

DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

**National Earthquake Information Center  
Waveform Catalog  
December 1985**

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  $100^\circ$  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,  $\Delta$ , in degrees. The start time is chosen to be about 15 seconds before the earliest theoretical arrival time of interest (P, Pdiff, or PKPdiff, 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 December 1985 with magnitudes  $\geq 5.5$ 

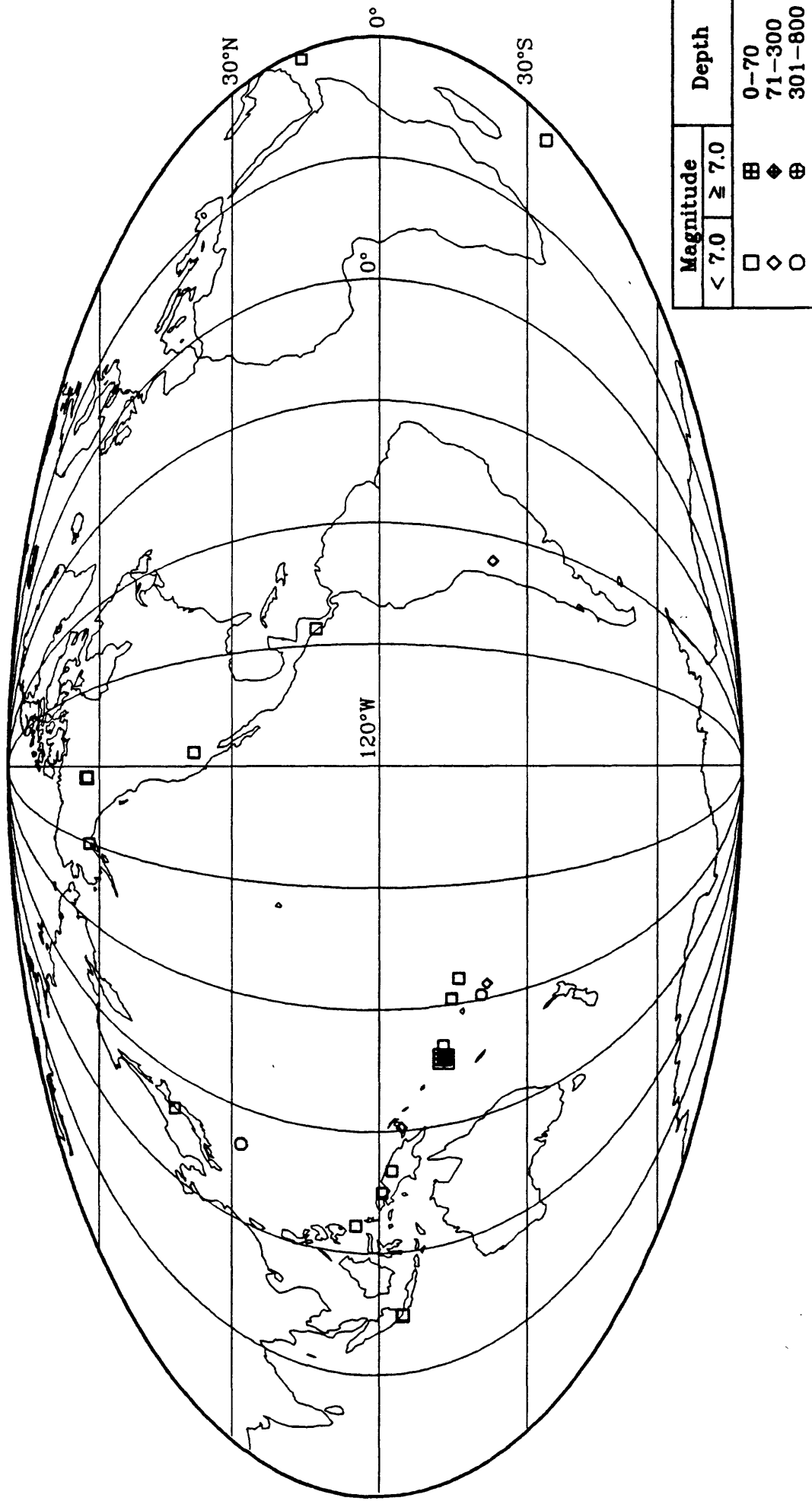
	Origin Time UTC	Latitude	Longitude	Depth (km)	$m_b$	Magnitude $M_{SZ}$	Flinn-Engdahl Region Name
1.	1985 12 02 07:14:36.83	41.098° N	139.923° E	23.4	5.4	5.6	Hokkaido, Japan Region
2.	1985 12 03 00:12:13.69	26.962° N	140.346° E	425.7	6.1		Bonin Islands Region
3.	1985 12 05 15:00:00.07	37.053° N	116.045° W	0.0	5.7		Southern Nevada
4.	1985 12 06 22:26:26.78	1.648° S	134.887° E	33.0	5.5	5.7	West Irian Region
5.	1985 12 14 06:46:13.35	3.651° N	126.699° E	33.0	5.7	6.0	Talaud Islands
6.	1985 12 14 18:13:31.66	14.795° N	57.995° E	10.0	5.5	5.3	Arabian Sea
7.	1985 12 16 02:44:35.69	11.719° N	85.854° W	20.5	5.9	6.0	Nicaragua
8.	1985 12 16 08:03:09.85	14.091° S	166.145° E	33.0	5.5		Vanuatu Islands
9.	1985 12 16 08:04:06.19	14.153° S	166.356° E	33.0	6.0	6.7	Vanuatu Islands
10.	1985 12 20 03:49:07.96	3.630° S	140.278° E	33.0	5.5	5.4	West Irian
11.	1985 12 21 01:13:21.09	14.035° S	166.508° E	33.0	6.1	7.3	Vanuatu Islands
12.	1985 12 21 02:46:32.73	14.189° S	166.711° E	33.0	5.7	6.5	Vanuatu Islands
13.	1985 12 21 10:01:57.93	14.481° S	166.789° E	33.0	5.7	5.8	Vanuatu Islands
14.	1985 12 21 11:09:51.43	14.220° S	166.704° E	33.0	5.5		Vanuatu Islands
15.	1985 12 22 17:13:29.04	15.548° S	178.536° W	33.0	5.7	5.7	Fiji Islands Region
16.	1985 12 22 18:27:02.53	15.540° S	178.580° W	30.5	5.5	5.8	Fiji Islands Region
17.	1985 12 23 05:16:03.91	62.207° N	124.302° W	10.0	6.4	6.9	Northwest Territories, Canada
18.	1985 12 23 05:48:47.44	62.177° N	124.269° W	10.0	5.5		Northwest Territories, Canada
19.	1985 12 23 18:15:07.45	13.873° S	166.424° E	33.0	5.5	5.2	Vanuatu Islands
20.	1985 12 23 19:37:54.80	62.062° N	124.301° W	10.0	5.5	5.0	Northwest Territories, Canada
21.	1985 12 24 04:09:41.33	35.109° S	54.319° E	10.0	6.1	6.0	South Indian Ocean
22.	1985 12 24 04:37:29.99	14.202° S	166.314° E	33.0	5.4	5.9	Vanuatu Islands
23.	1985 12 25 02:35:51.44	13.913° S	169.908° E	33.0	5.4	5.6	Vanuatu Islands Region
24.	1985 12 25 03:01:23.82	22.680° S	176.057° W	71.4	5.5		South of Fiji Islands
25.	1985 12 25 15:42:42.44	62.075° N	124.153° W	10.0	5.7	5.0	Northwest Territories, Canada
26.	1985 12 25 15:43:56.30	23.990° S	66.742° W	186.6	5.5		Jujuy Province, Argentina
27.	1985 12 25 22:15:12.43	21.560° S	178.719° W	481.7	5.6		Fiji Islands Region
28.	1985 12 27 05:38:54.86	5.784° S	104.208° E	33.0	5.8	6.6	Southern Sumatra
29.	1985 12 28 15:41:03.18	13.185° S	166.565° E	33.0	5.8	6.2	Vanuatu Islands
30.	1985 12 28 23:10:53.31	5.879° S	104.359° E	33.0	5.7	6.0	Southern Sumatra
31.	1985 12 30 11:13:14.89	5.565° S	150.732° E	114.3	5.7		New Britain Region
32.	1985 12 30 12:41:03.01	61.588° N	150.333° W	61.6	5.5		Southern Alaska
33.	1985 12 31 14:04:43.64	16.885° S	173.625° W	16.4	5.7	4.9	Tonga Islands

**Table 2. Network-event tape station list for December 1985**

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
BDF	72	Brasilia, Brazil	15.66° S	47.90° W	1500.0	DWWSSN
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
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
NE03	203	Logumkloster, Denmark	55.045° N	9.153° E	25.0	NARS
NE04	204	Witteveen, Netherlands	52.813° N	6.668° E	17.0	NARS
NE06	206	Dourbes, Belgium	50.097° N	4.595° E	225.0	NARS
NE07	207	Villiers-Adam, France	49.074° N	2.232° E	70.0	NARS
NE10	210	Arette, France	43.086° N	0.699° W	480.0	NARS
NE14	214	Granada, Spain	37.190° N	3.595° W	774.0	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
NRA0	301	NORESS array site A0	60.735° N	11.541° E	302.0	NRSA
NWA0	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
RSON	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
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

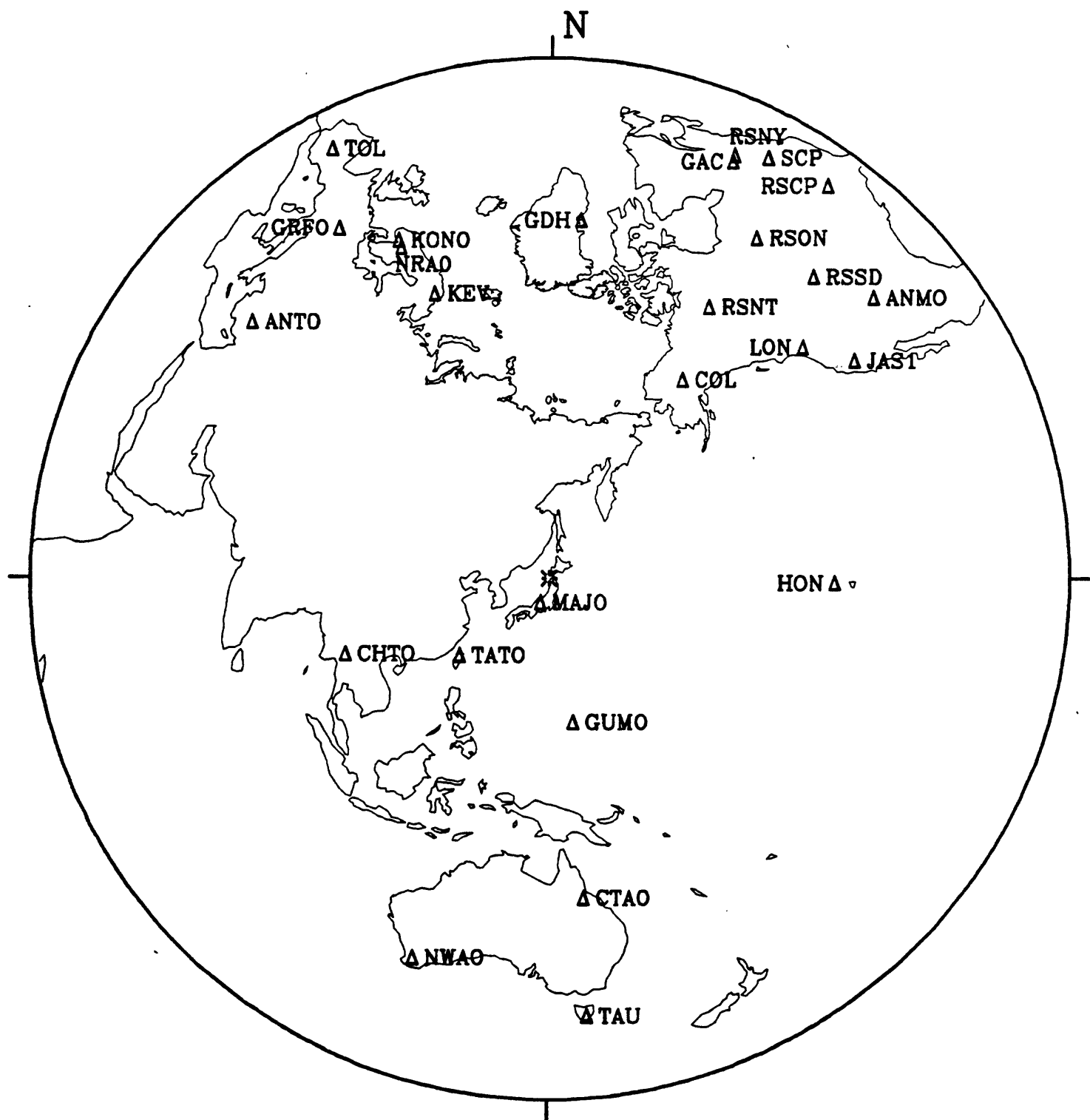
- \* ASRO - Abbreviated Seismic Research Observatory  
DWWSSN - Digital World Wide Standardized Seismograph Network  
GRF - Graefenberg Array  
NARS - Network of Autonomously Registrating Stations  
NRSA - Norwegian Regional Seismic Array  
RSTN - Regional Seismic Test Network  
SRO - Seismic Research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

