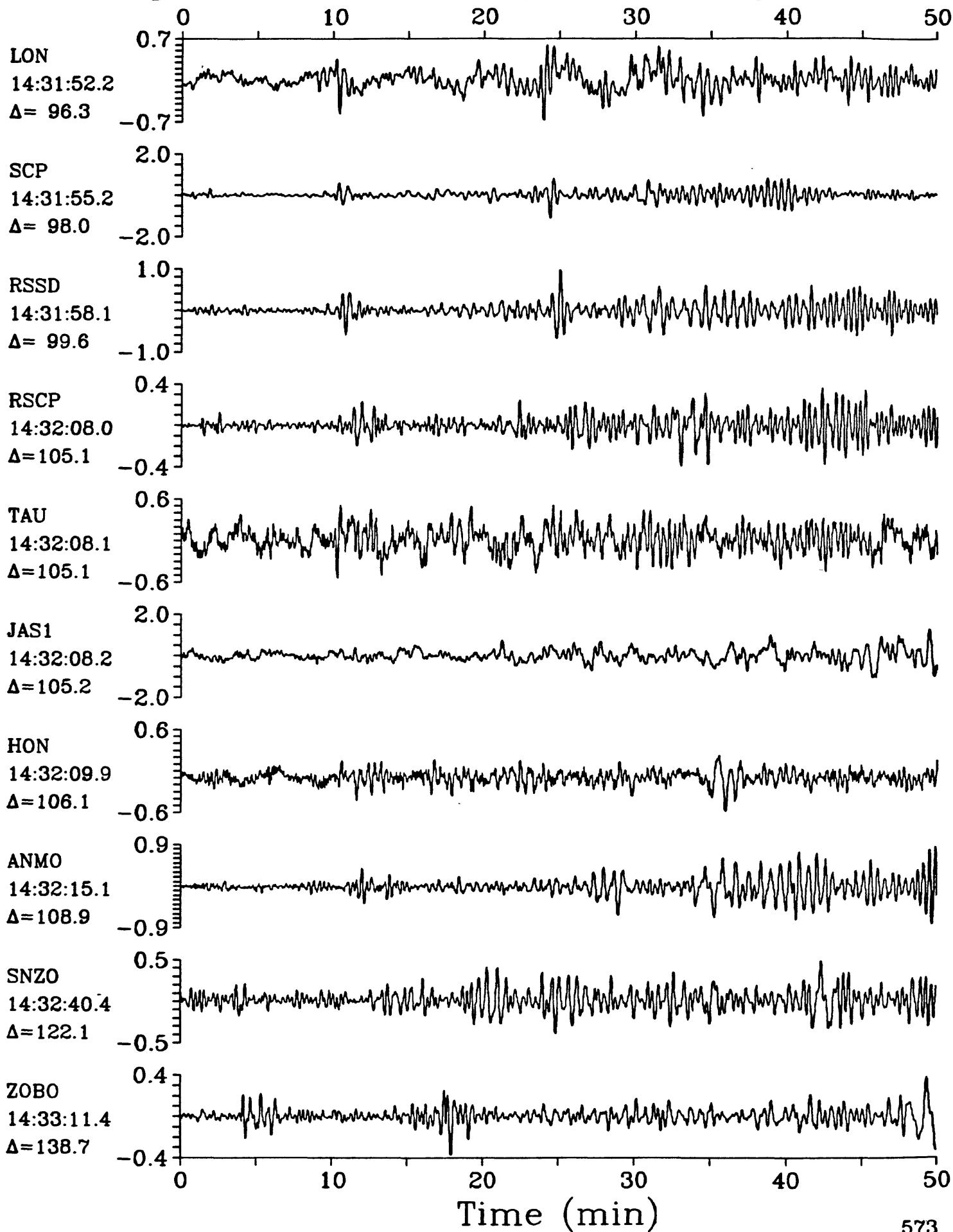
LPZ

Afghanistan-USSR Border Region $h=187.1$ $m_b=5.6$ 

LPZ

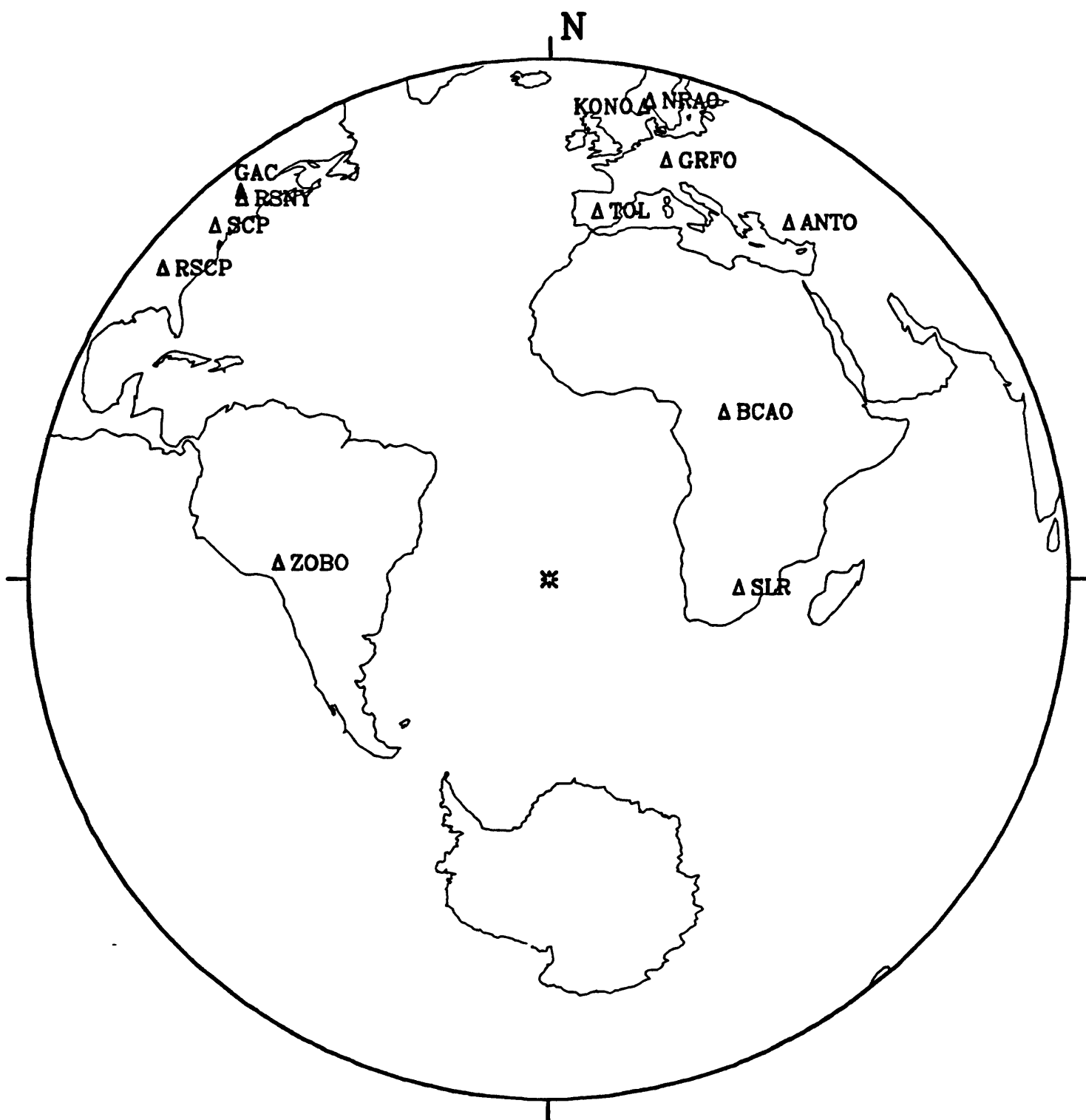
26 April 1986 14:15:07.66

LPZ

Afghanistan-USSR Border Region $h=187.1$ $m_b=5.6$ 

27 April 1986 03:24:06.02

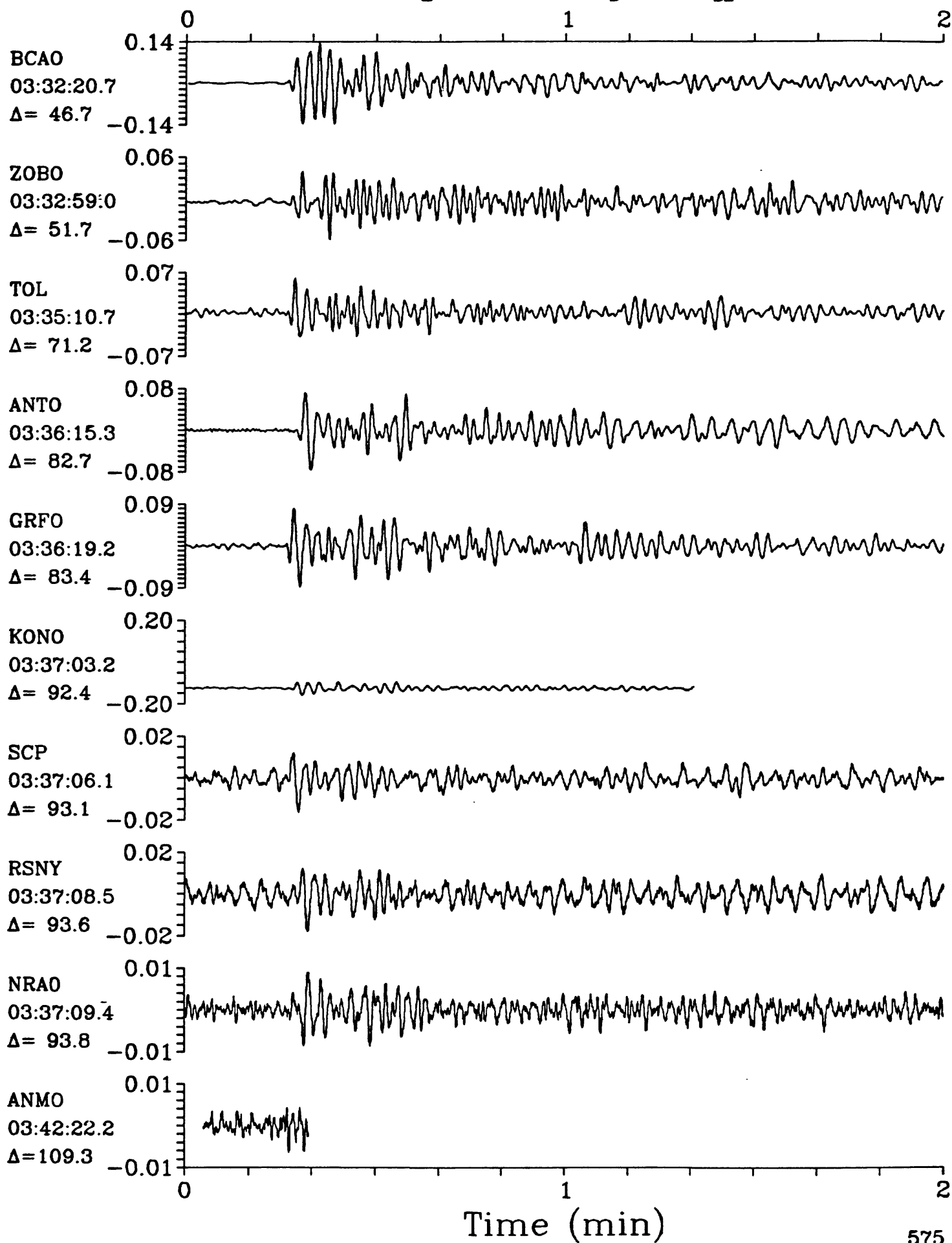
South Atlantic Ridge



SPZ

27 April 1986 03:24:06.02

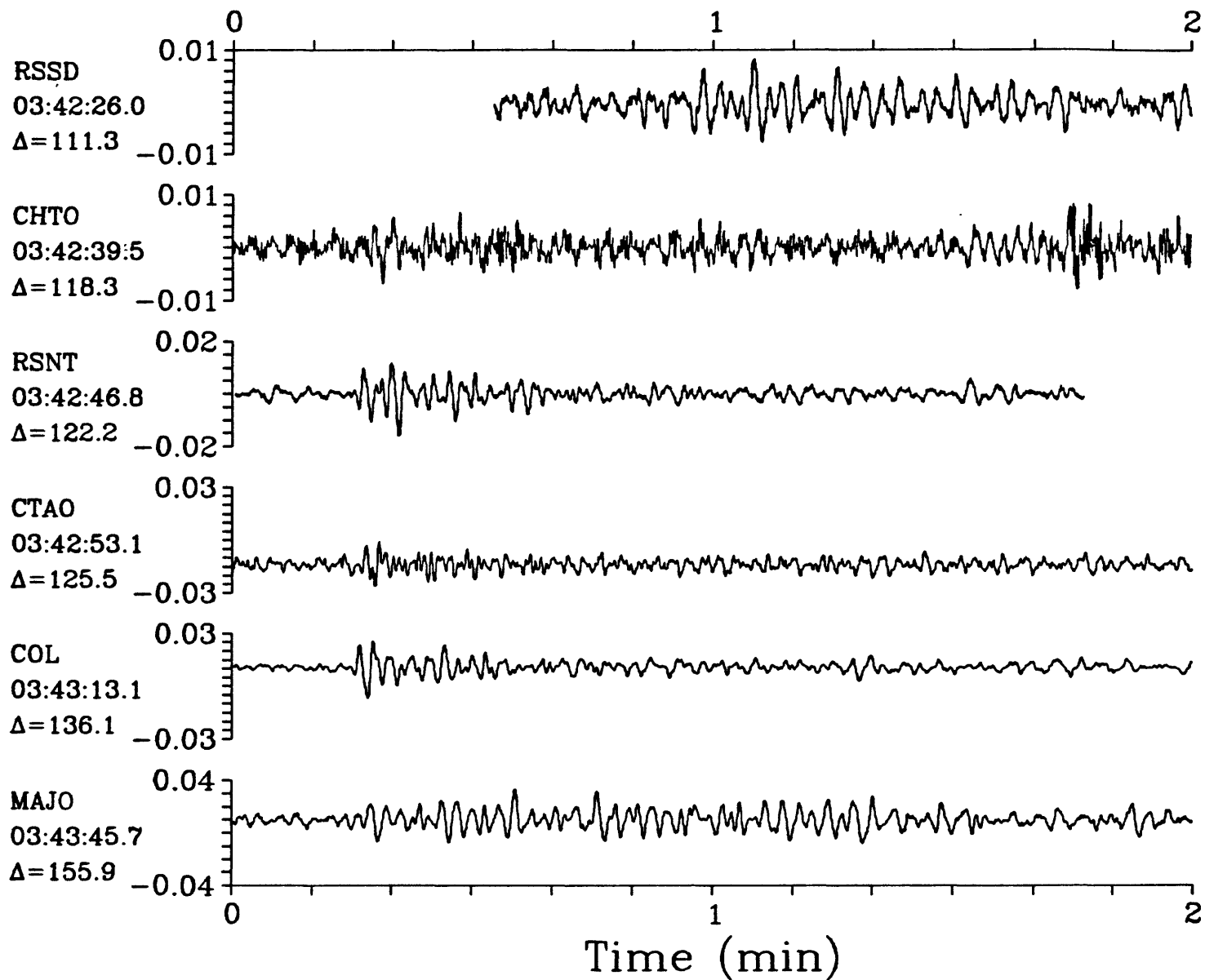
SPZ

South Atlantic Ridge $h=10.0$ $m_b=5.7$ $M_{sz}=5.7$ 

SPZ

27 April 1986 03:24:06.02

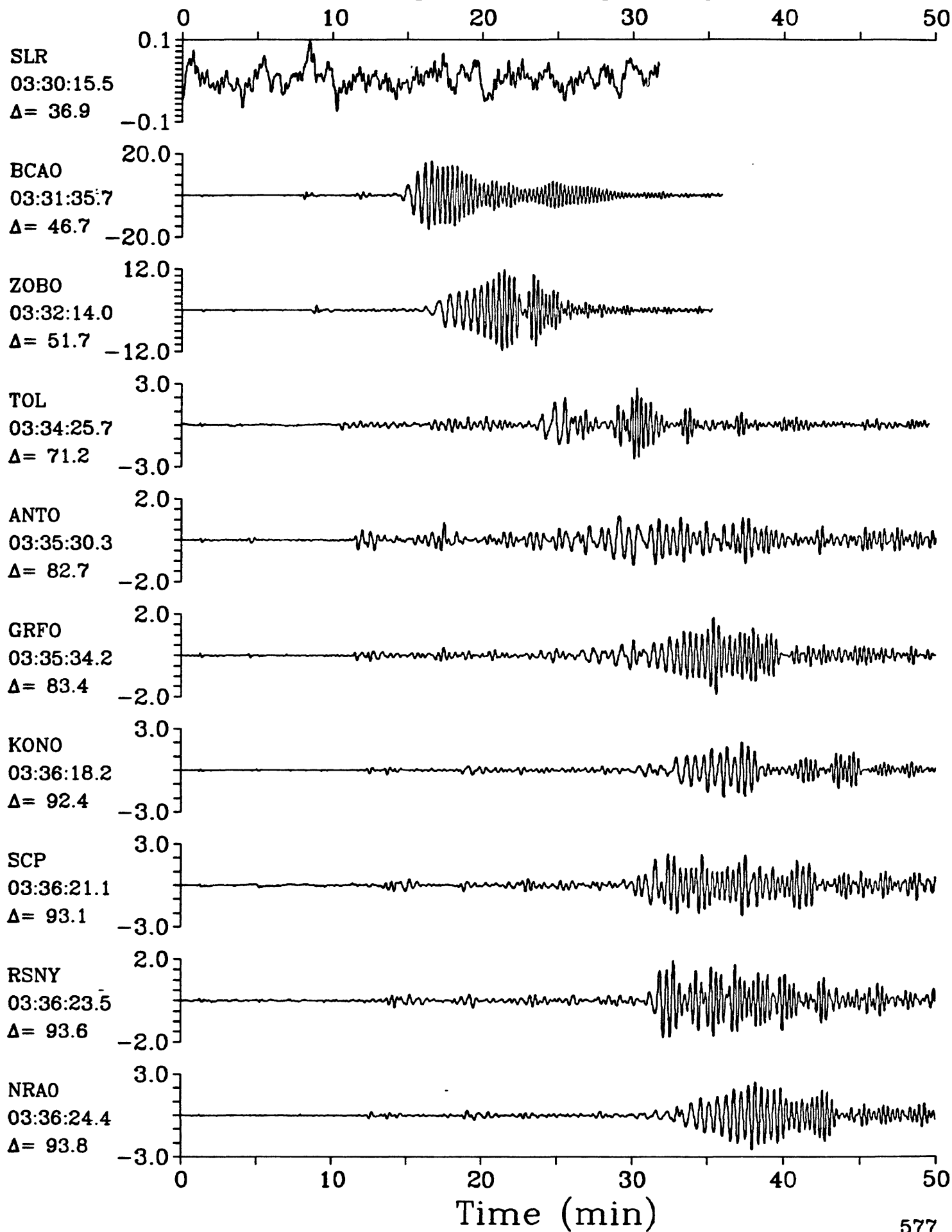
SPZ