# EARTHQUAKES – December 1985 – MAGNITUDE $\geq 5.5$



02 December 1985 07:14:36.83

## Hokkaido, Japan Region

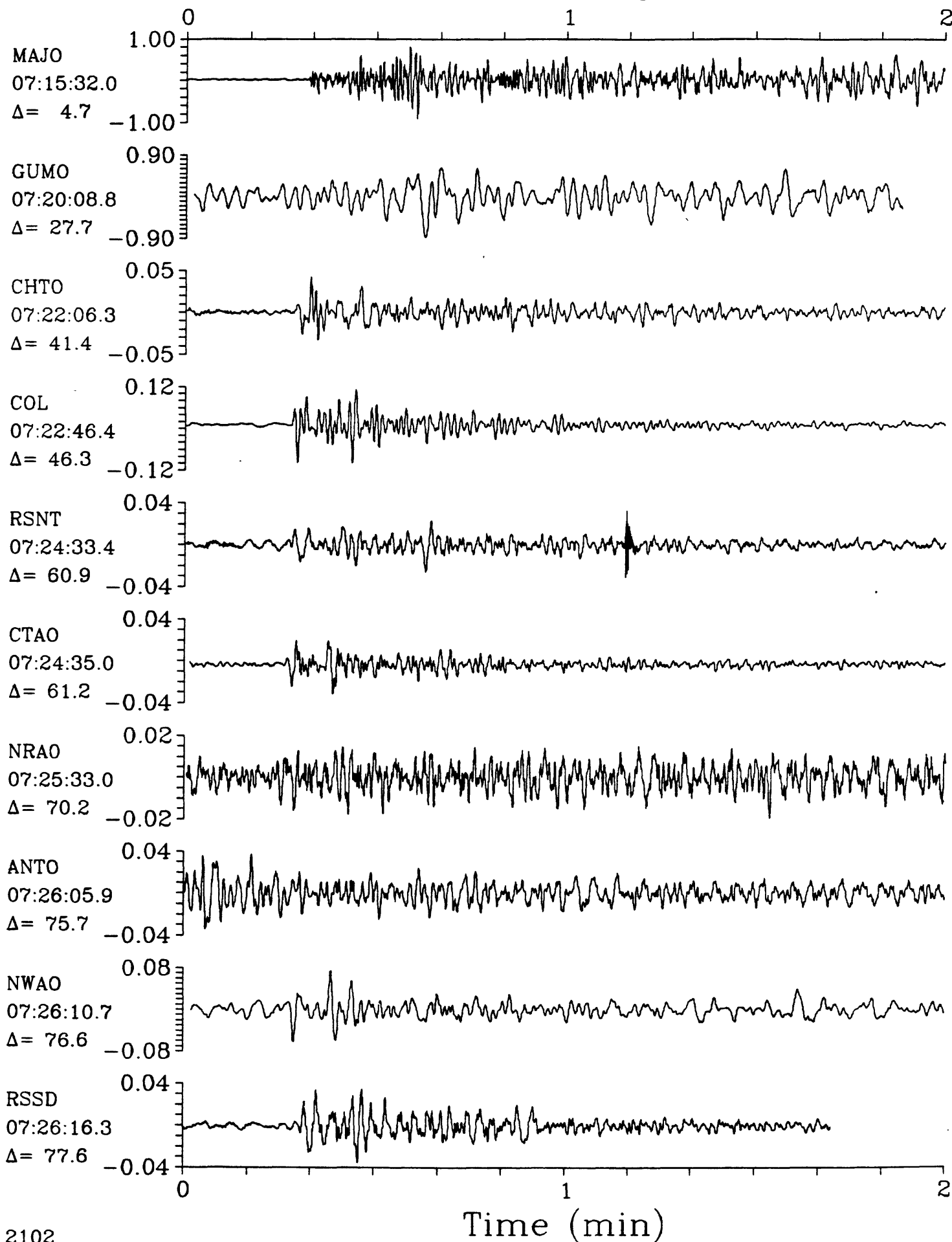




SPZ

02 December 1985 07:14:36.83

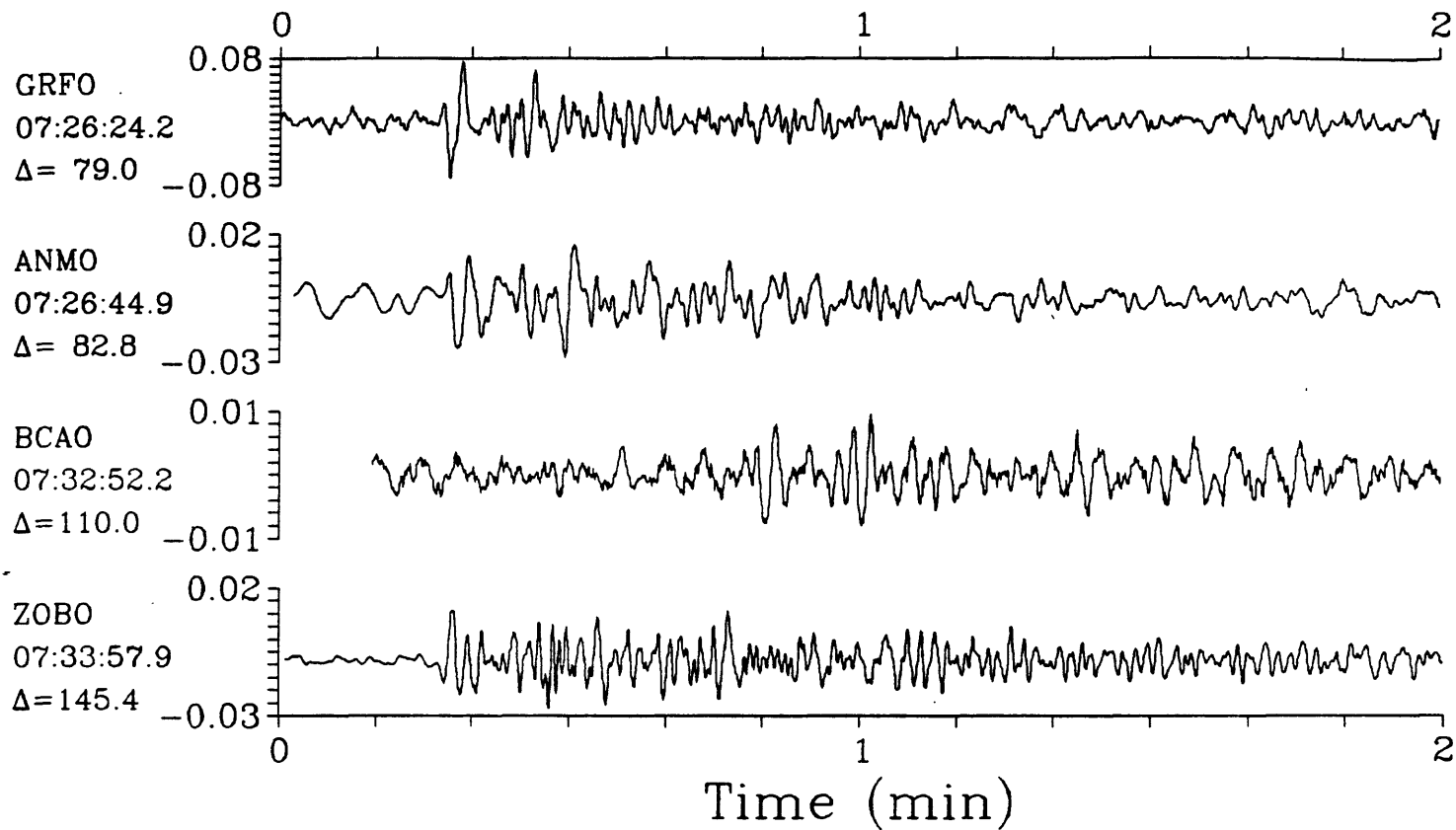
SPZ

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SPZ

02 December 1985 07:14:36.83

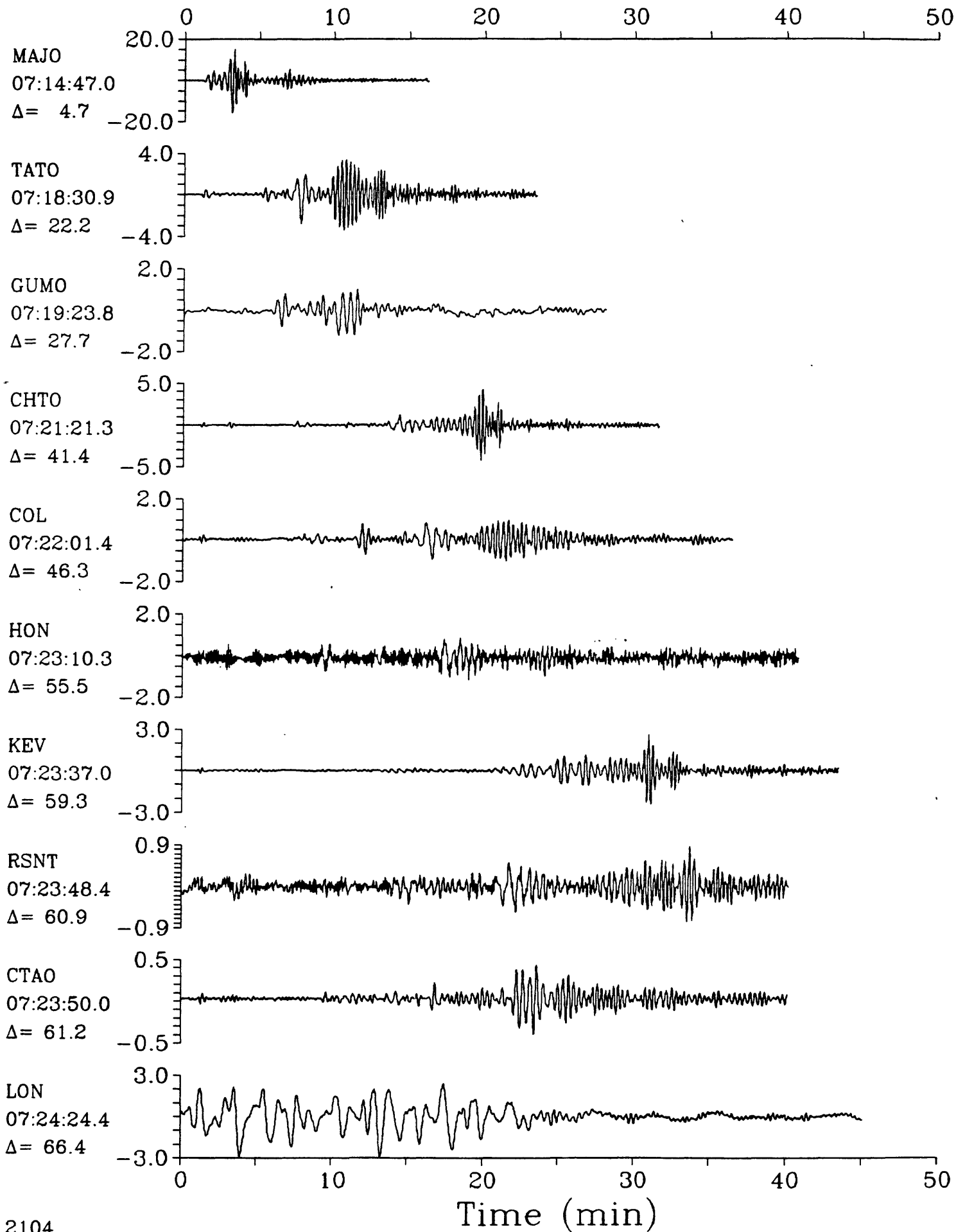
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LPZ

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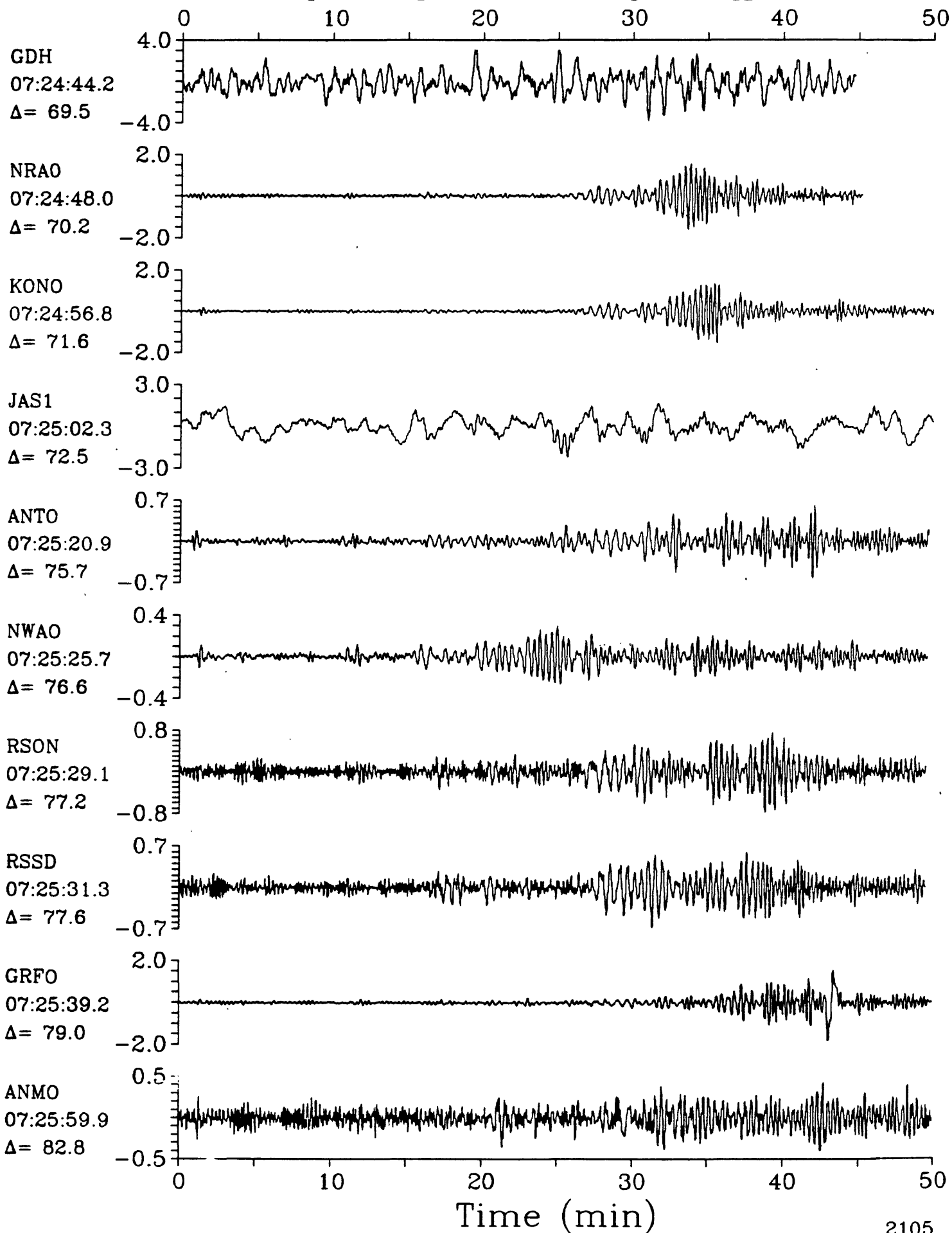
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LPZ

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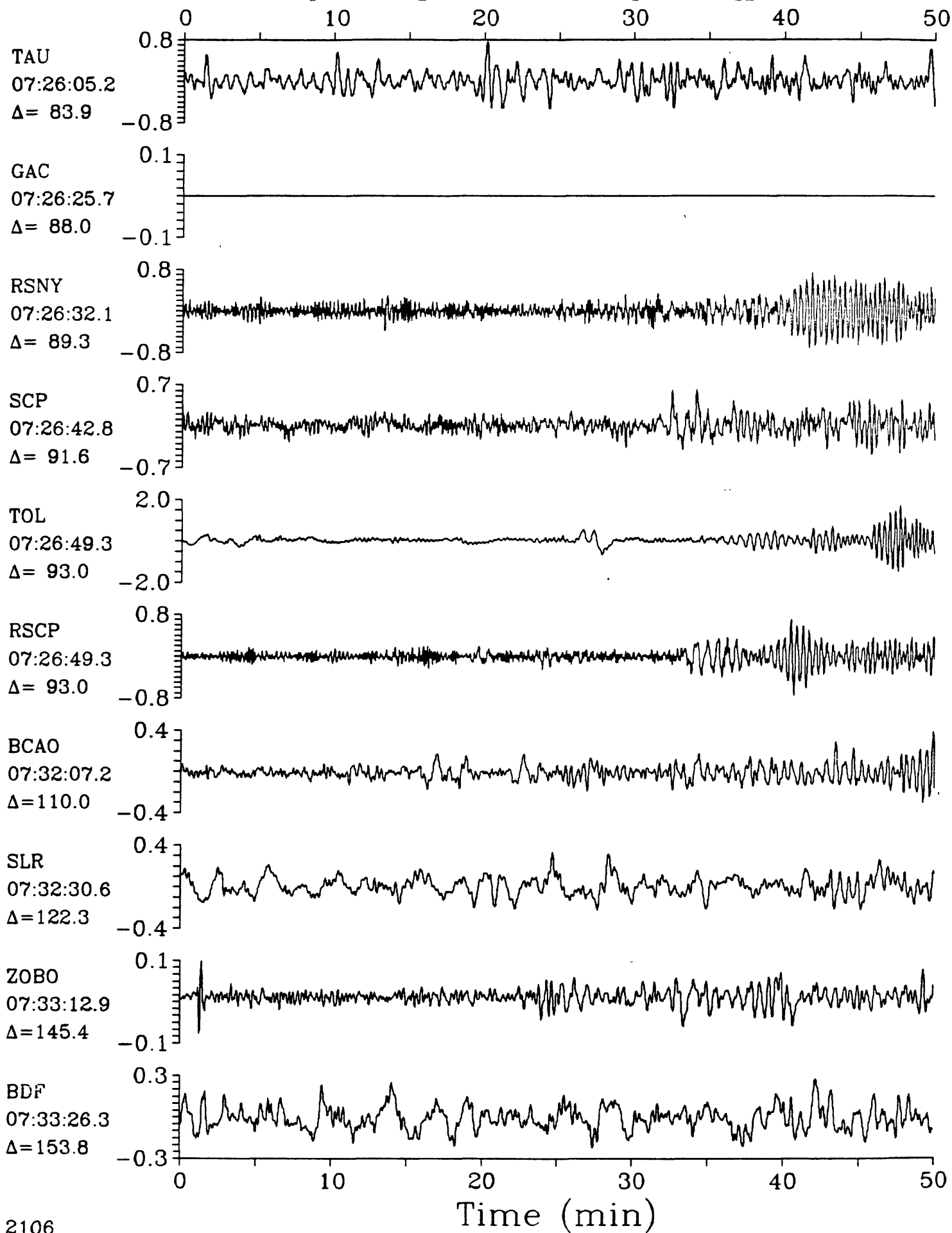
LPZ

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LPZ

02 December 1985 07:14:36.83

LPZ

Hokkaido, Japan Region  $h=23.4$   $m_b=5.4$   $M_{sz}=5.6$ 

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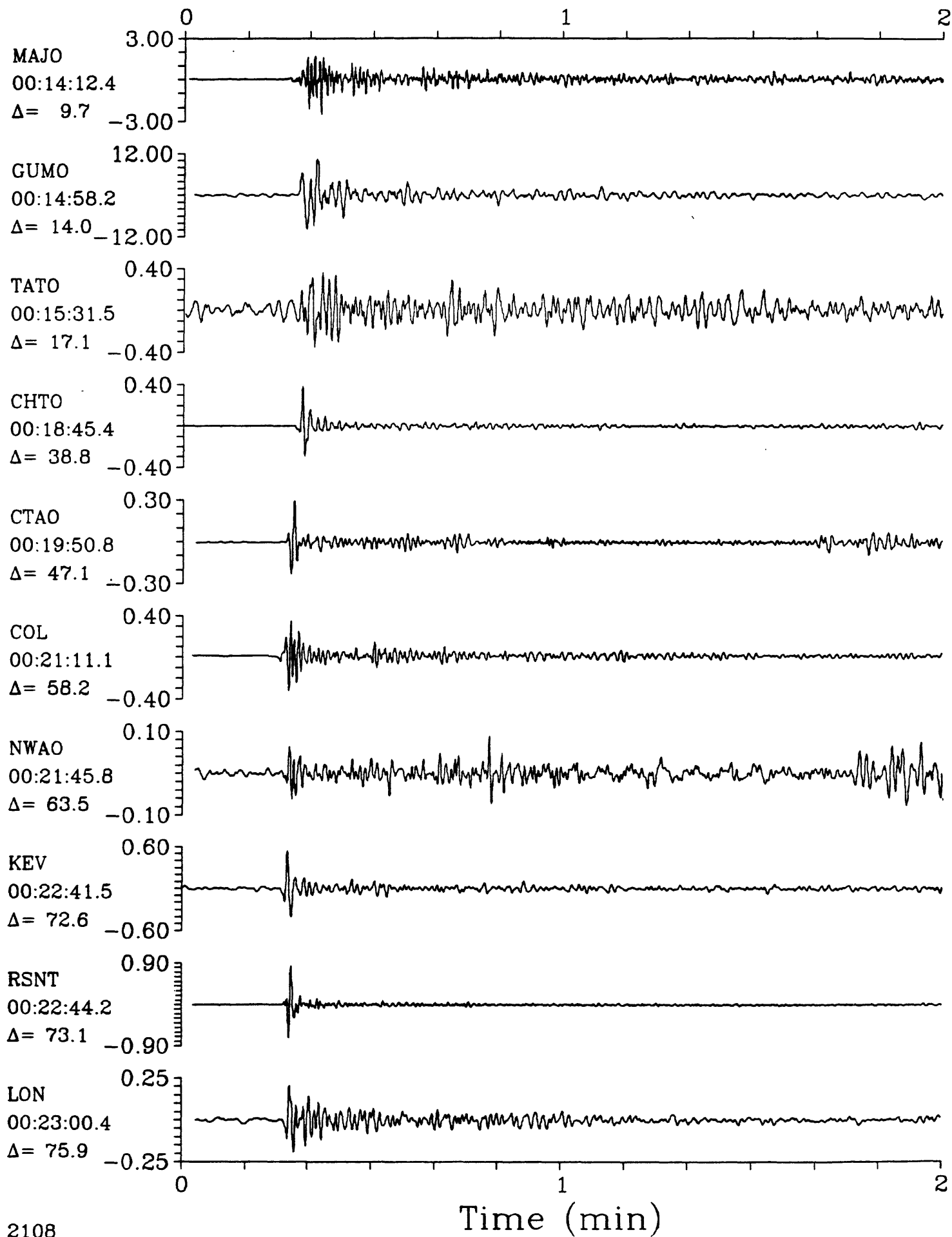
## Bonin Islands Region