South Atlantic Ridge $h=10.0$ $m_b=5.7$ $M_{sz}=5.7$ 

LPZ

27 April 1986 03:24:06.02

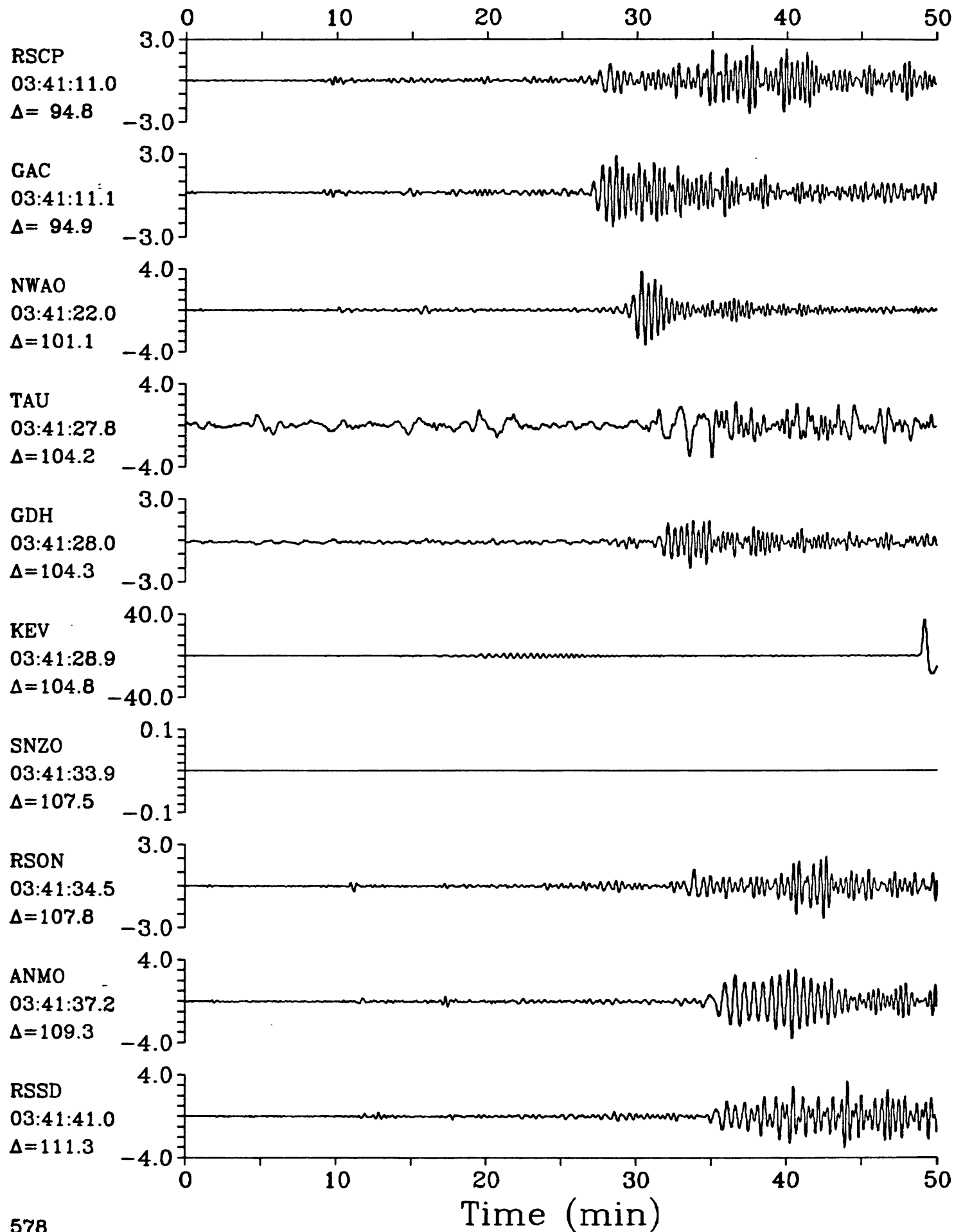
LPZ

South Atlantic Ridge $h=10.0$ $m_b=5.7$ $M_{sz}=5.7$ 

LPZ

27 April 1986 03:24:06.02

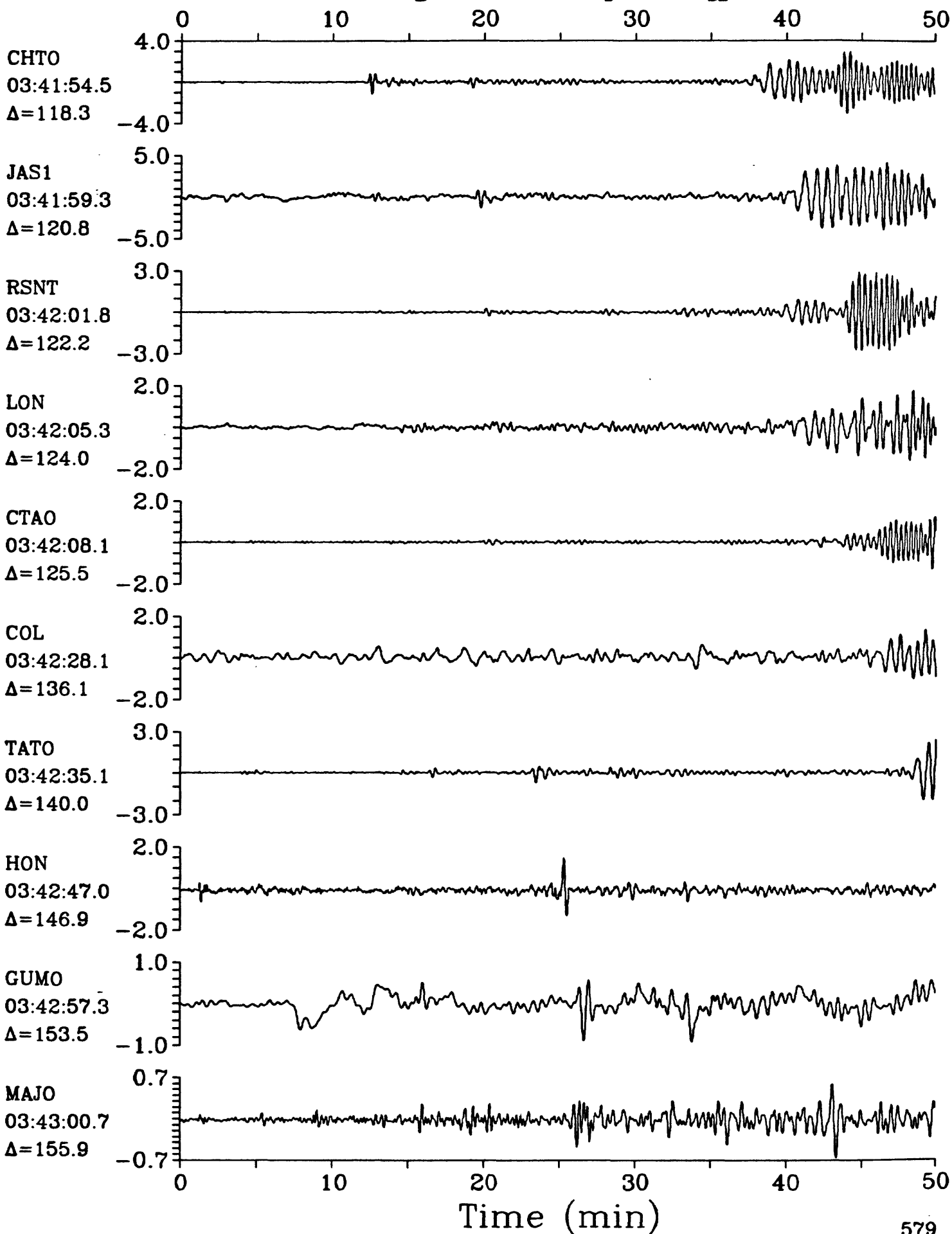
LPZ

South Atlantic Ridge $h=10.0$ $m_b=5.7$ $M_{sz}=5.7$ 

LPZ

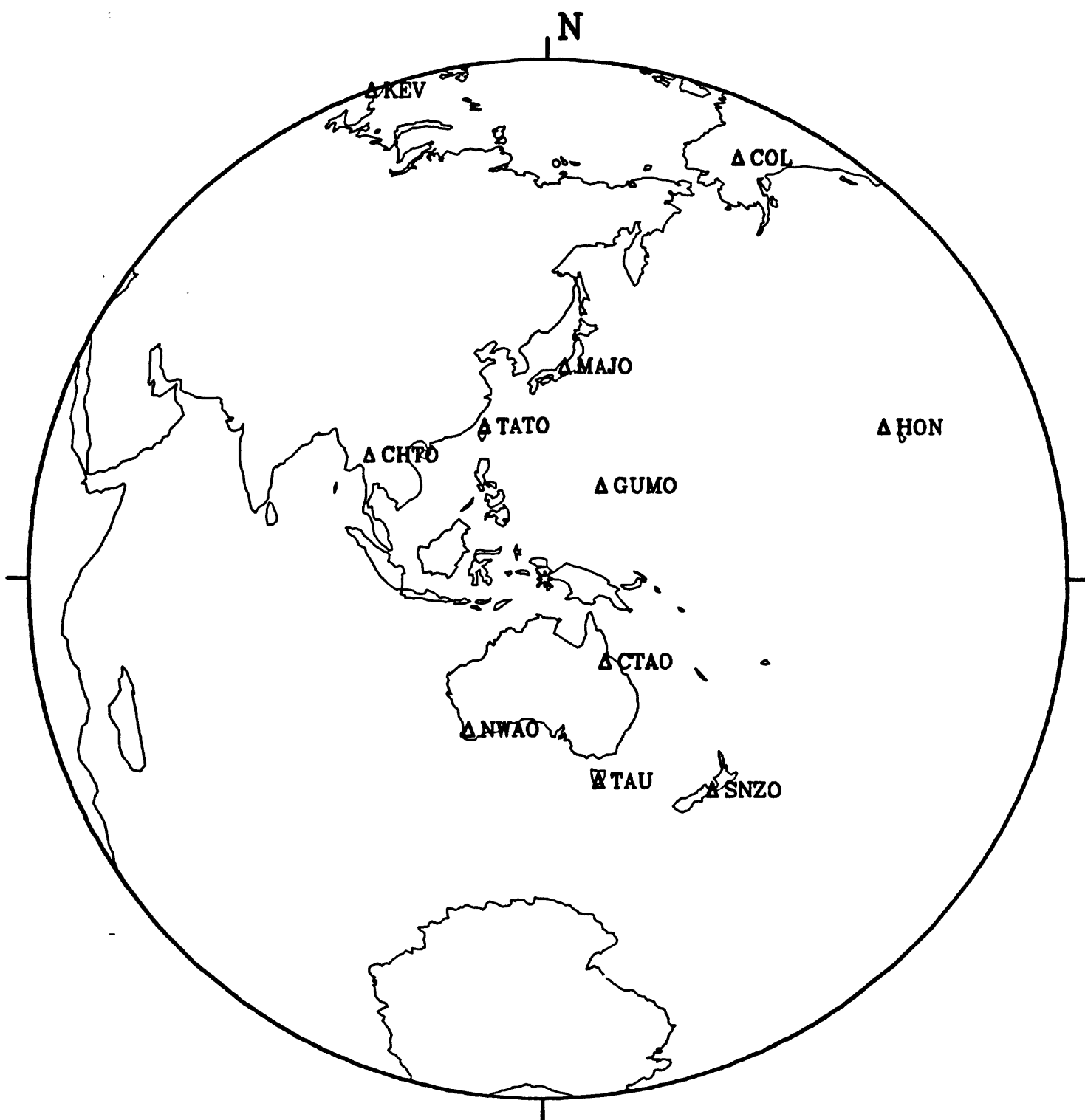
27 April 1986 03:24:06.02

LPZ

South Atlantic Ridge $h=10.0$ $m_b=5.7$ $M_{sz}=5.7$ 

29 April 1986 07:28:04.93

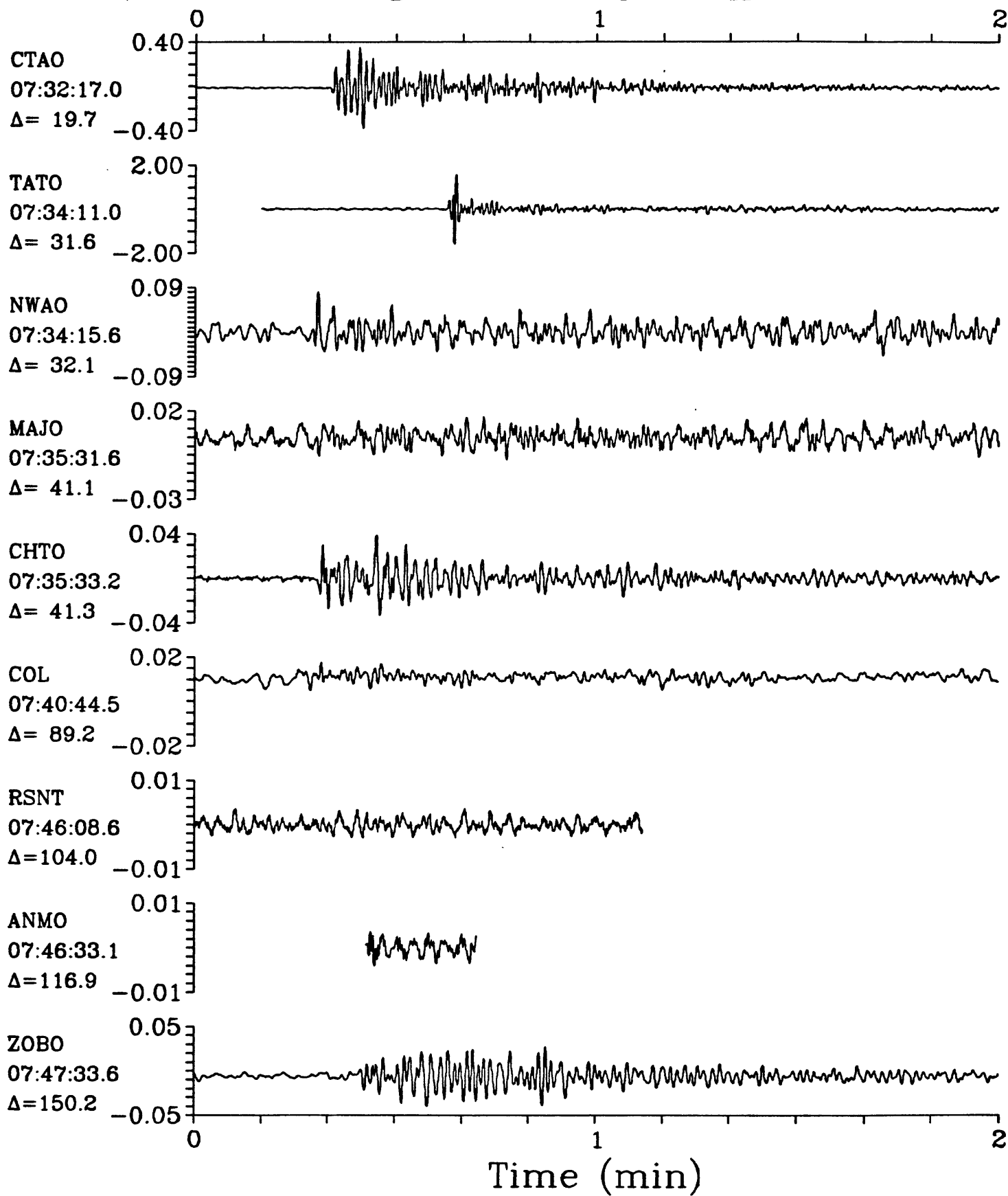
West Irian Region



SPZ

29 April 1986 07:28:04.93