SPZ

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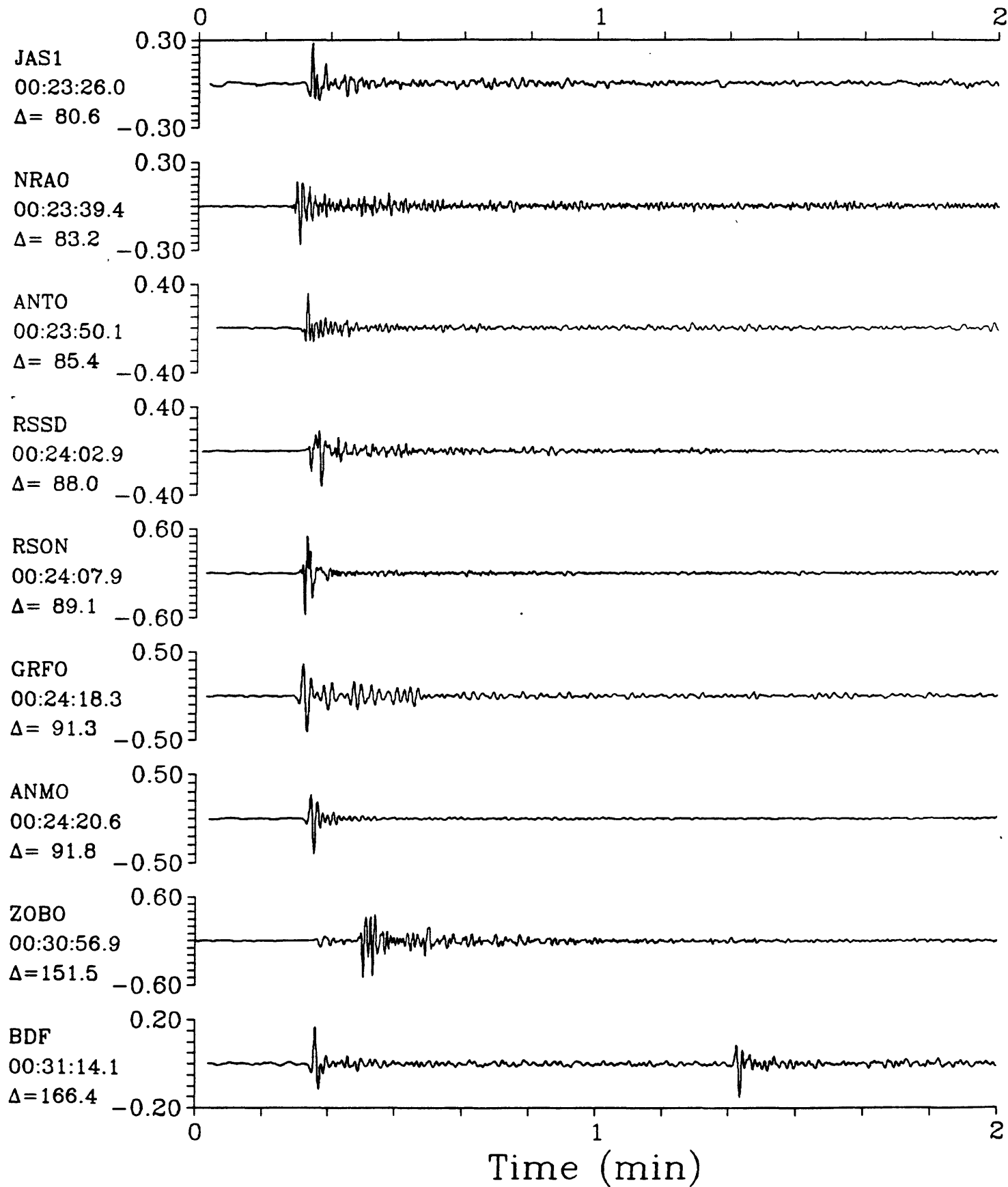
SPZ



SPZ

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SPZ

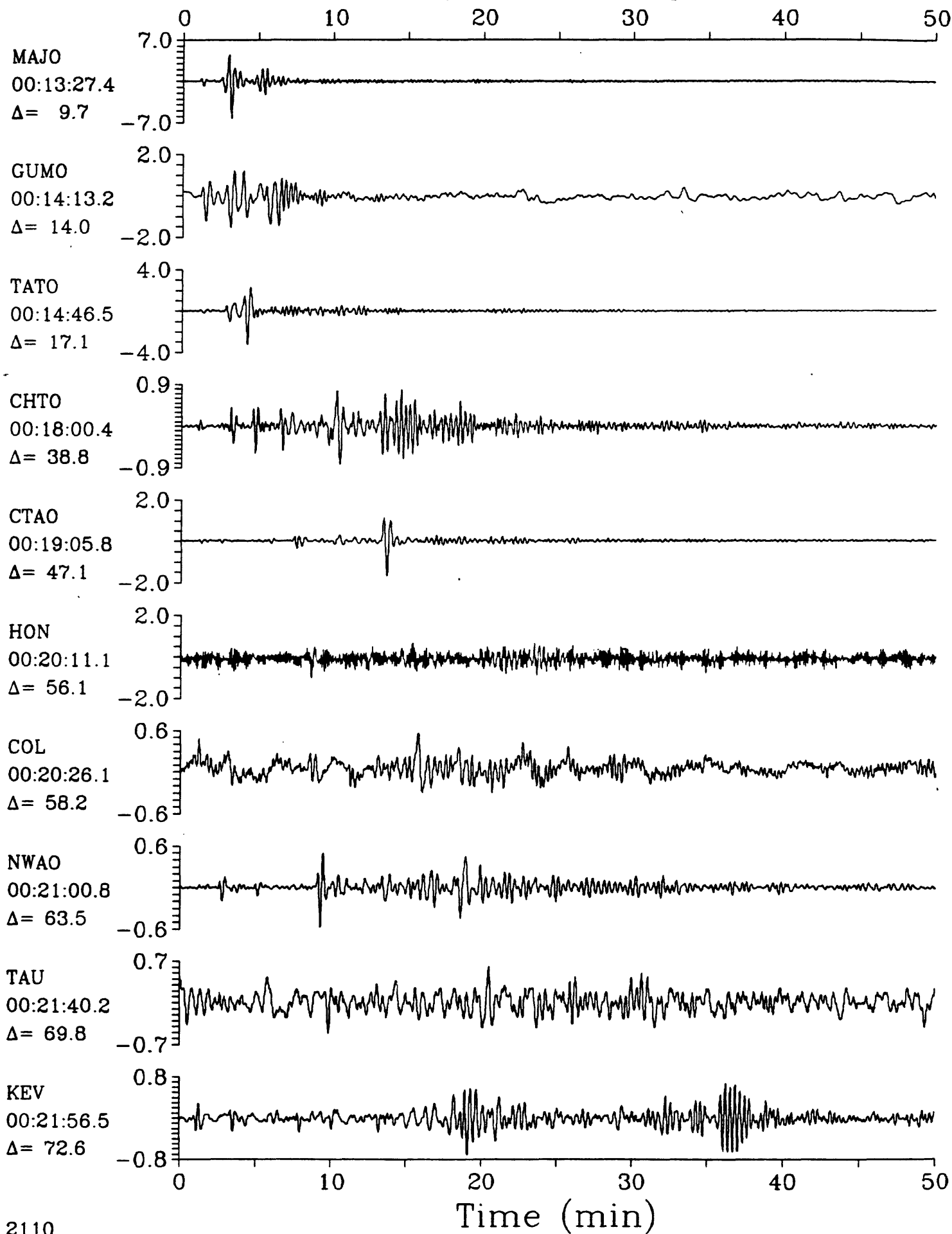




LPZ

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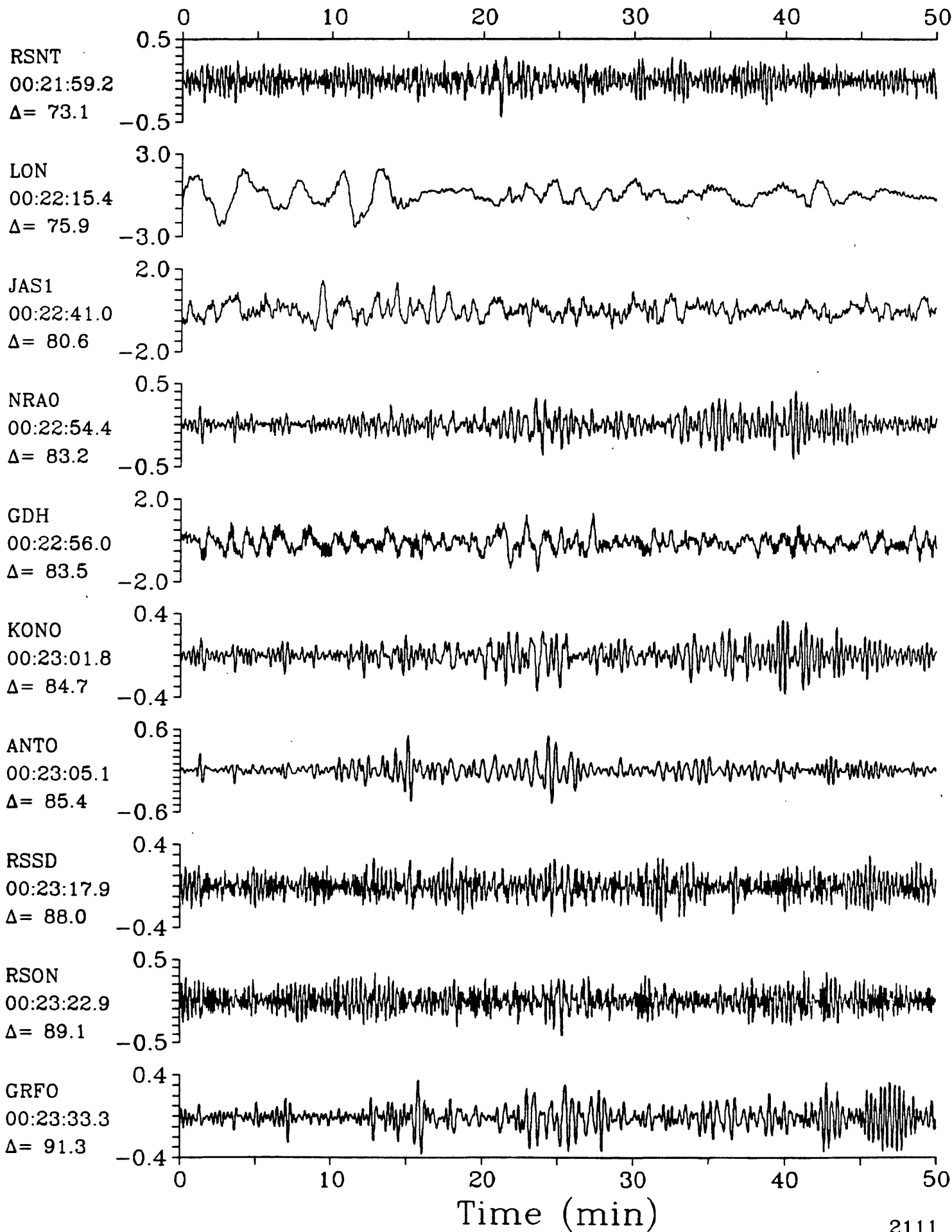
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LPZ

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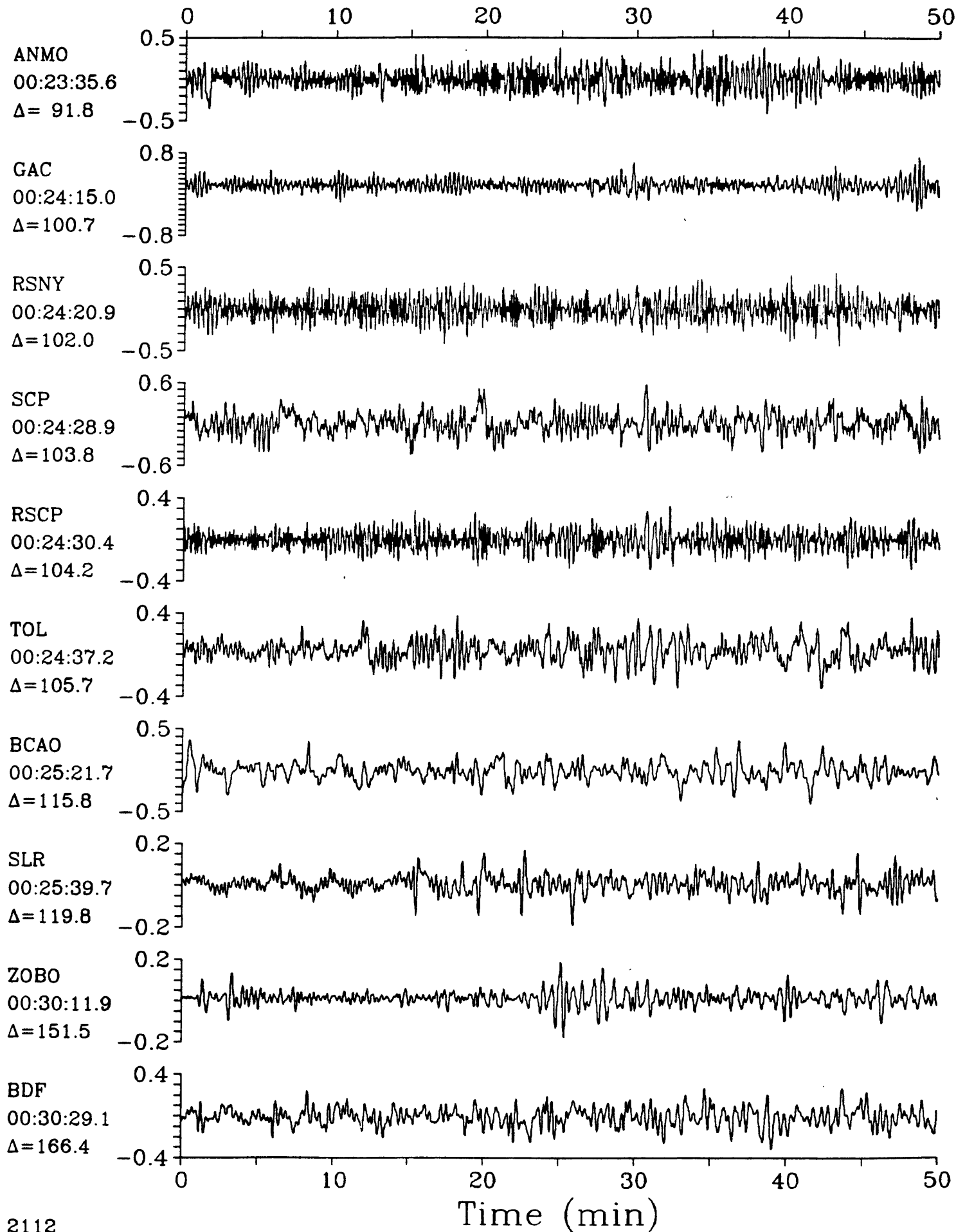
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LPZ

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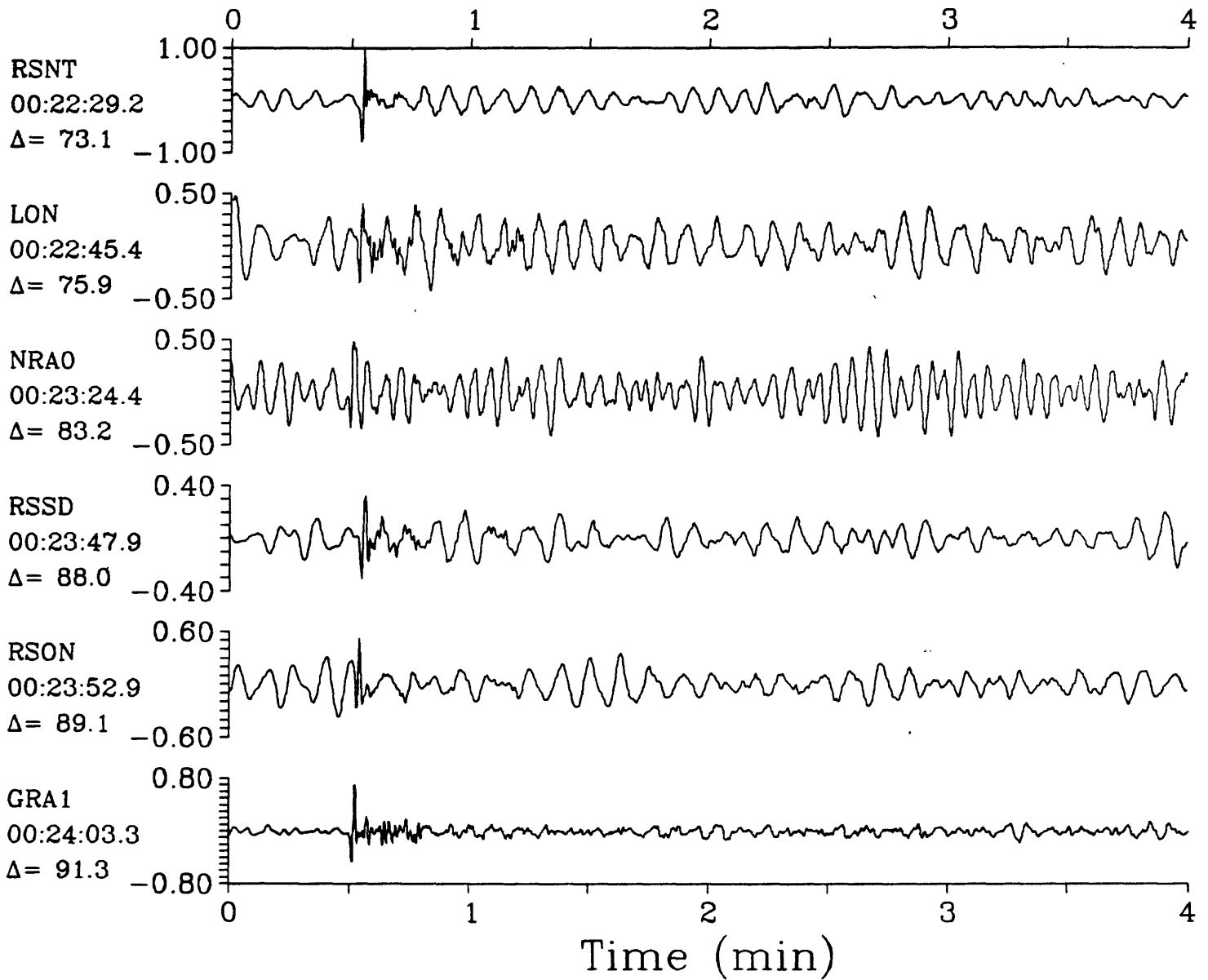
LPZ



IPZ

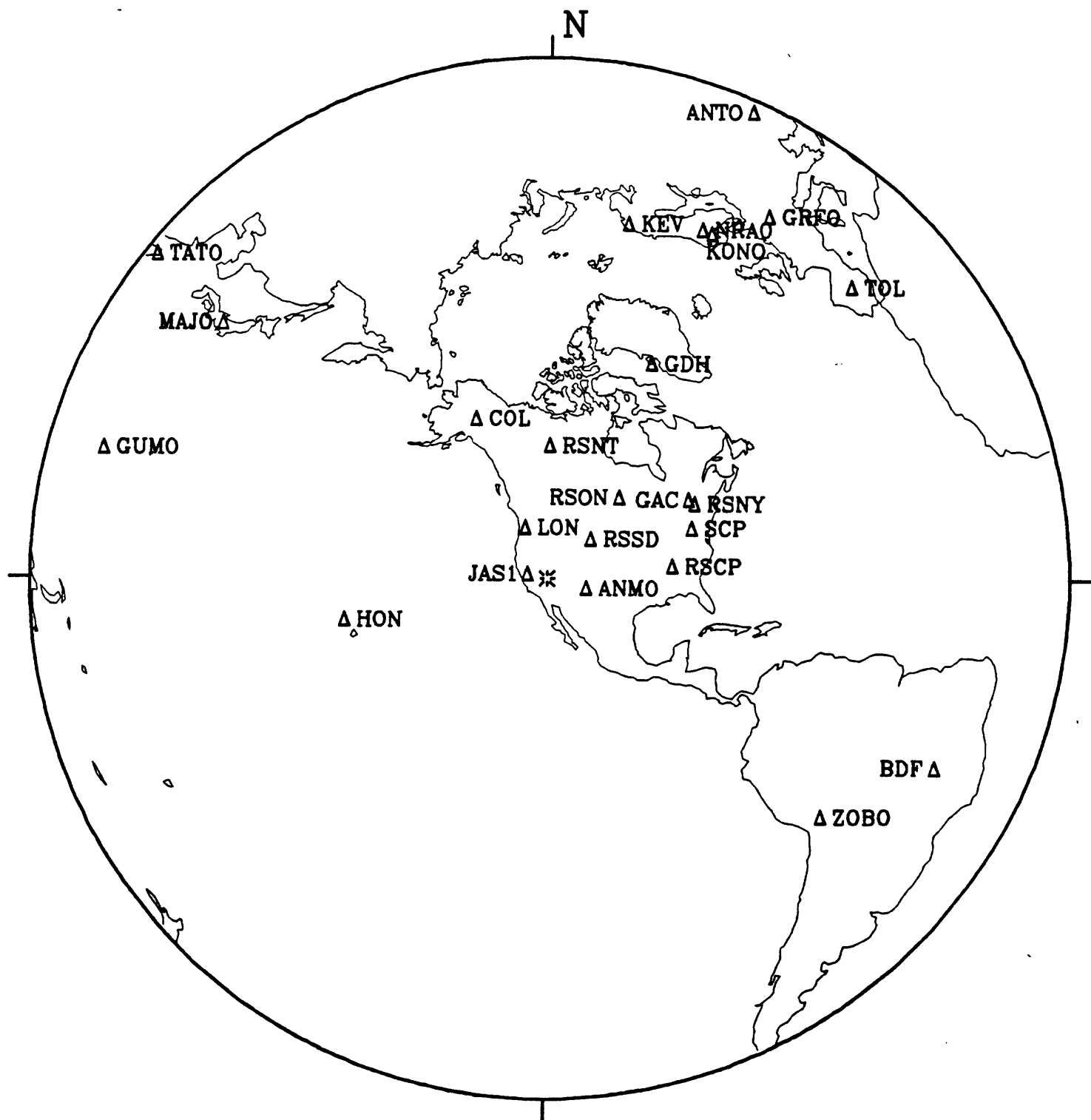
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IPZ