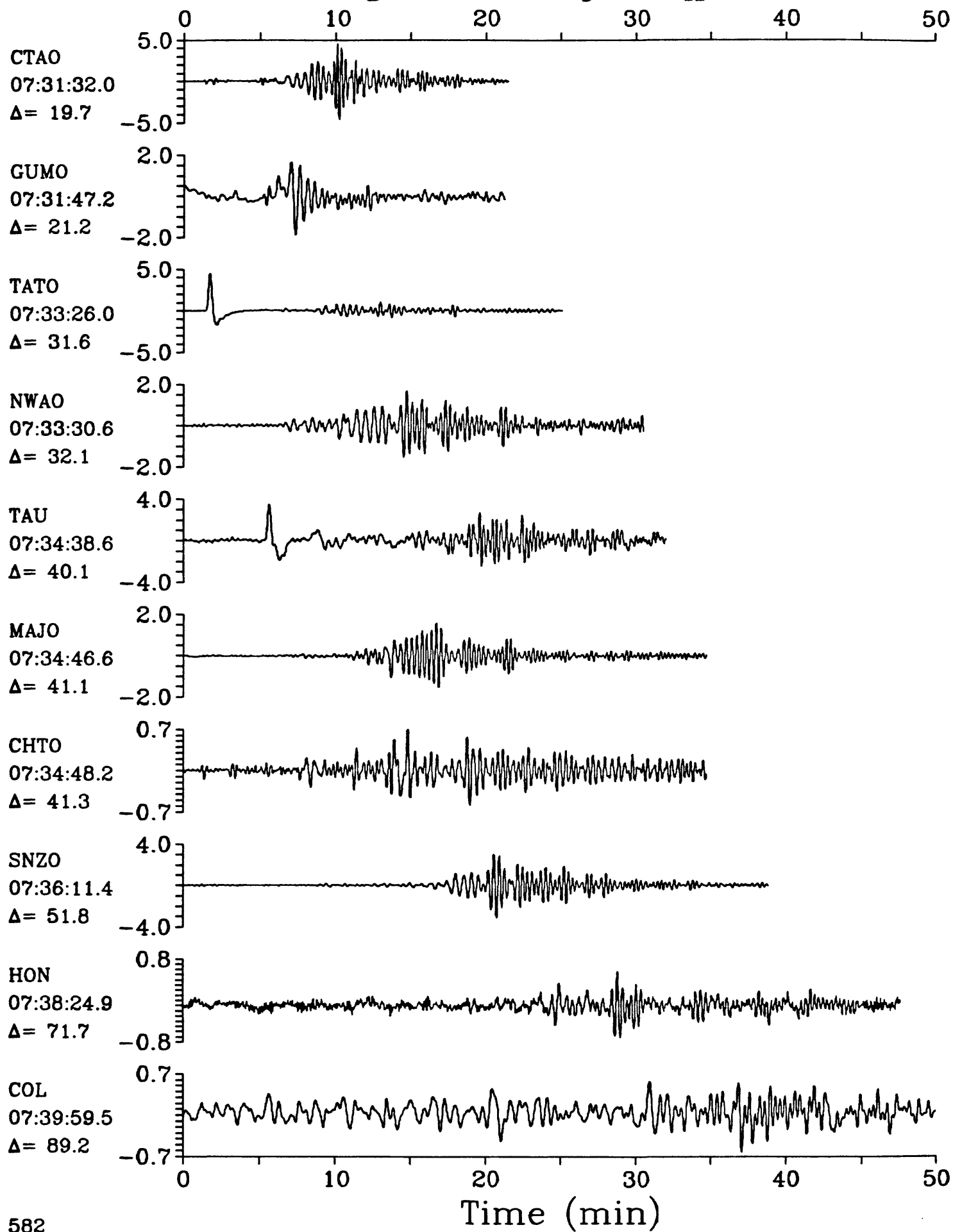
SPZ

West Irian Region $h=25.9$ $m_b=5.5$ $M_{sz}=4.9$ 

LPZ

29 April 1986 07:28:04.93

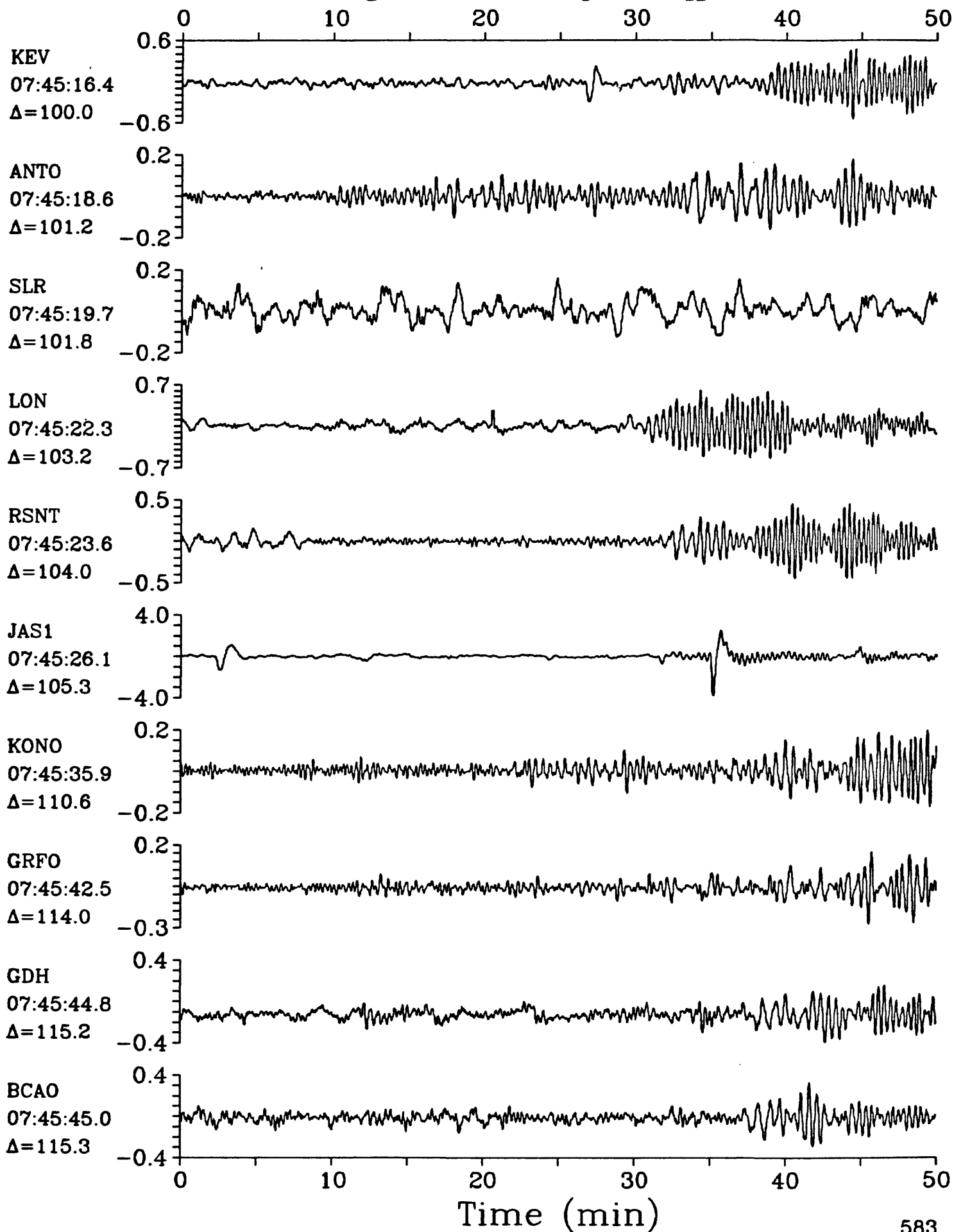
LPZ

West Irian Region $h=25.9$ $m_b=5.5$ $M_{sz}=4.9$ 

LPZ

29 April 1986 07:28:04.93

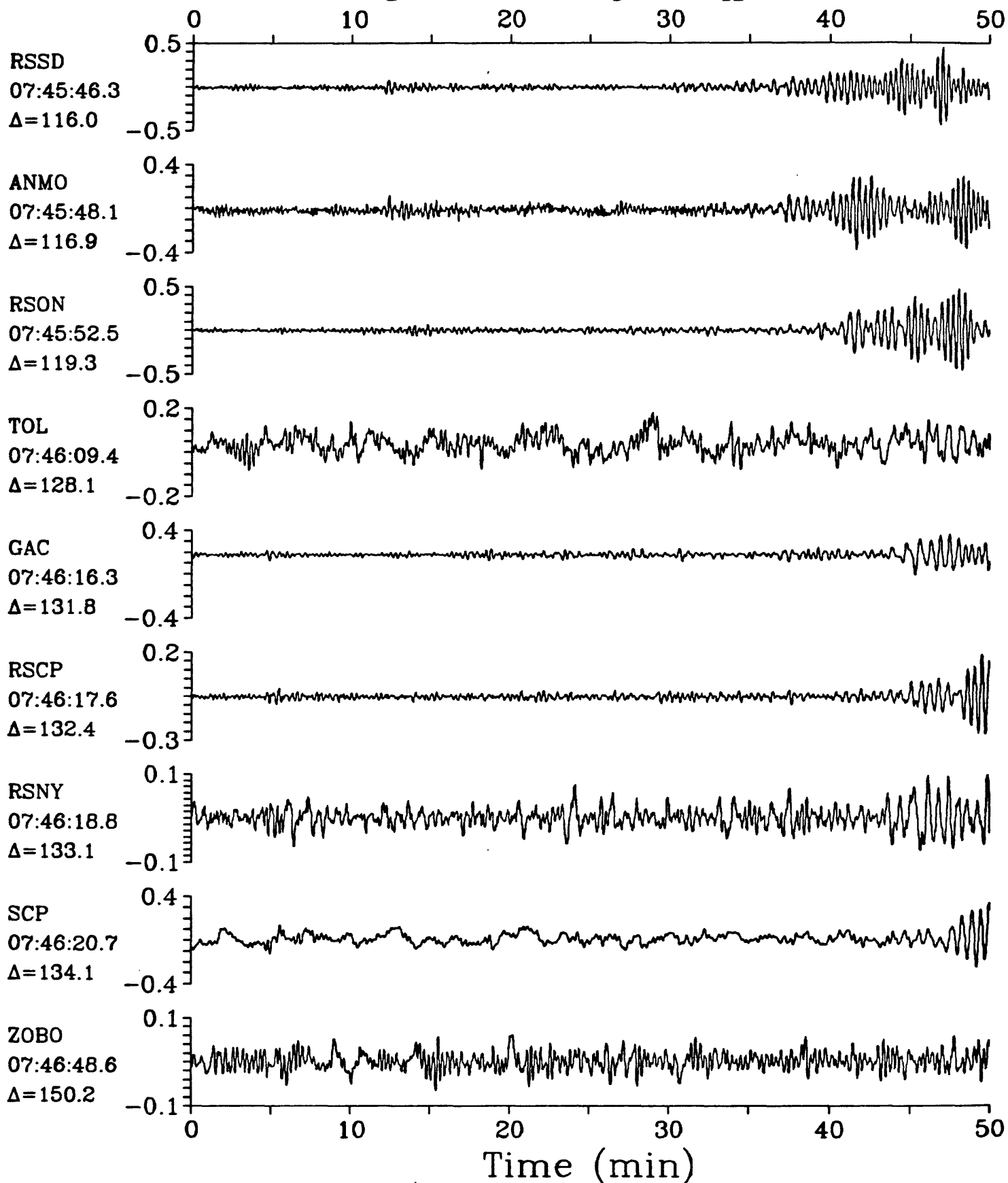
LPZ

West Irian Region $h=25.9$ $m_b=5.5$ $M_{SZ}=4.9$ 

LPZ

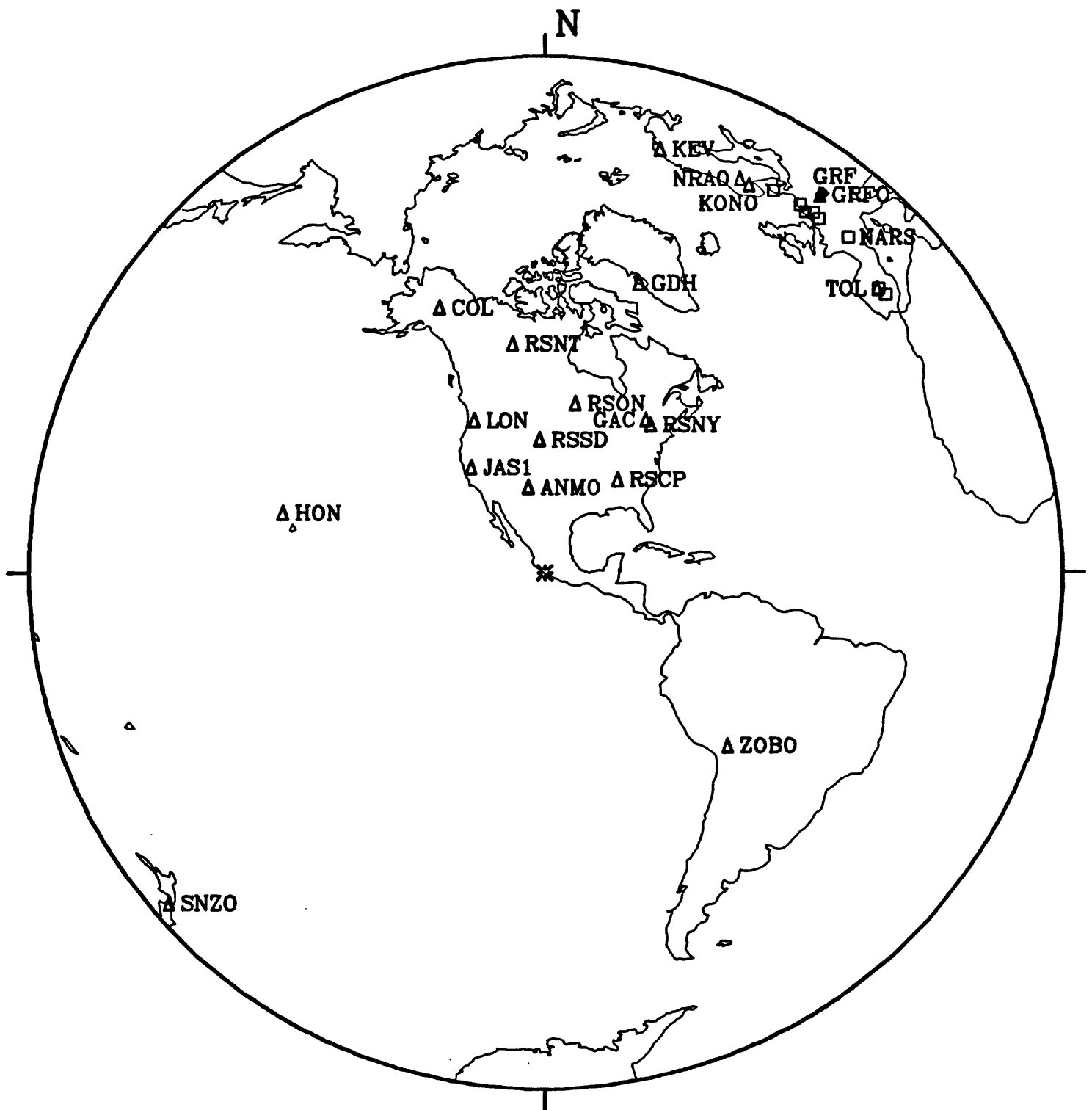
29 April 1986 07:28:04.93

LPZ

West Irian Region $h=25.9$ $m_b=5.5$ $M_{sz}=4.9$ 

30 April 1986 07:07:18.80

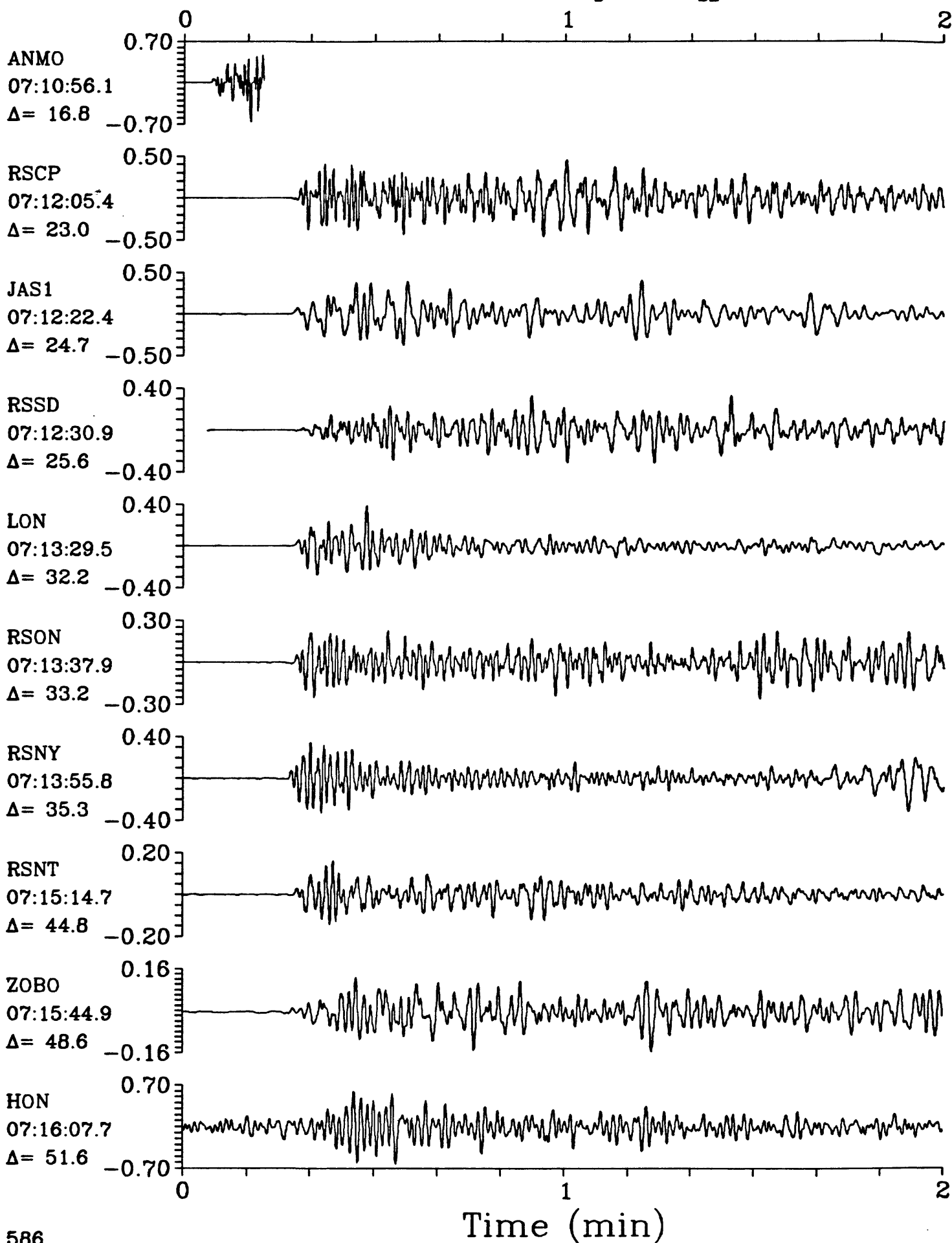