Bonin Islands Region  $h=425.7$   $m_b=6.1$ 

05 December 1985 15:00:00.07

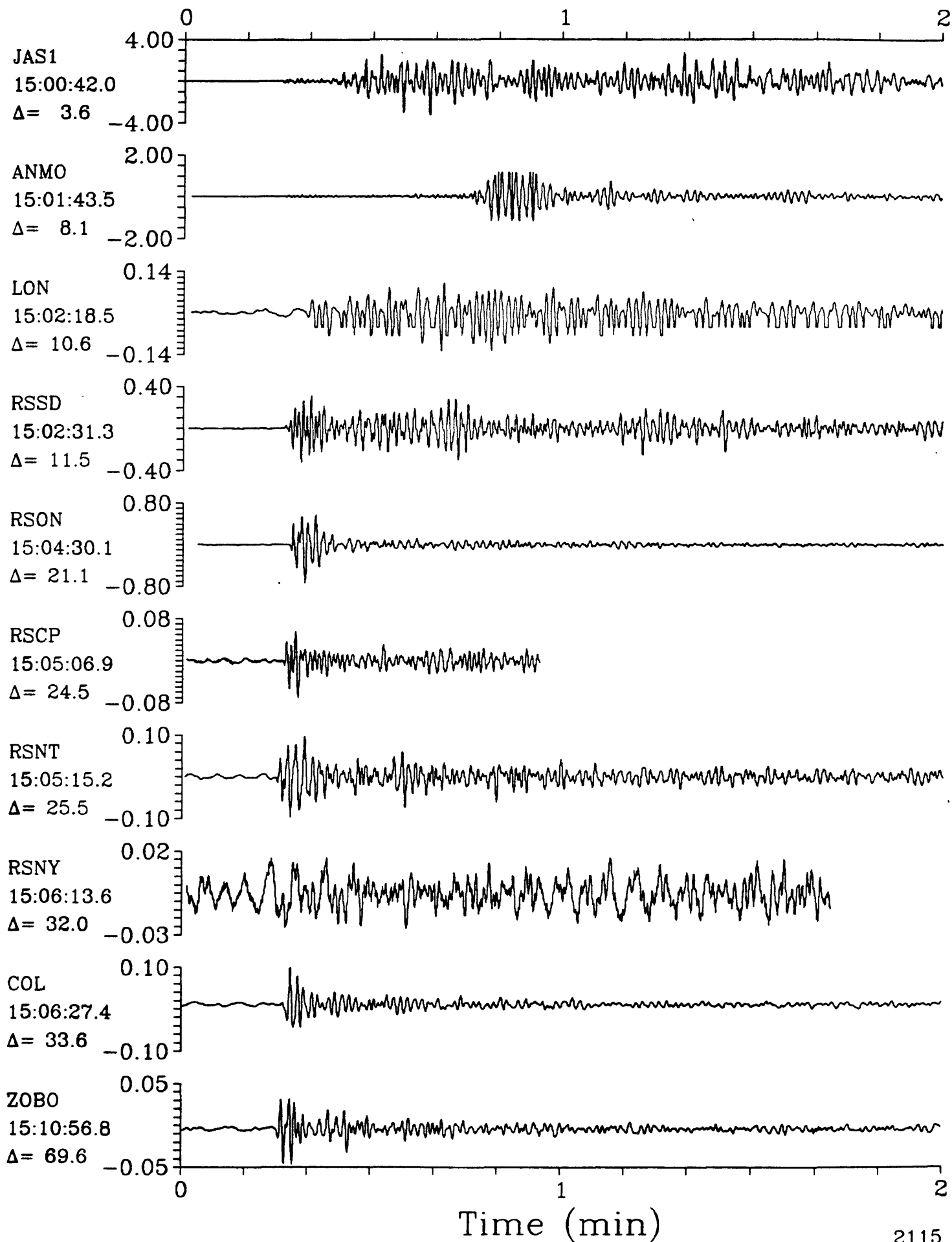
## Southern Nevada

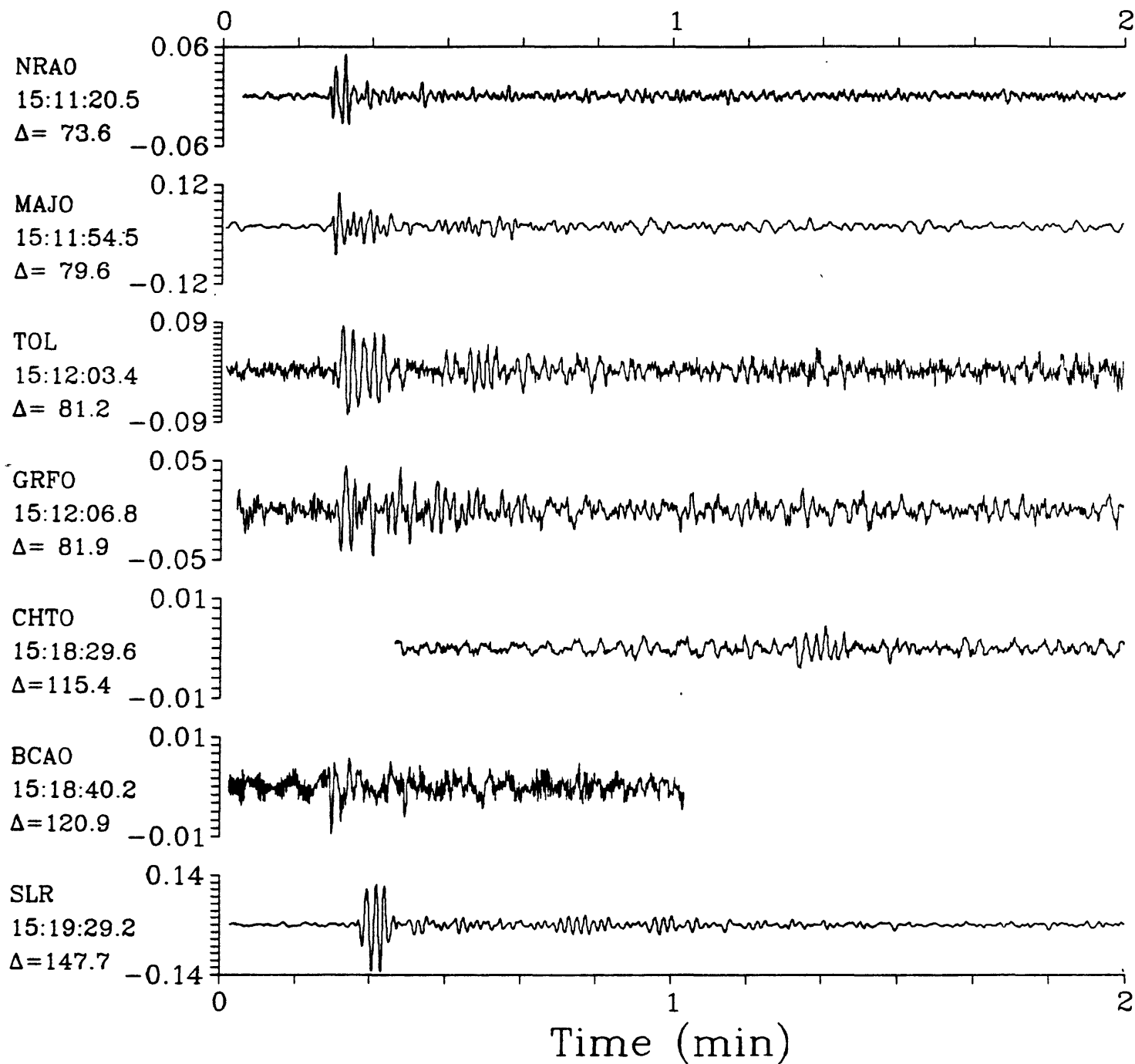


SPZ

05 December 1985 15:00:00.07  
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SPZ

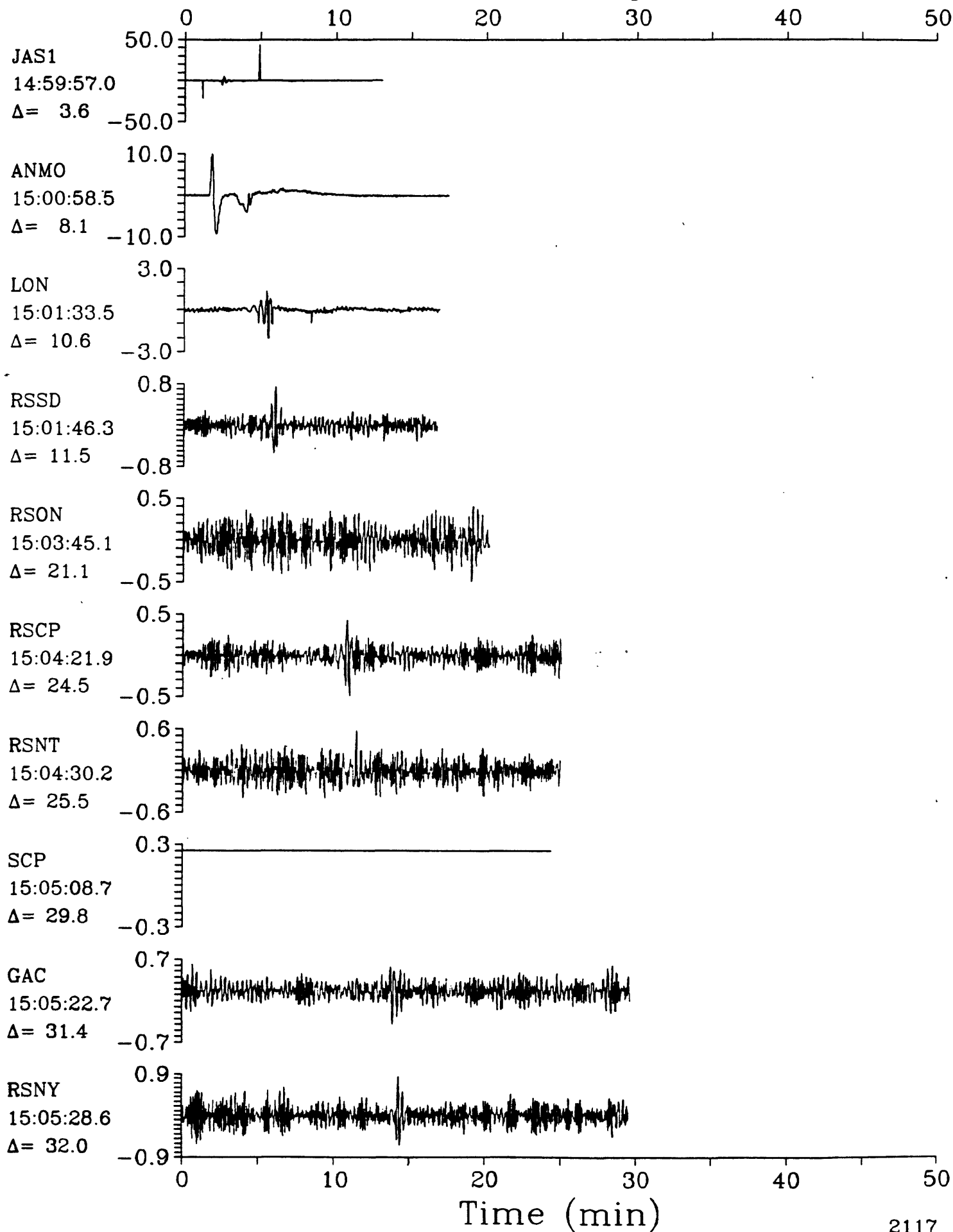




LPZ

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LPZ

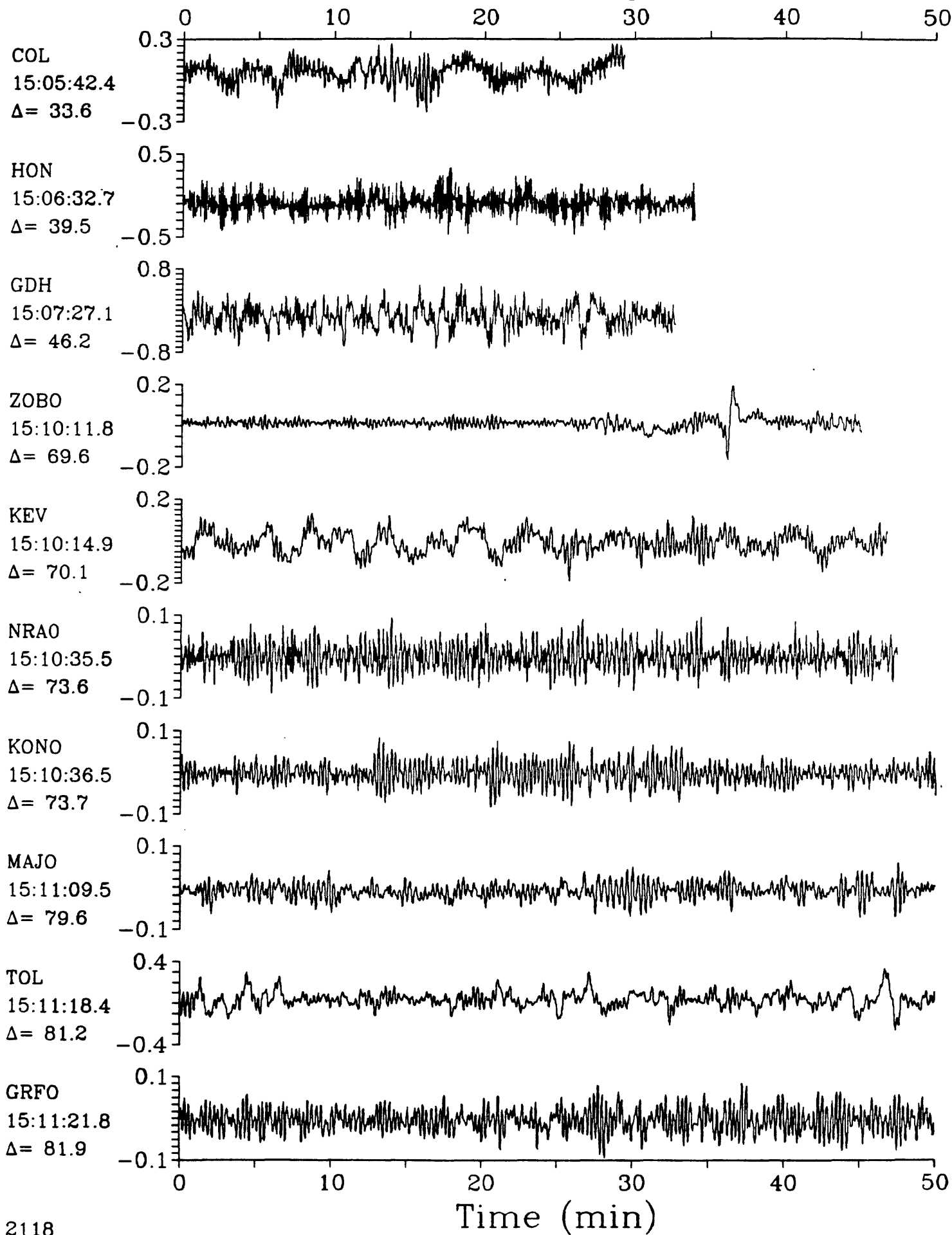




LPZ

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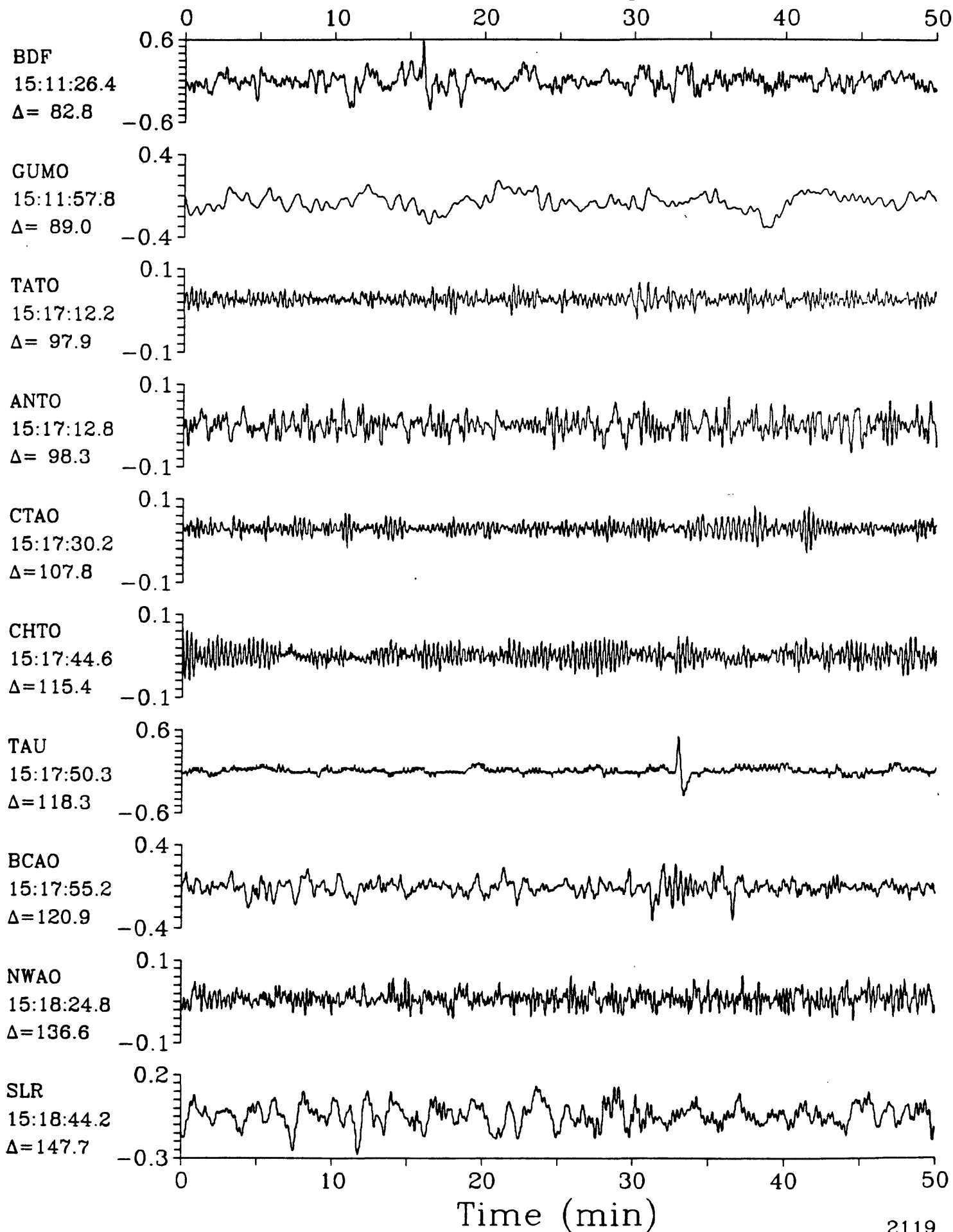
LPZ



LPZ

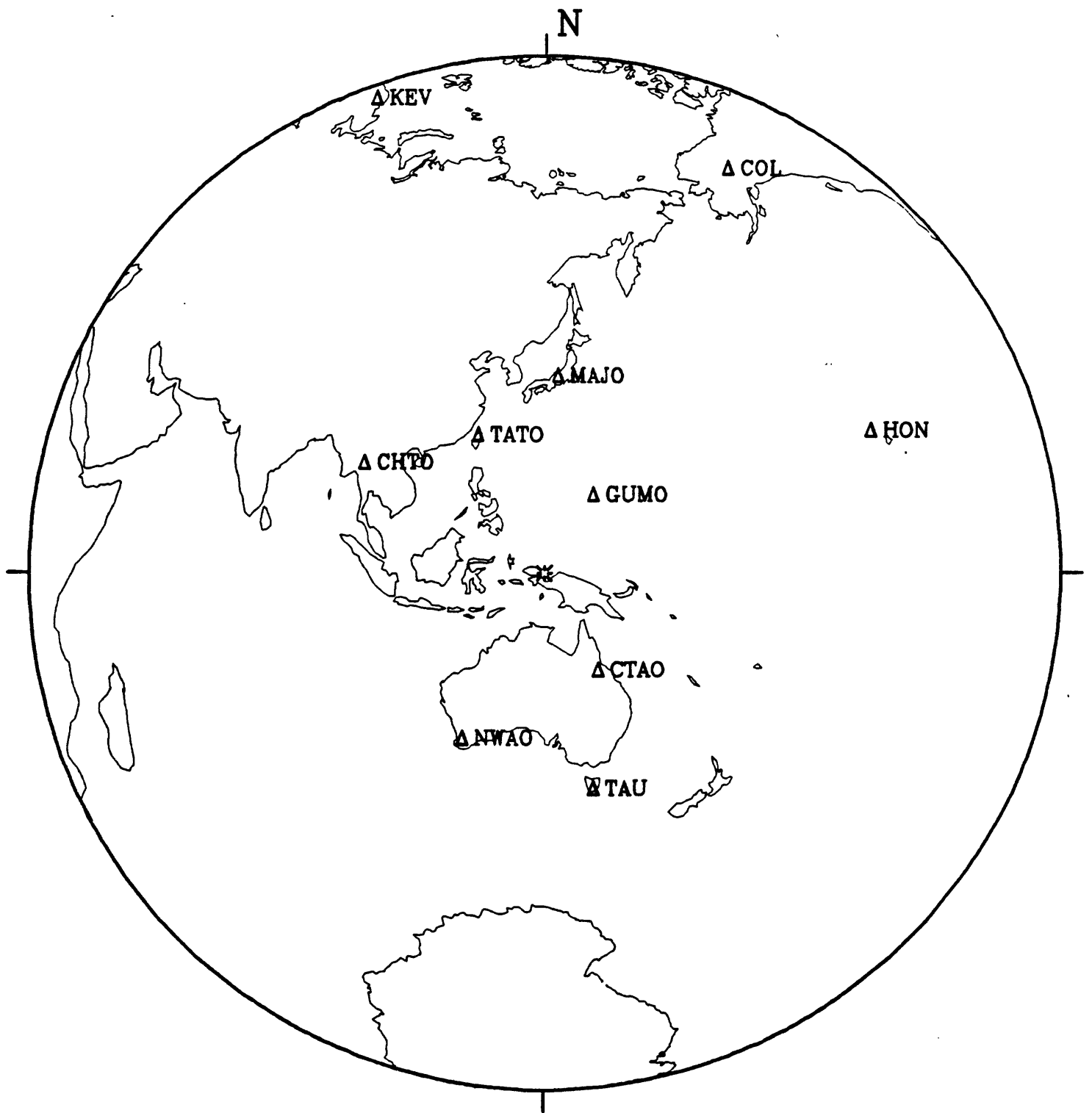
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LPZ



06 December 1985 22:26:26.78

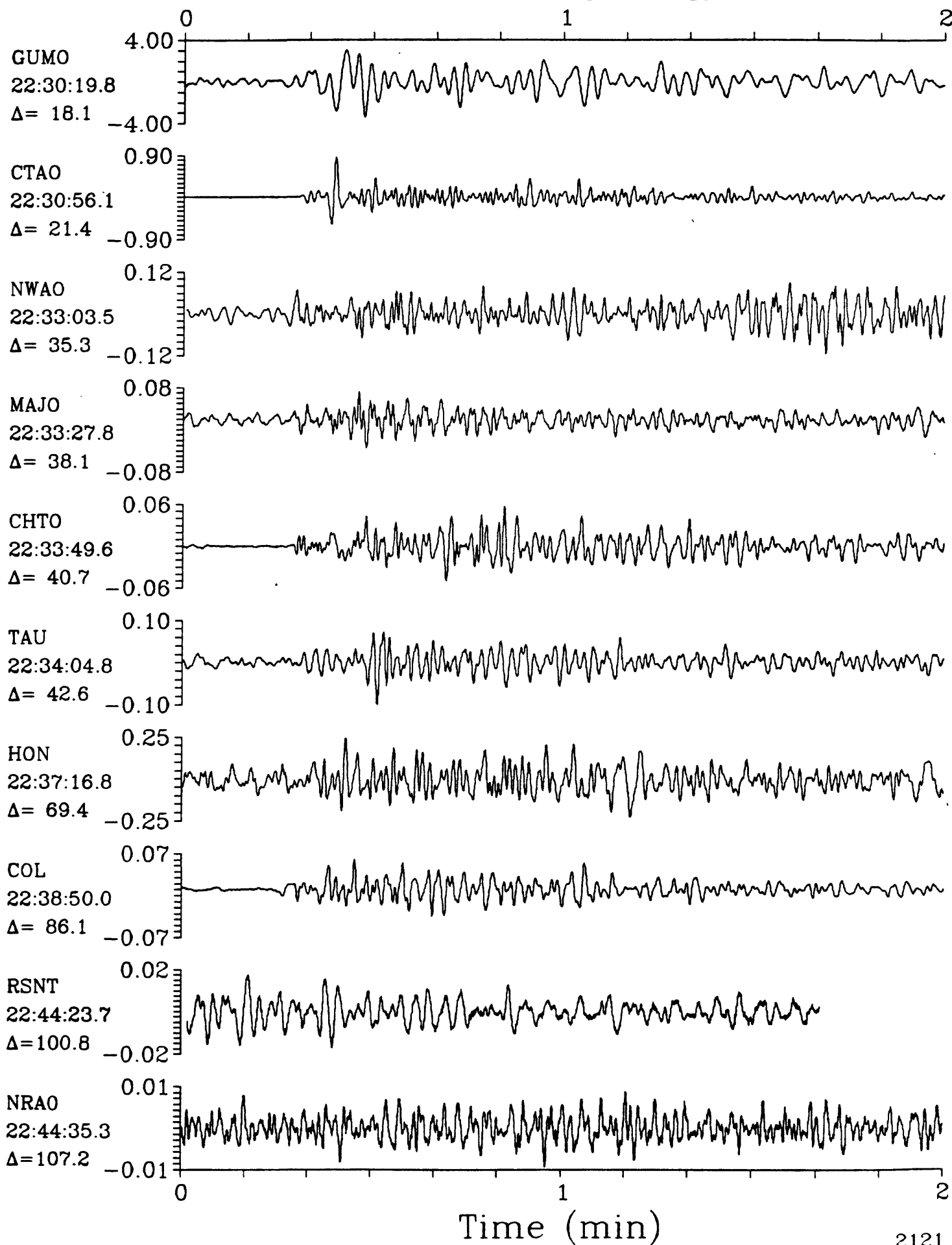
## West Irian Region



SPZ

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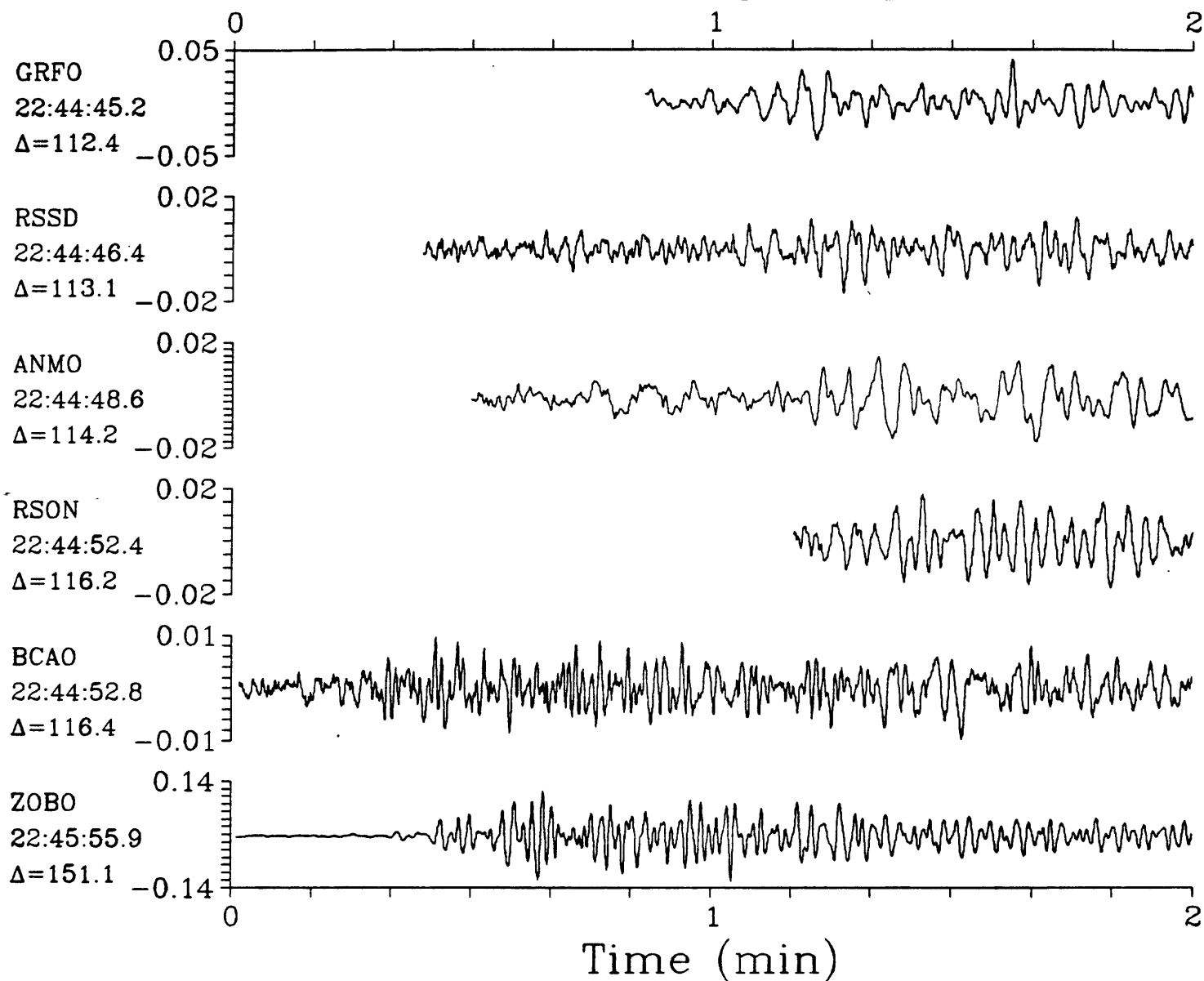
SPZ