Michoacan, Mexico



SPZ

30 April 1986 07:07:18.80

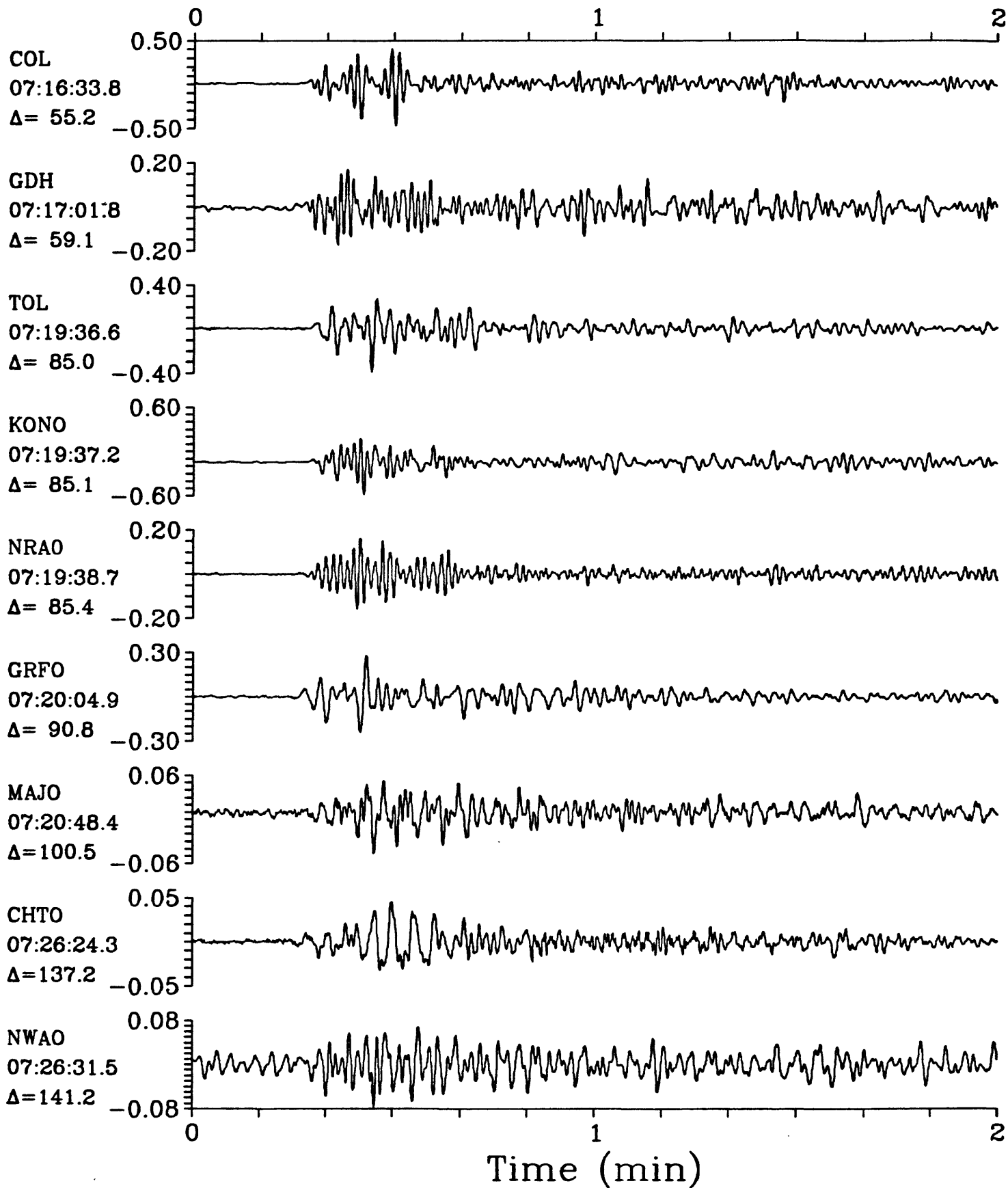
SPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{SZ}=7.0$ 

SPZ

30 April 1986 07:07:18.80

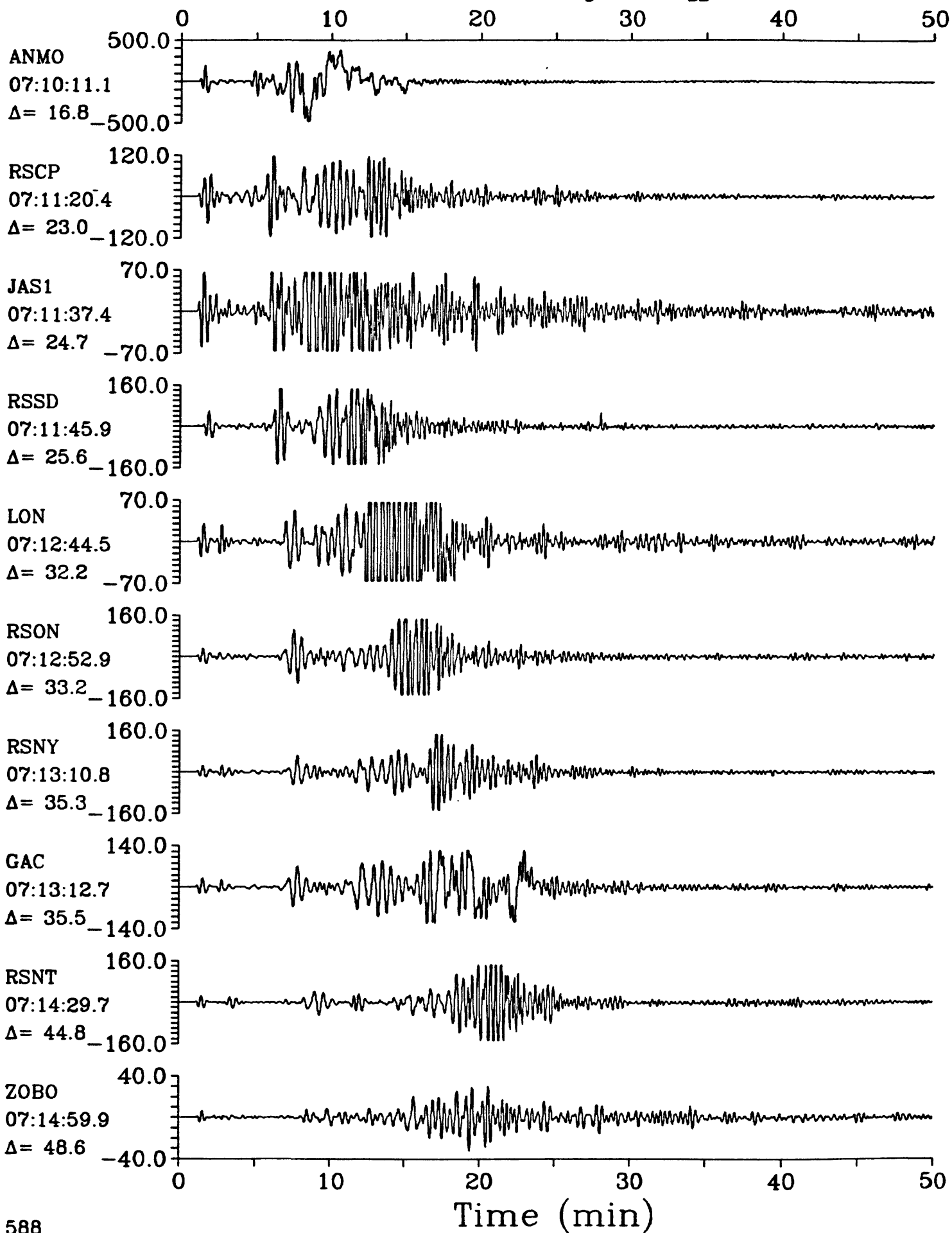
SPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

LPZ

30 April 1986 07:07:18.80

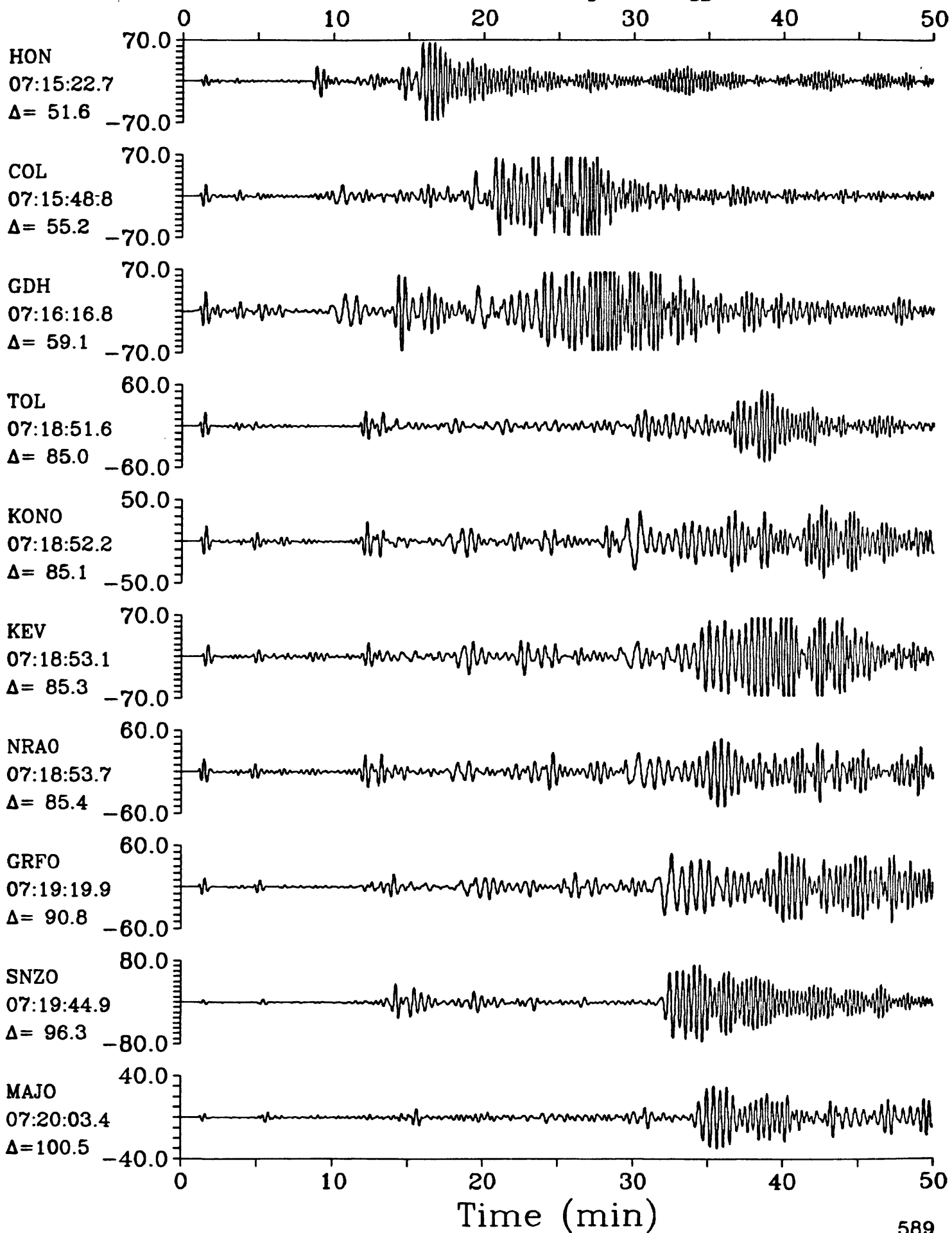
LPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

LPZ

30 April 1986 07:07:18.80

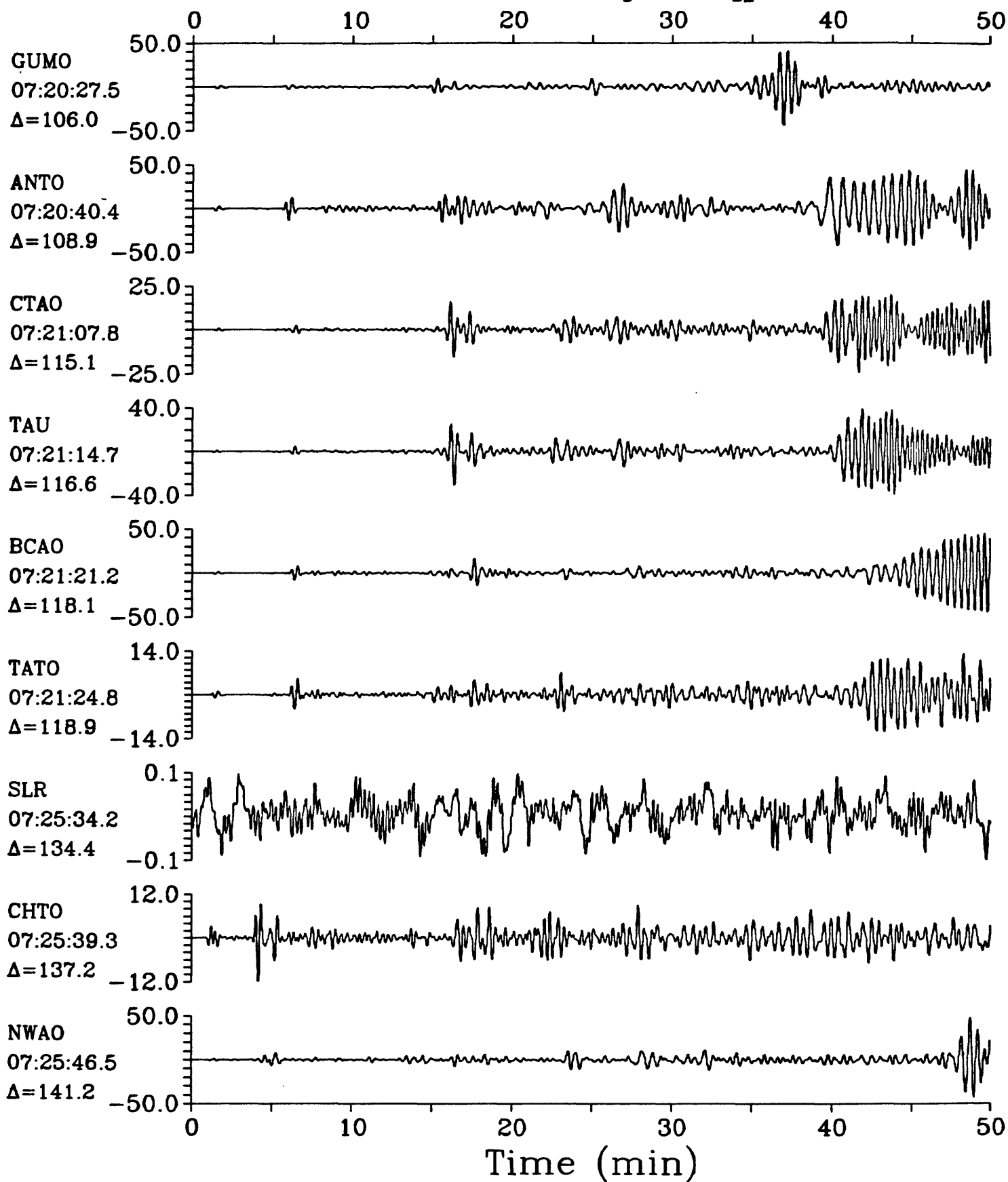
LPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

LPZ

30 April 1986 07:07:18.80

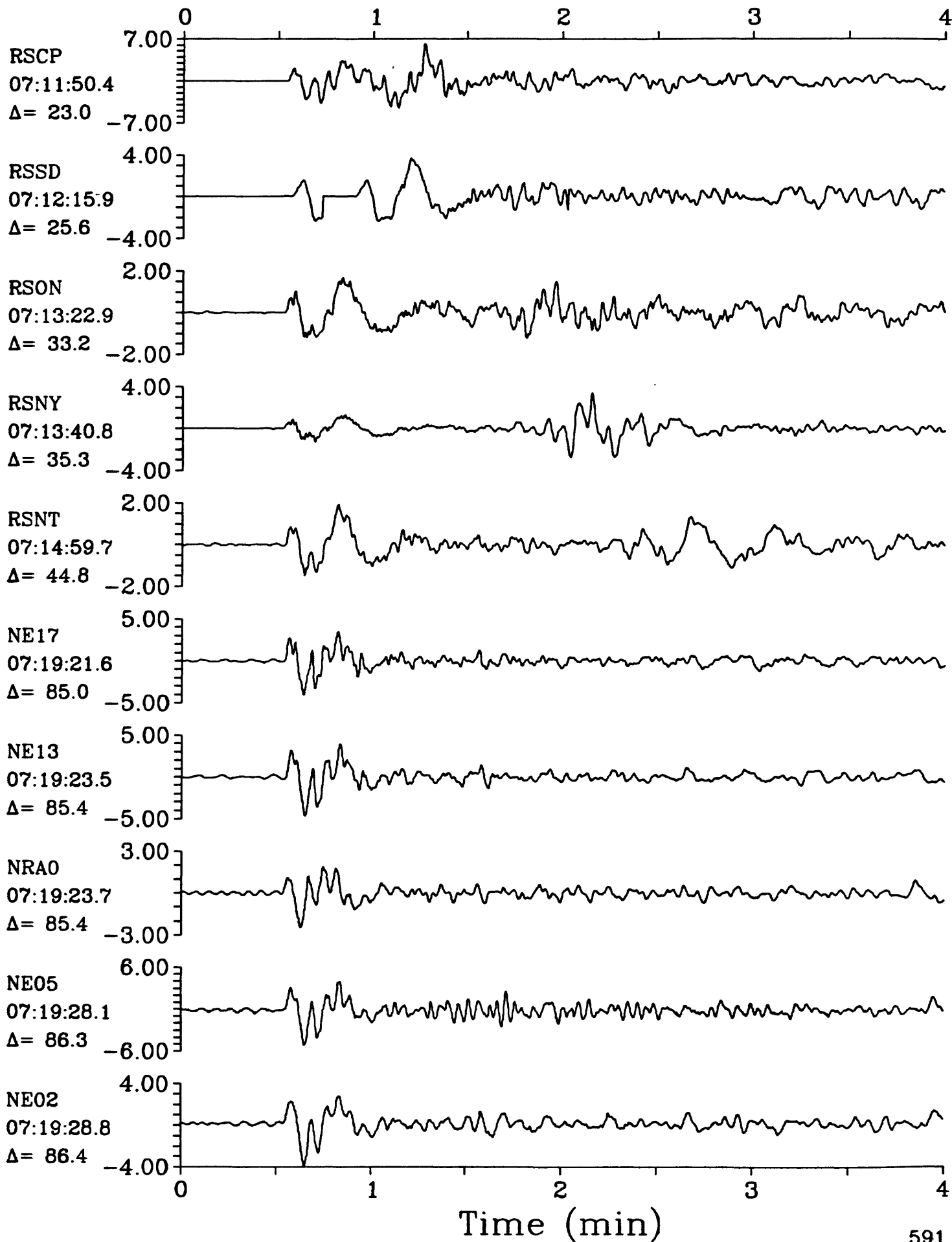
LPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

IPZ

30 April 1986 07:07:18.80

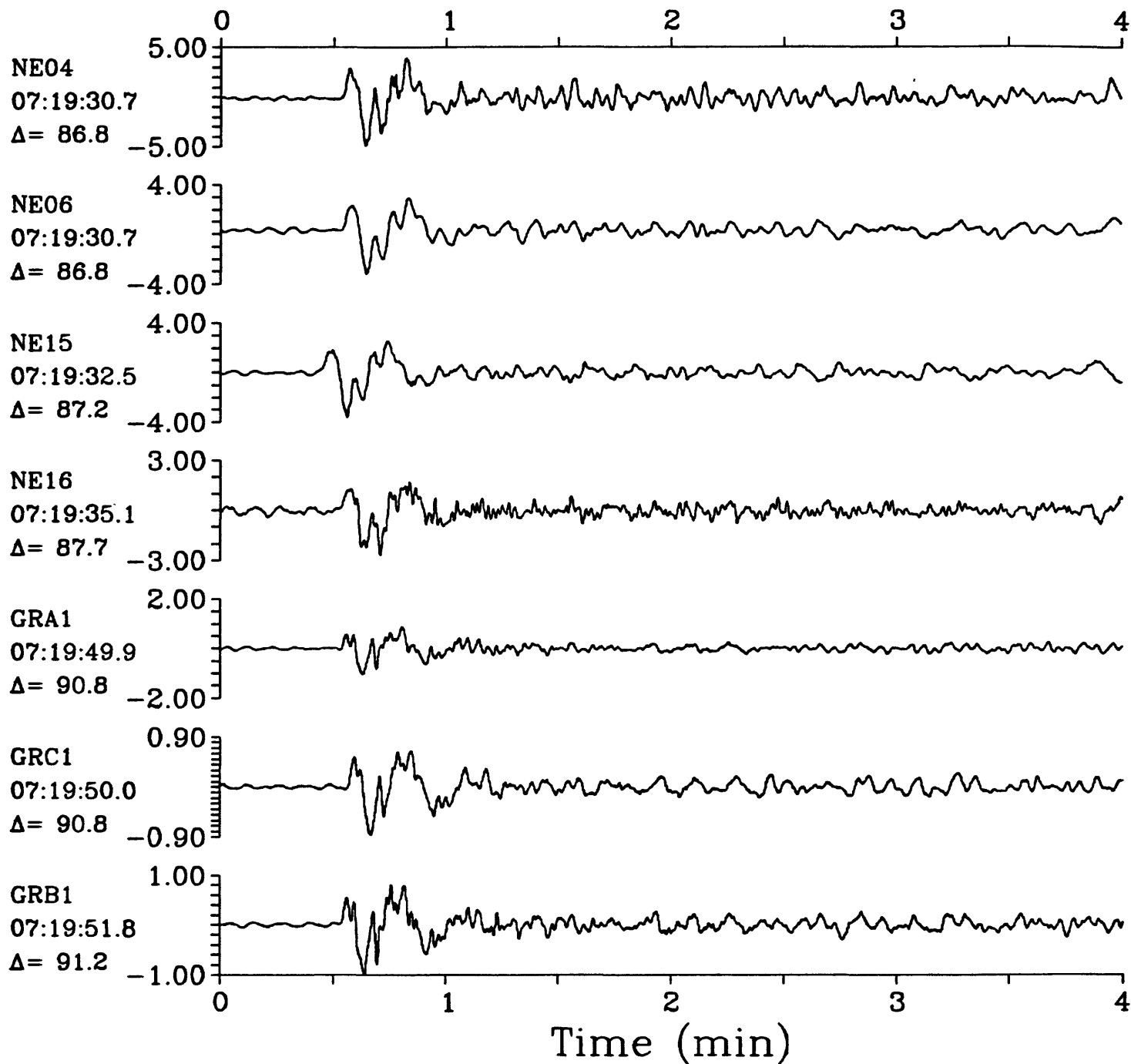
IPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

IPZ

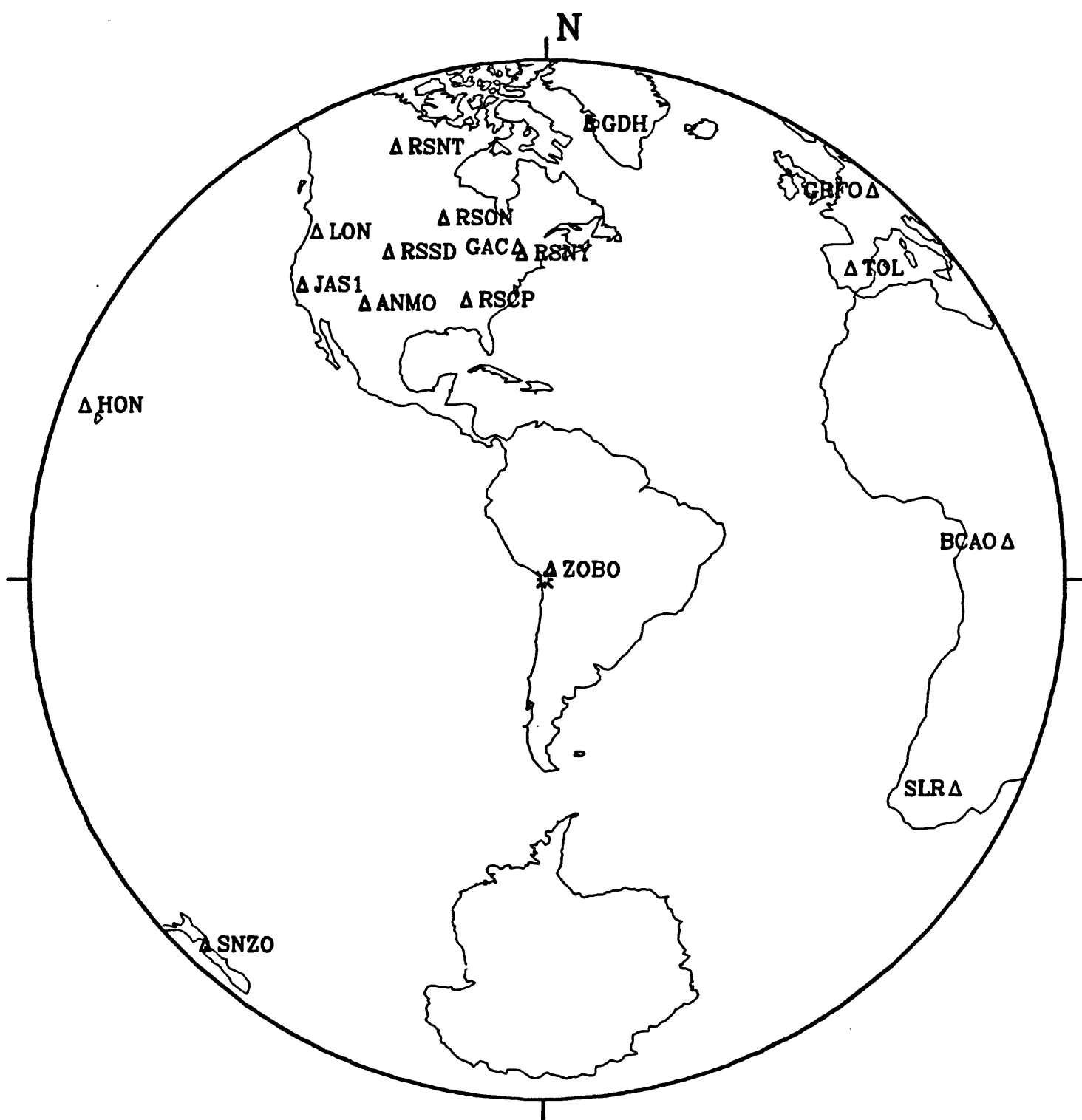
30 April 1986 07:07:18.80

IPZ

Michoacan, Mexico $h=32.3$ $m_b=6.2$ $M_{sz}=7.0$ 

30 April 1986 14:09:39.73

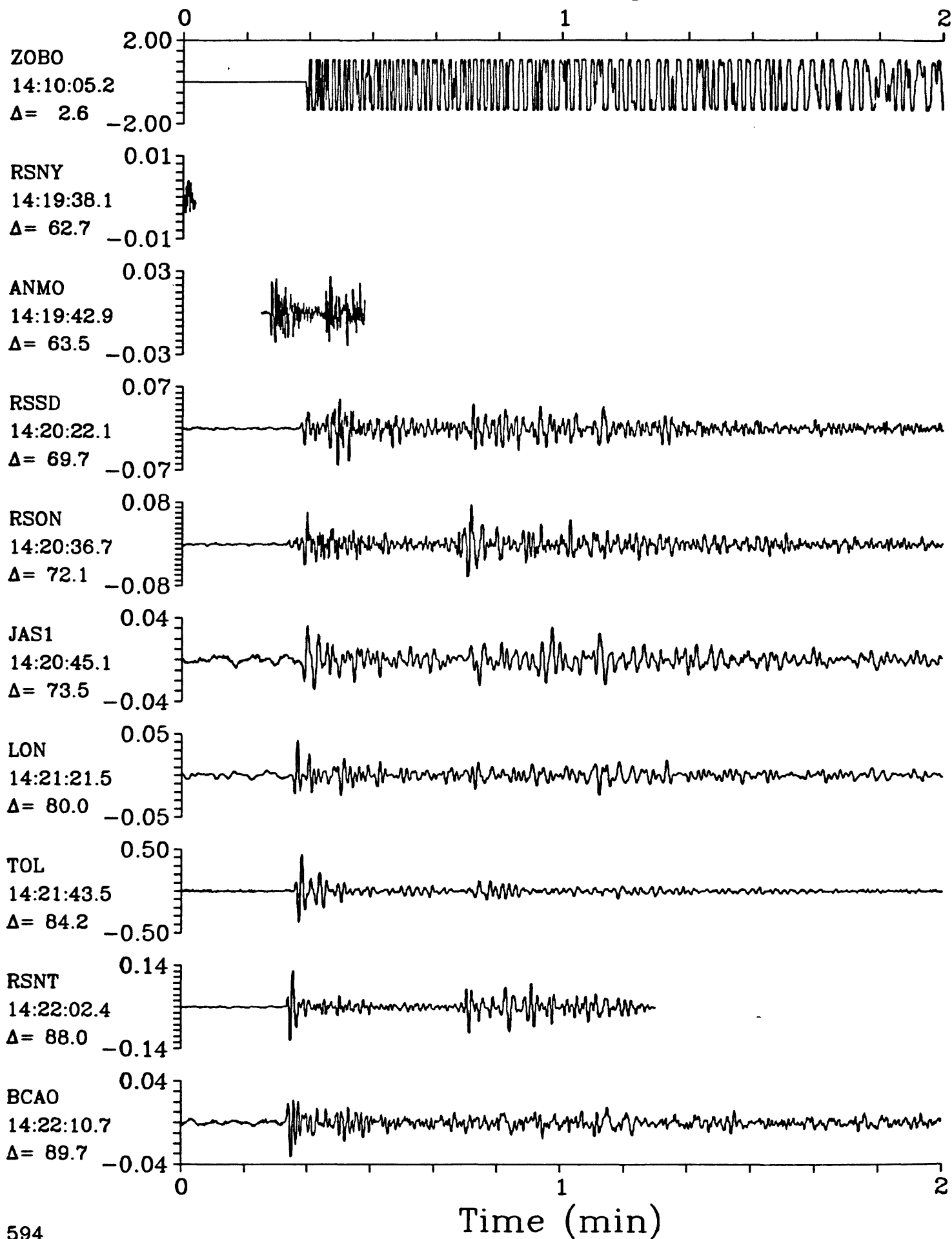
Northern Chile



SPZ

30 April 1986 14:09:39.73
Northern Chile $h=116.3$ $m_b=5.5$

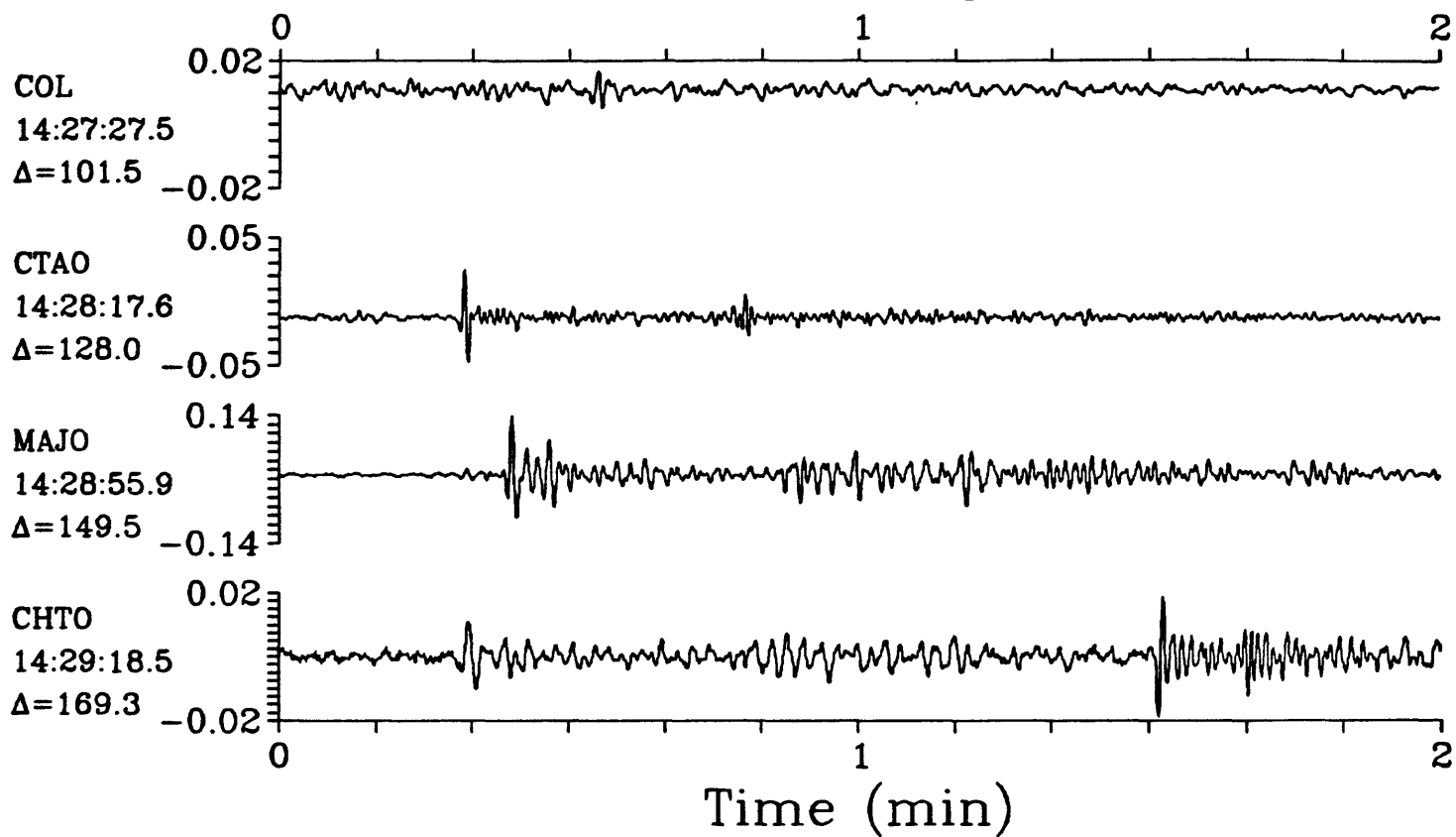
SPZ



SPZ

30 April 1986 14:09:39.73
Northern Chile $h=116.3$ $m_b=5.5$

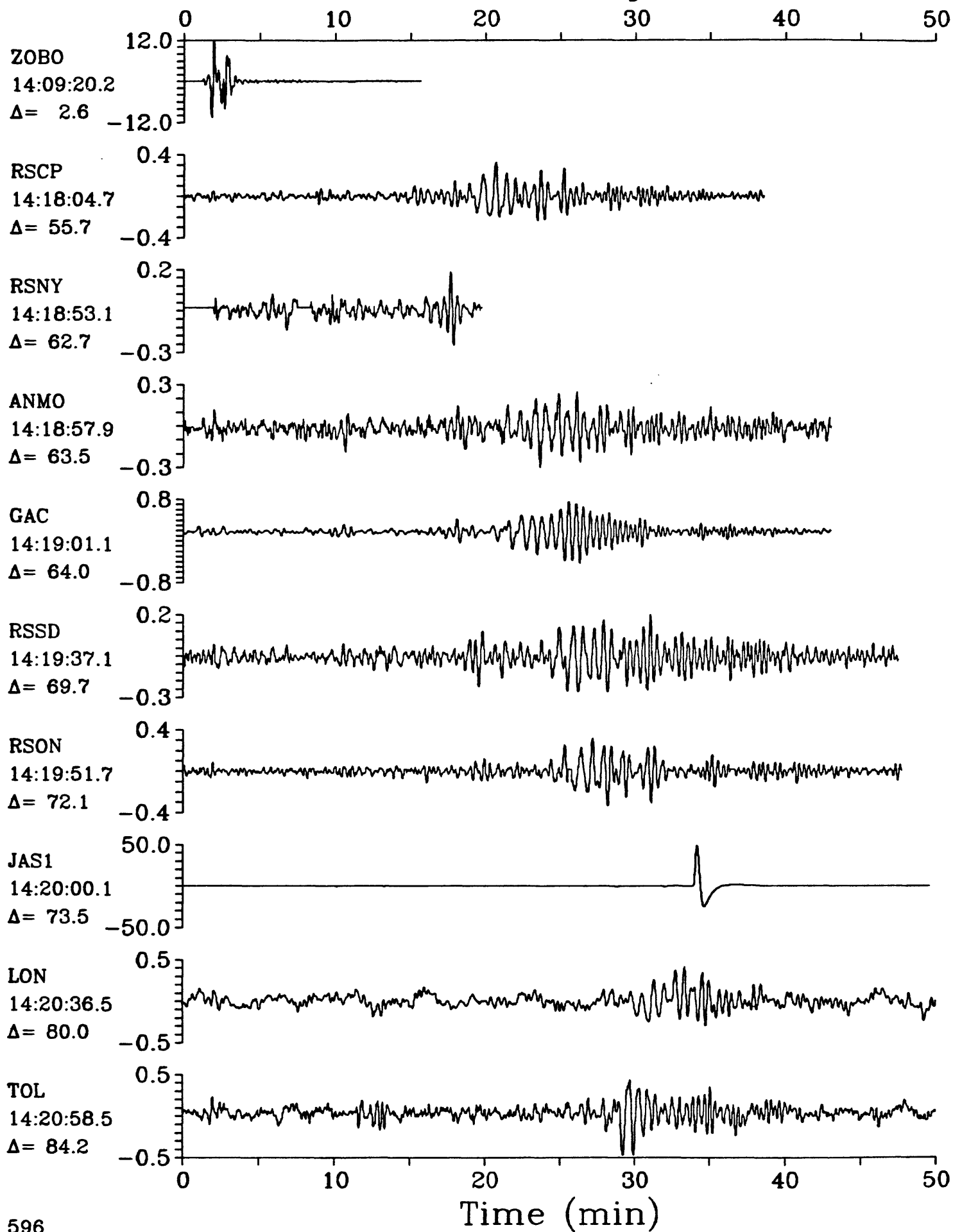
SPZ



LPZ

30 April 1986 14:09:39.73
Northern Chile $h=116.3$ $m_b=5.5$

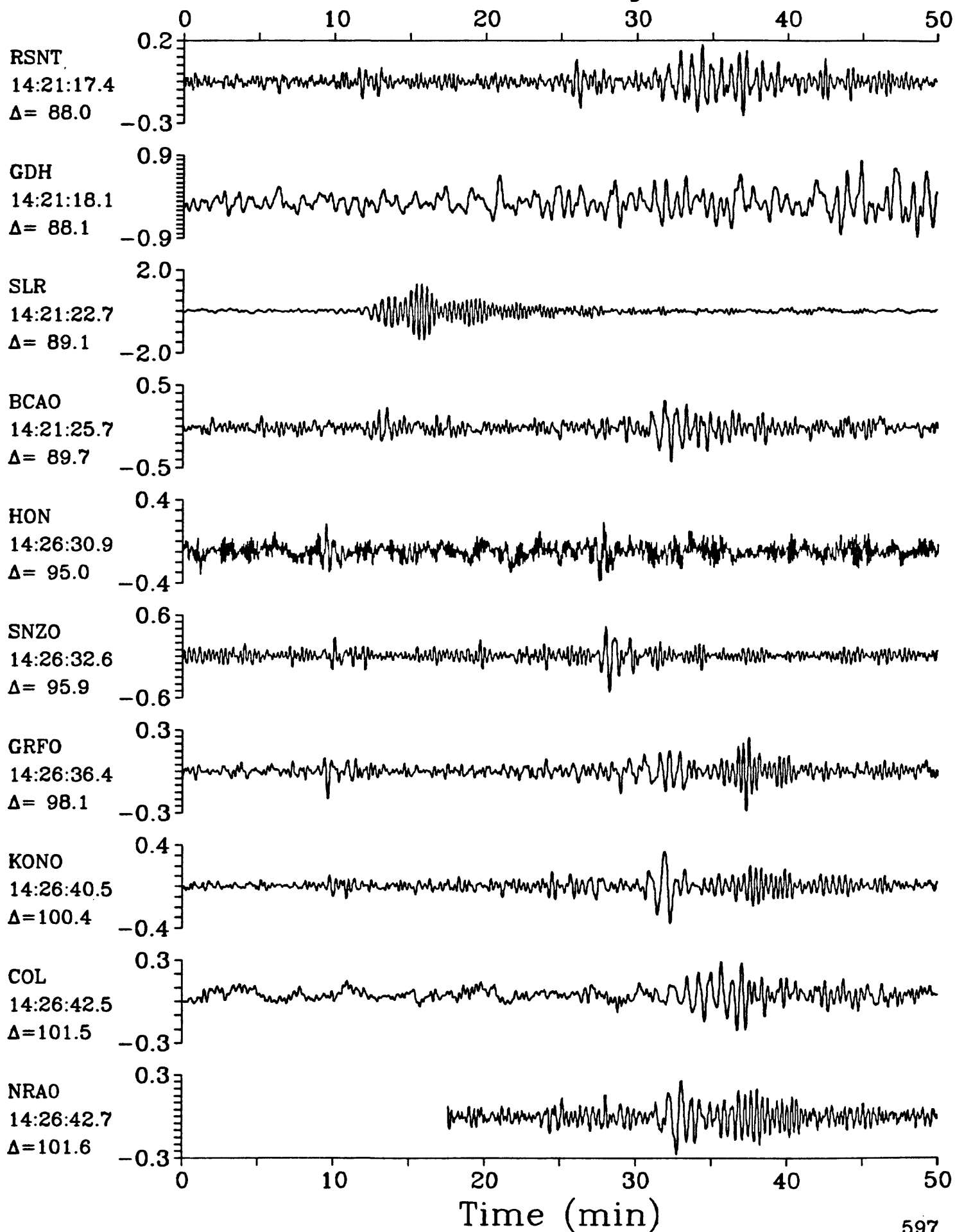
LPZ



LPZ

30 April 1986 14:09:39.73
Northern Chile $h=116.3$ $m_b=5.5$

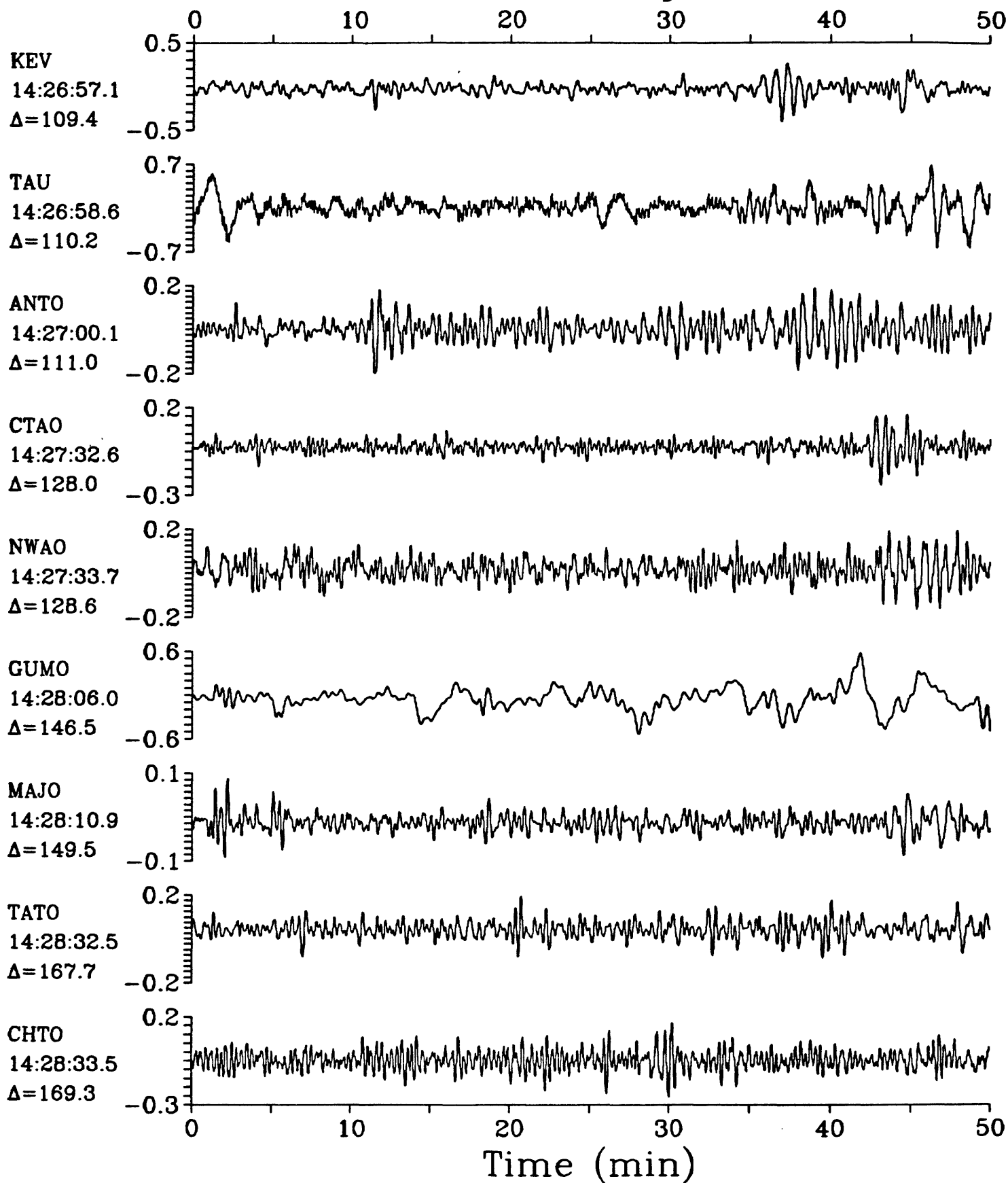
LPZ



LPZ

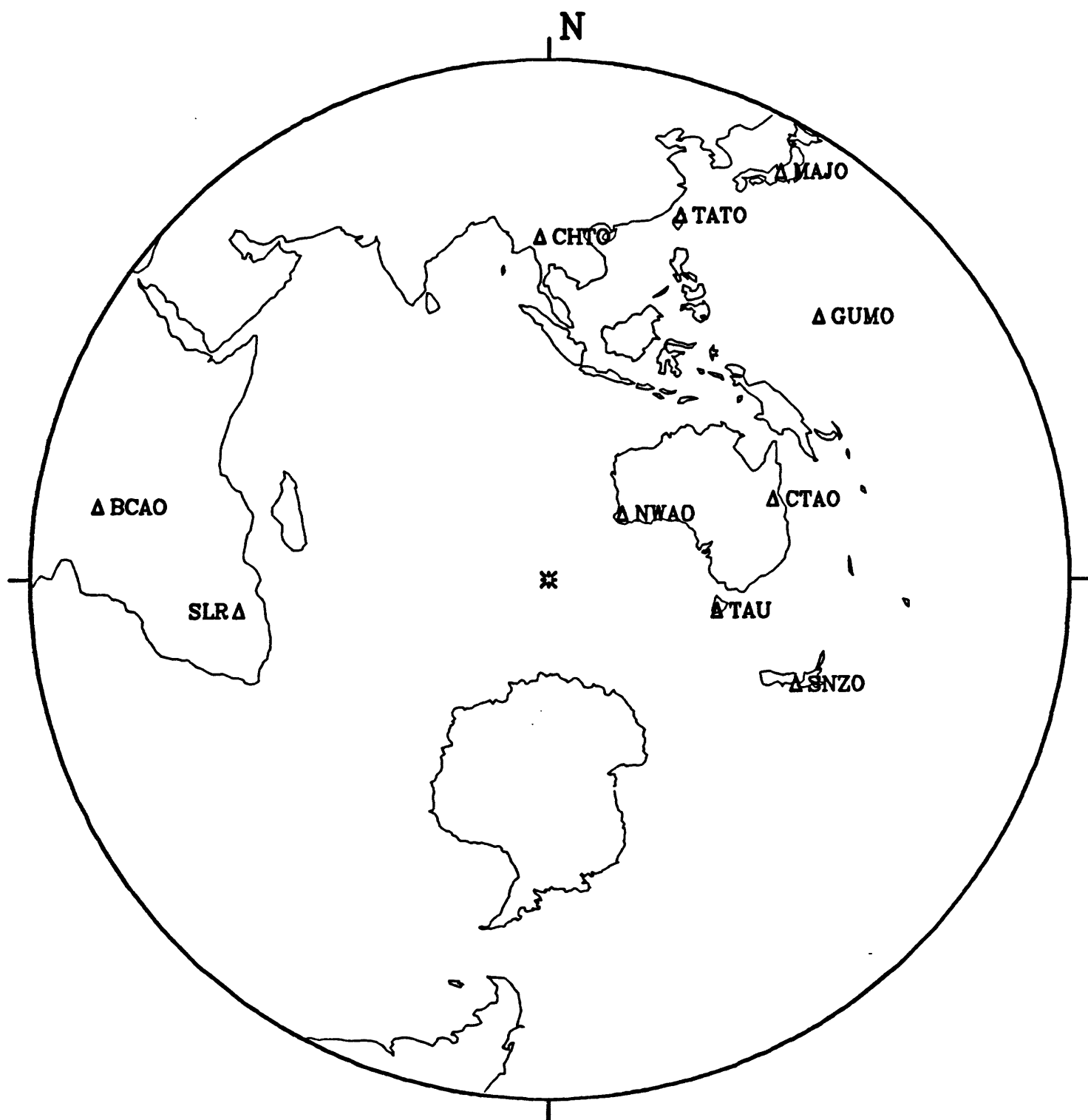
30 April 1986 14:09:39.73
Northern Chile $h=116.3$ $m_b=5.5$

LPZ



30 April 1986 17:47:52.60

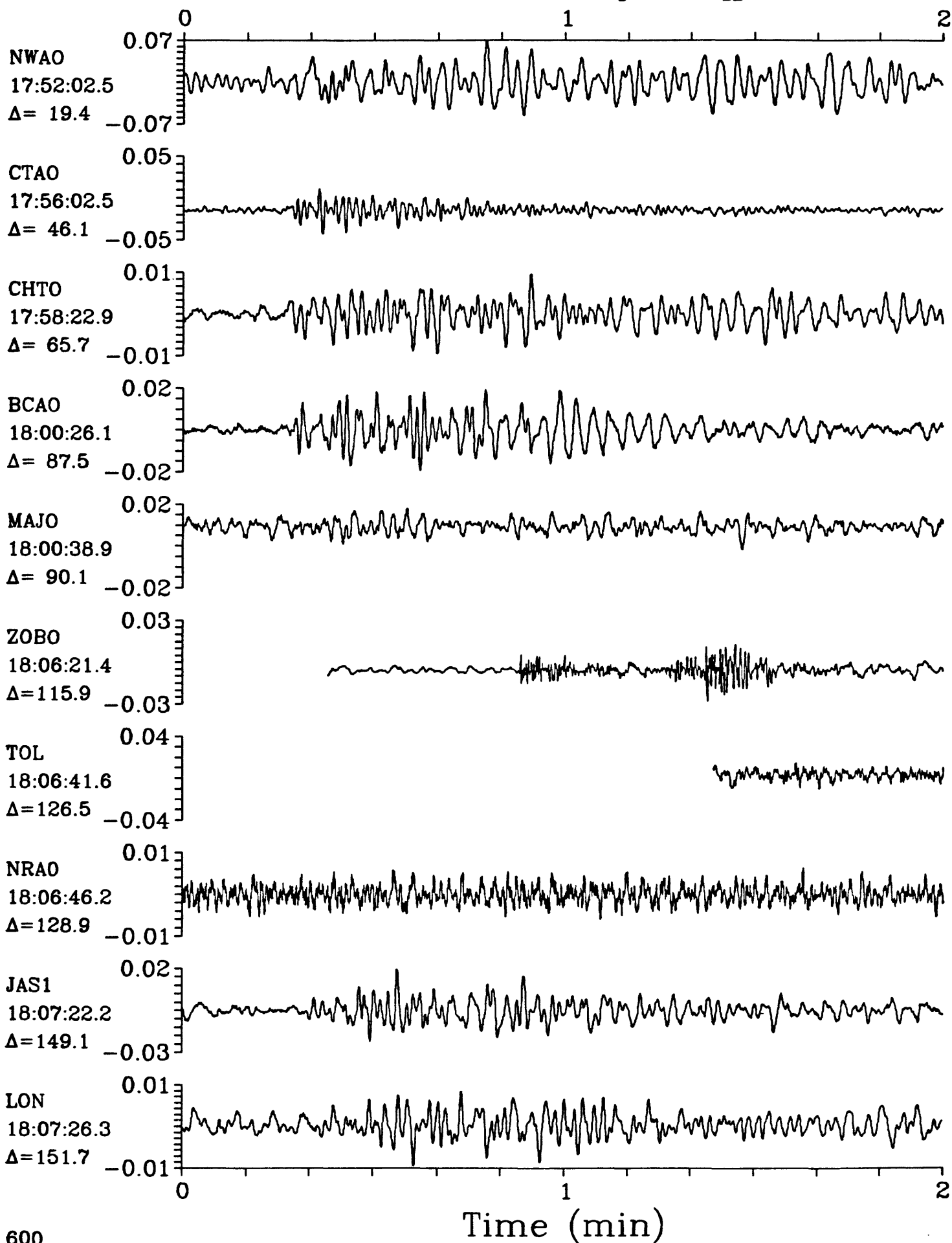
Southeast Indian Rise



SPZ

30 April 1986 17:47:52.60

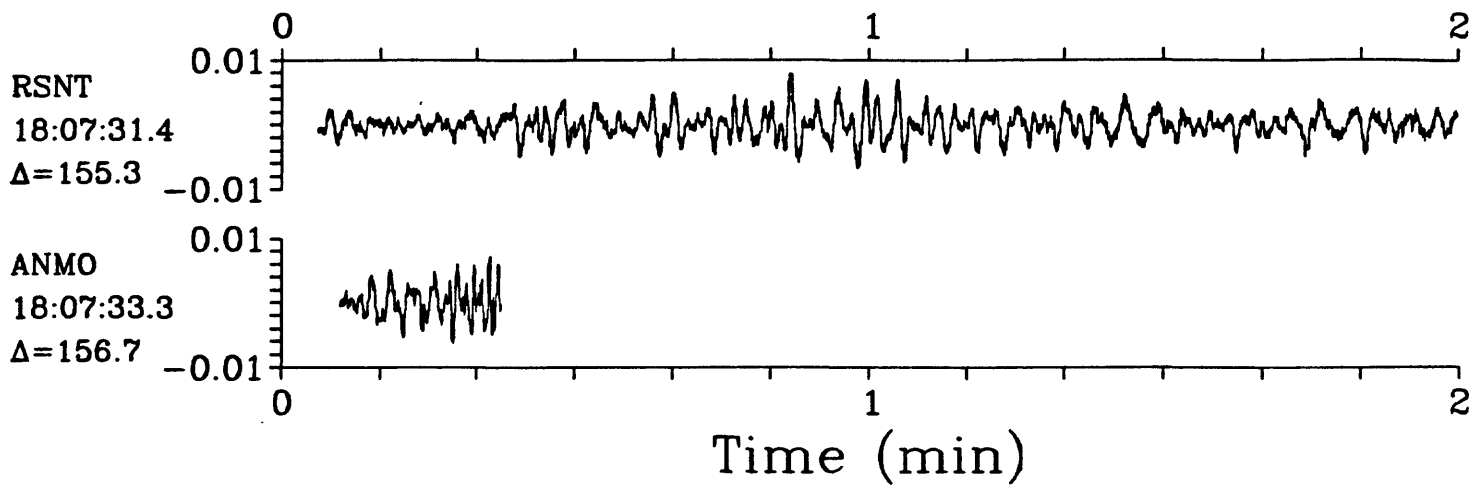
SPZ

Southeast Indian Rise $h=10.0$ $m_b=5.3$ $M_{sz}=5.6$ 

SPZ

30 April 1986 17:47:52.60

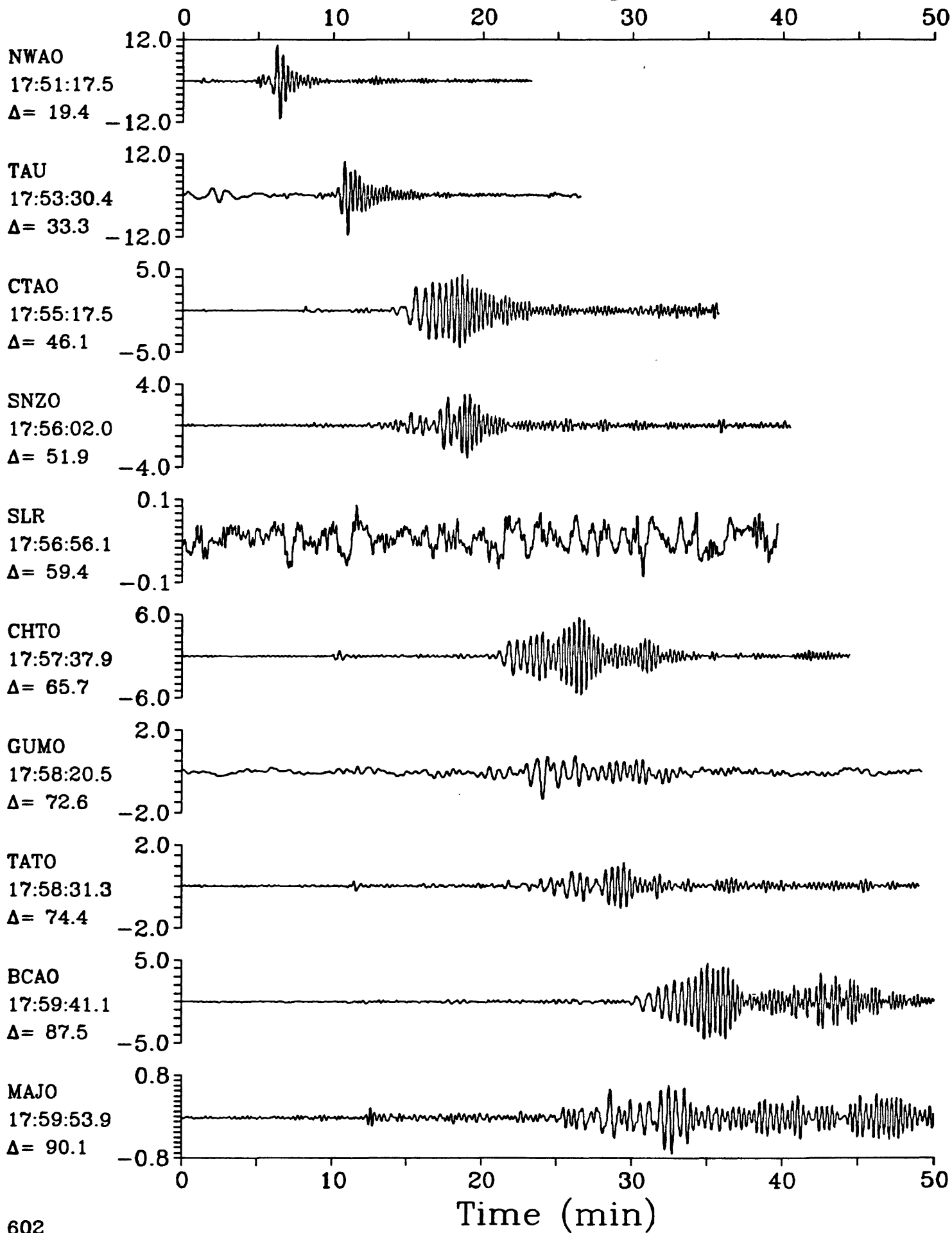
SPZ

Southeast Indian Rise $h=10.0$ $m_b=5.3$ $M_{sz}=5.6$ 

LPZ

30 April 1986 17:47:52.60

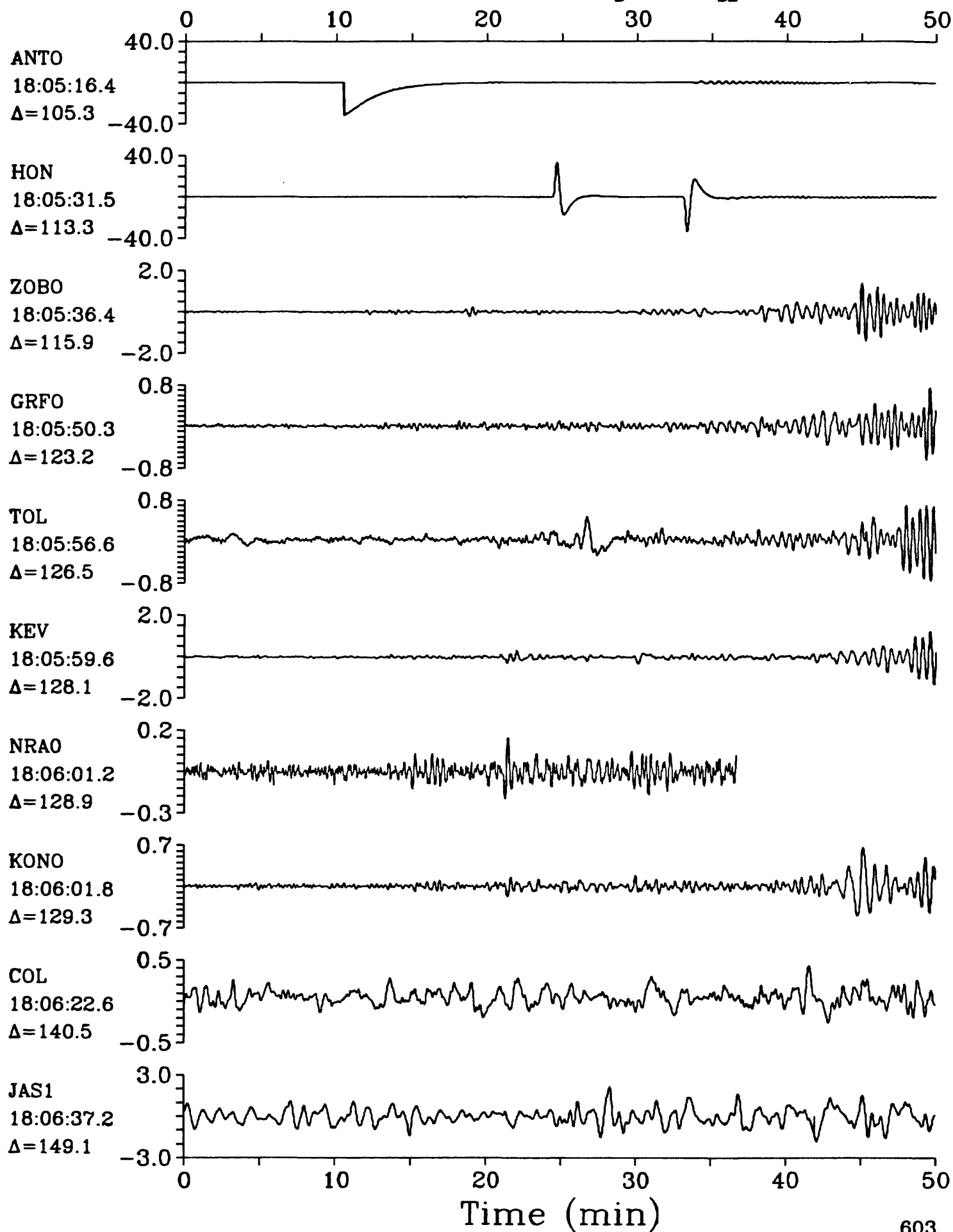
LPZ

Southeast Indian Rise $h=10.0$ $m_b=5.3$ $M_{sz}=5.6$ 

LPZ

30 April 1986 17:47:52.60

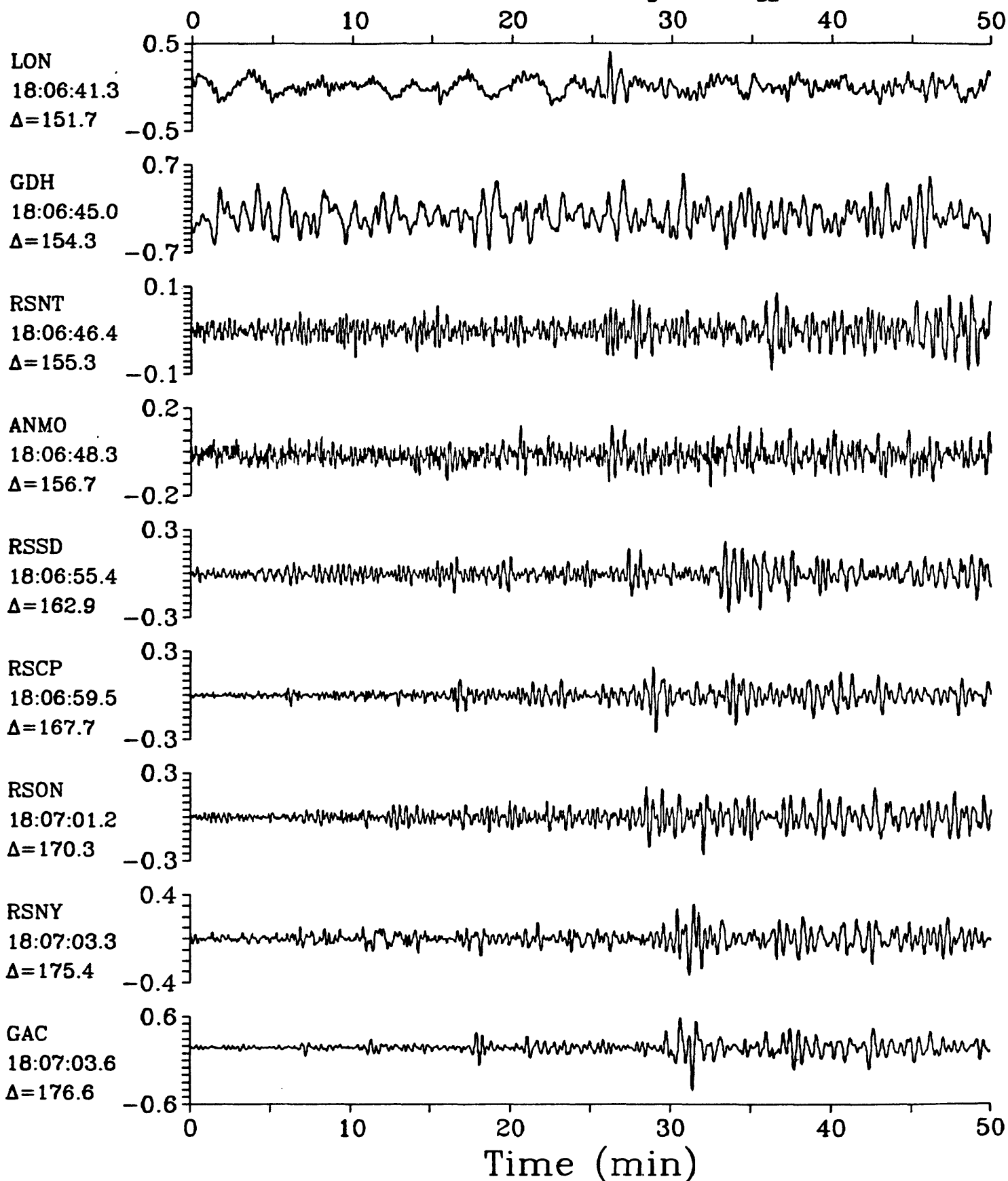
LPZ

Southeast Indian Rise $h=10.0$ $m_b=5.3$ $M_{sz}=5.6$ 

LPZ

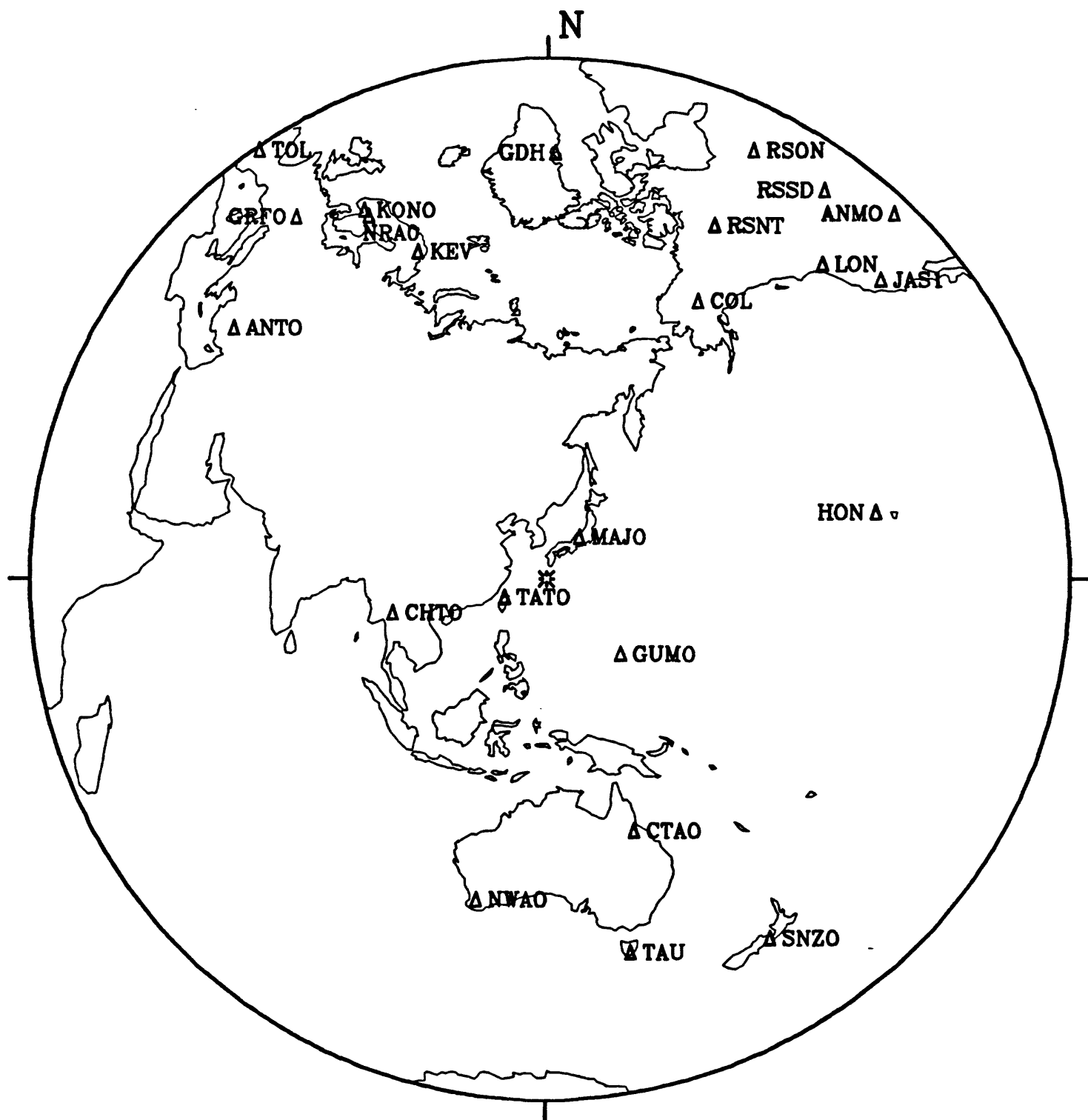
30 April 1986 17:47:52.60

LPZ

Southeast Indian Rise $h=10.0$ $m_b=5.3$ $M_{sz}=5.6$ 

30 April 1986 23:14:43.71

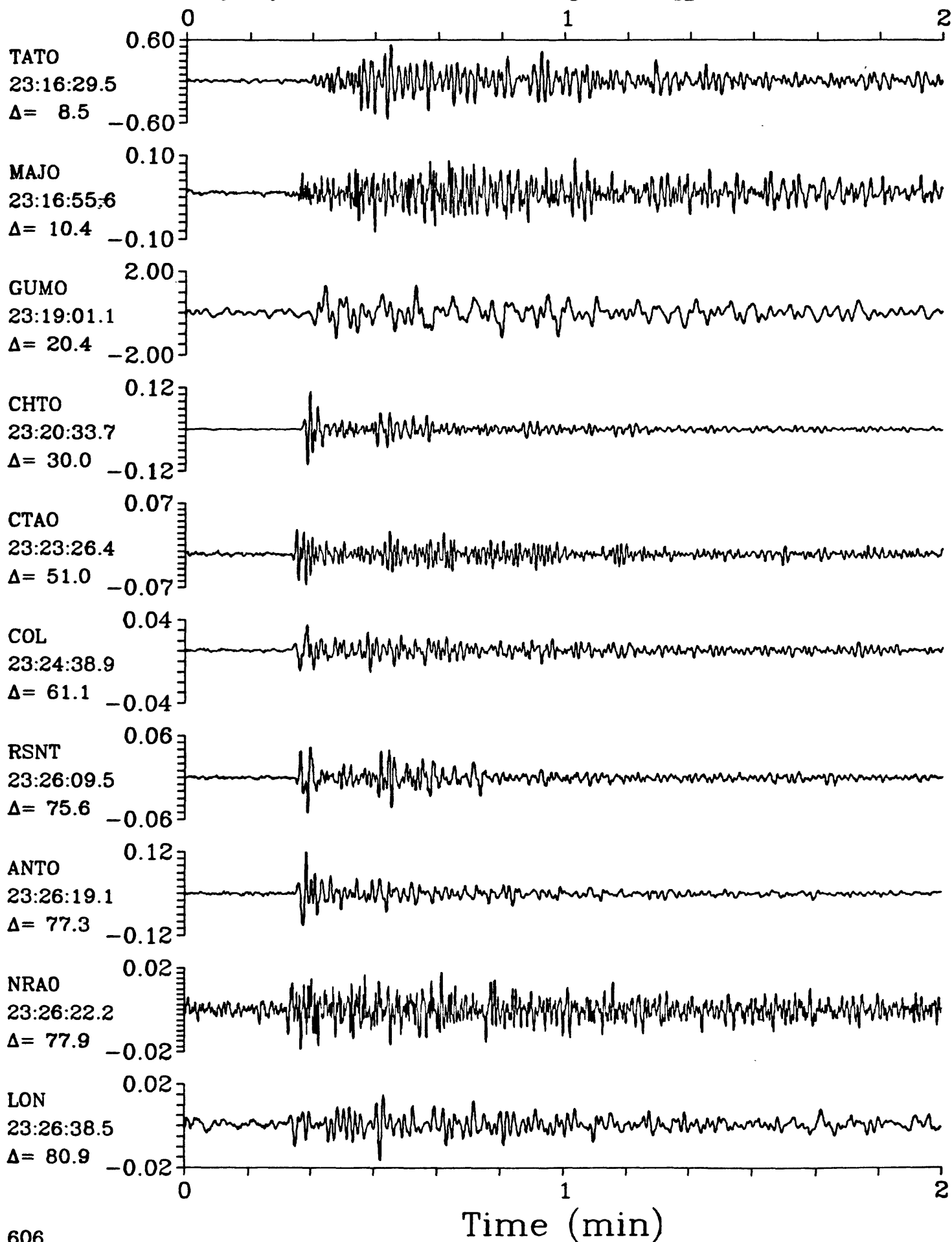
Ryukyu Islands



SPZ

30 April 1986 23:14:43.71

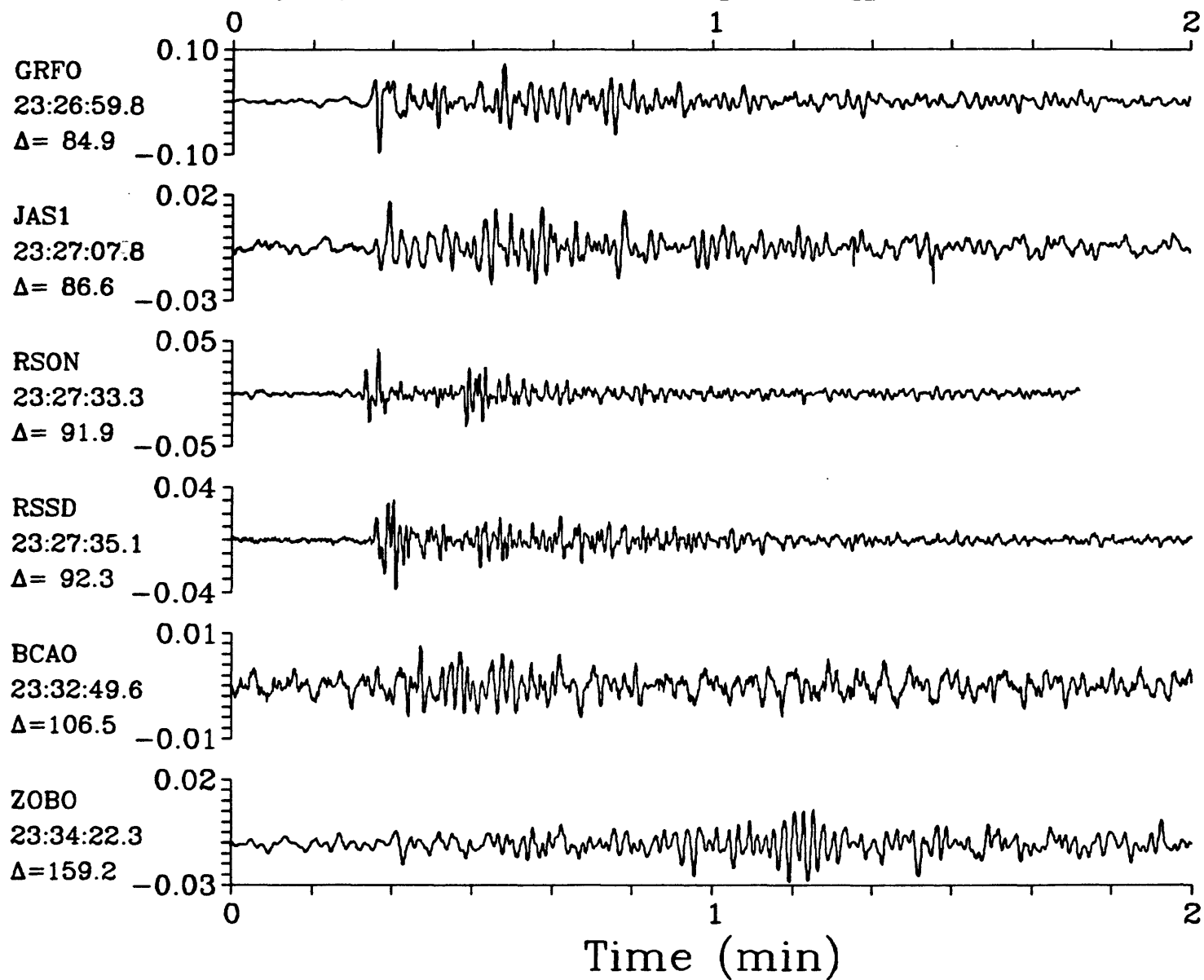
SPZ

Ryukyu Islands $h=43.9$ $m_b=5.5$ $M_{SZ}=5.4$ 

SPZ

30 April 1986 23:14:43.71

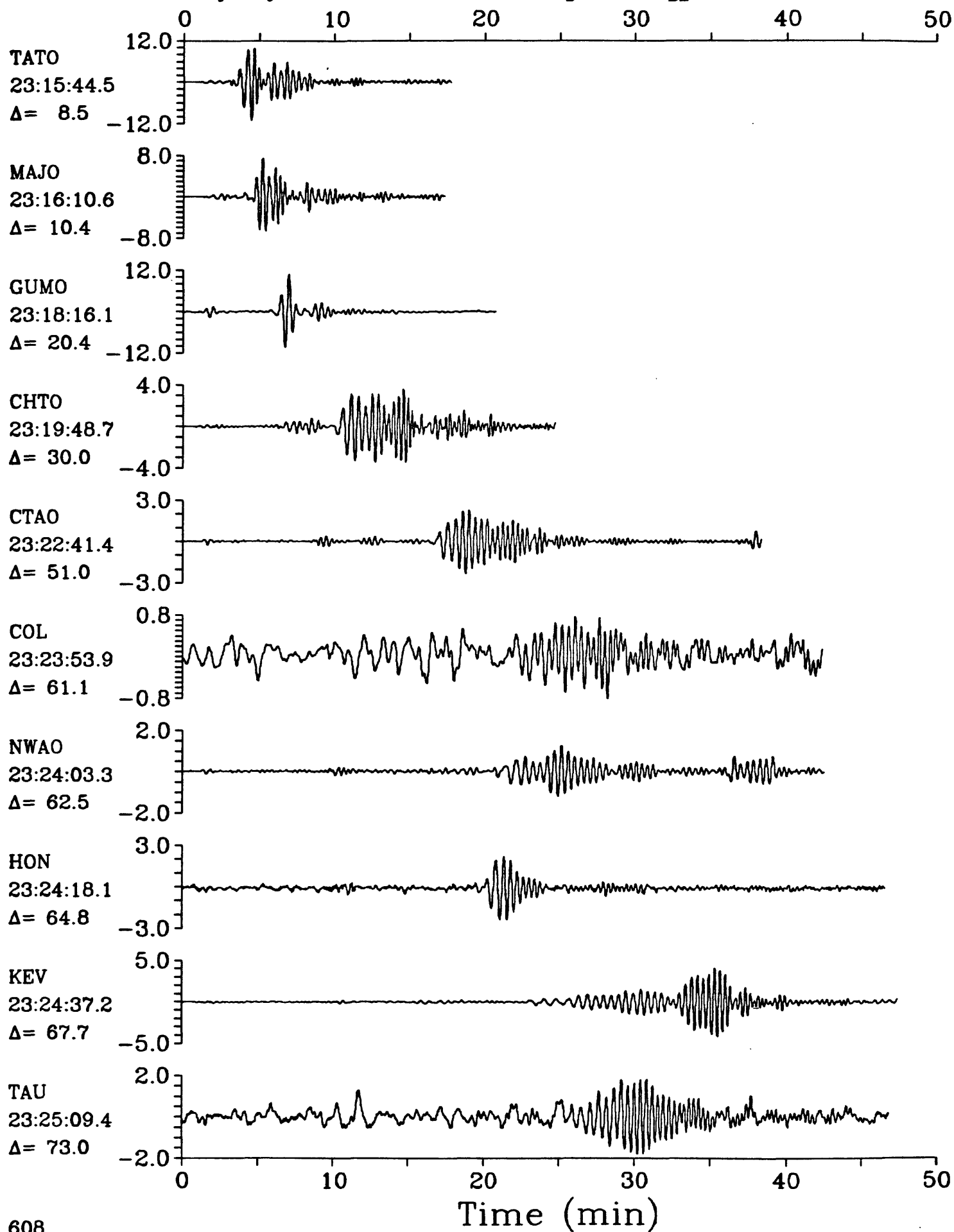
SPZ

Ryukyu Islands $h=43.9$ $m_b=5.5$ $M_{sz}=5.4$ 

LPZ

30 April 1986 23:14:43.71

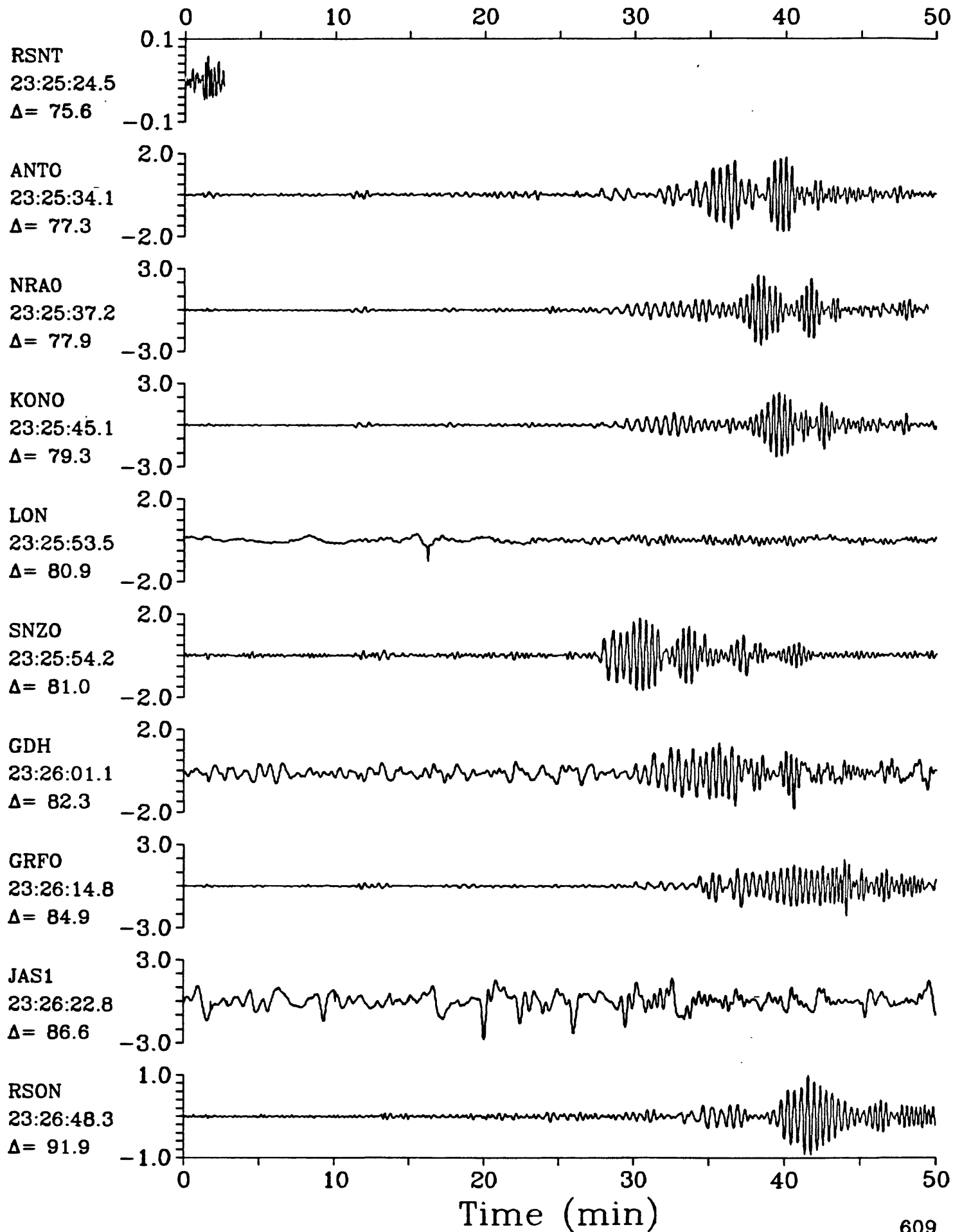
LPZ

Ryukyu Islands $h=43.9$ $m_b=5.5$ $M_{SZ}=5.4$ 

LPZ

30 April 1986 23:14:43.71

LPZ

Ryukyu Islands $h=43.9$ $m_b=5.5$ $M_{sz}=5.4$ 

LPZ

30 April 1986 23:14:43.71

LPZ

Ryukyu Islands $h=43.9$ $m_b=5.5$ $M_{sz}=5.4$ 