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SPZ

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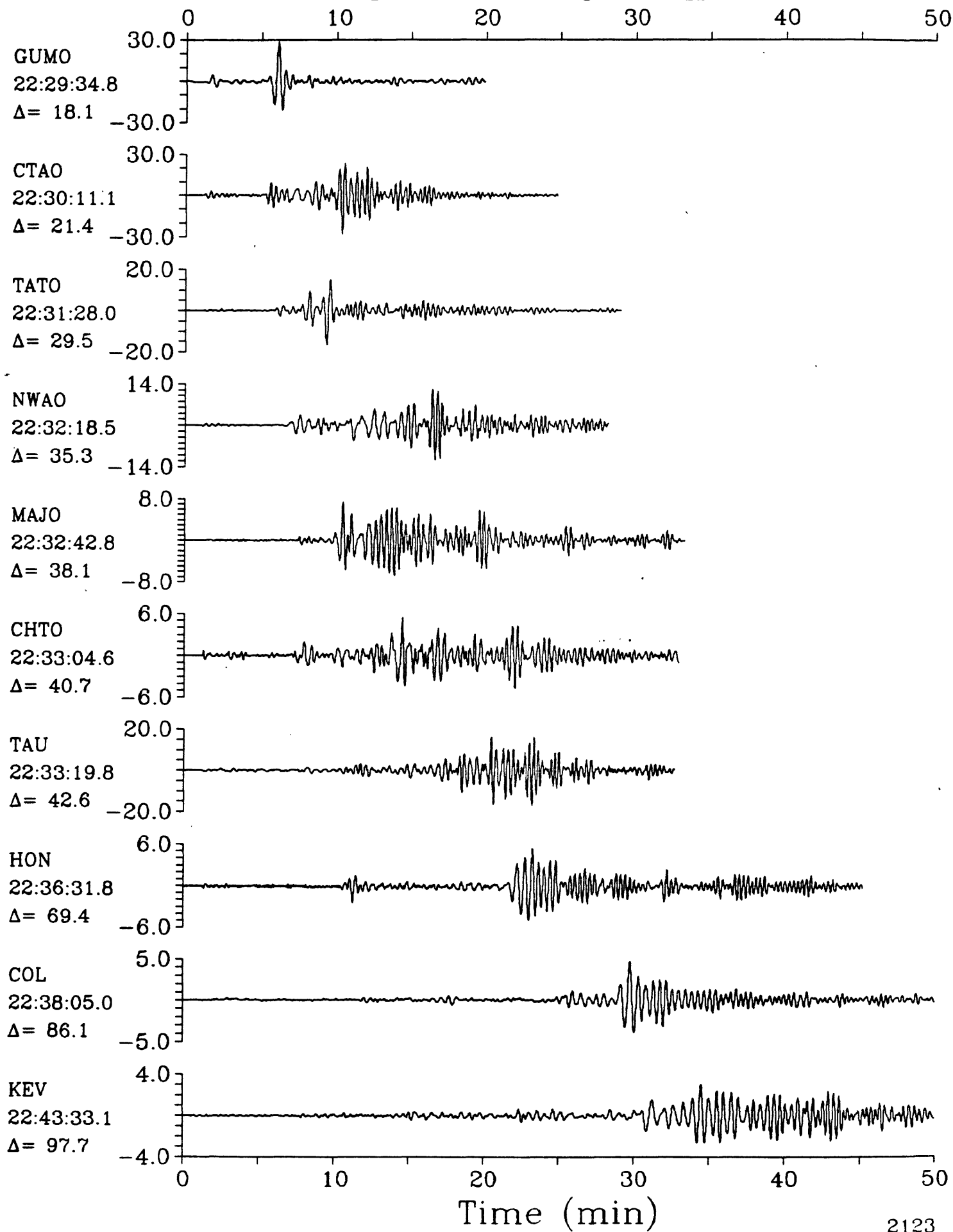
SPZ

West Irian Region  $h=33.0$   $m_b=5.5$   $M_{sz}=5.7$ 

LPZ

06 December 1985 22:26:26.78

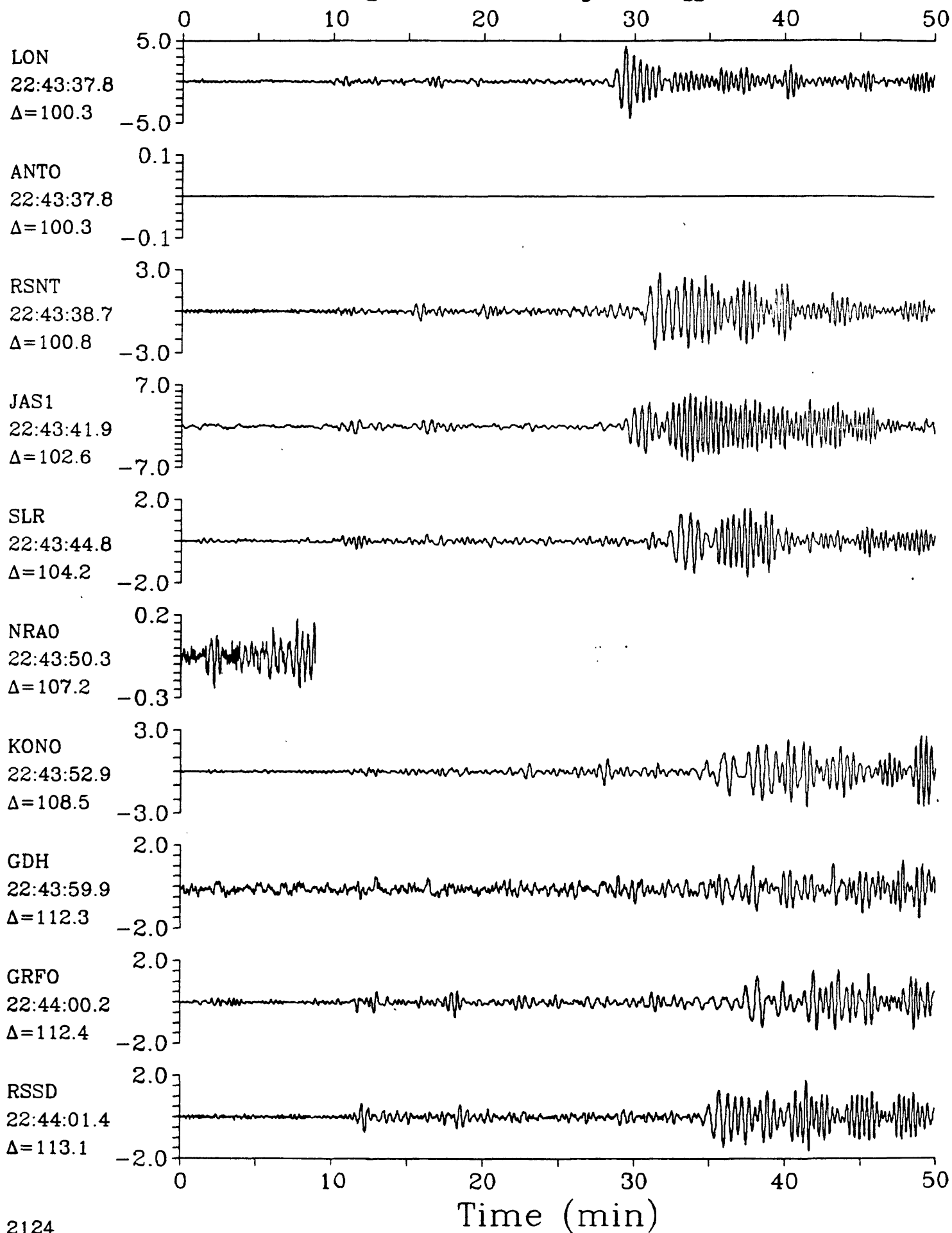
LPZ

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LPZ

06 December 1985 22:26:26.78

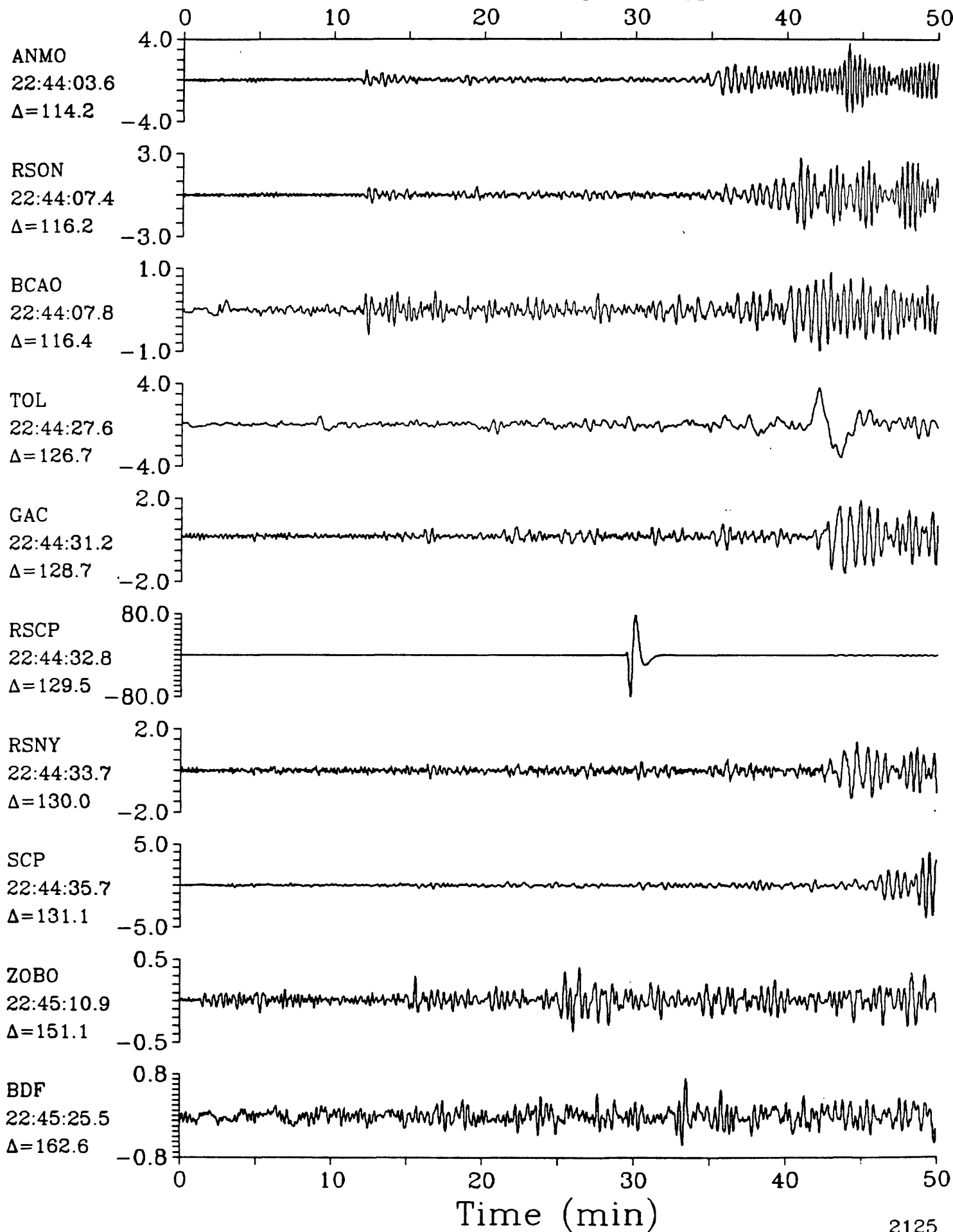
LPZ

West Irian Region  $h=33.0$   $m_b=5.5$   $M_{sz}=5.7$ 

LPZ

06 December 1985 22:26:26.78

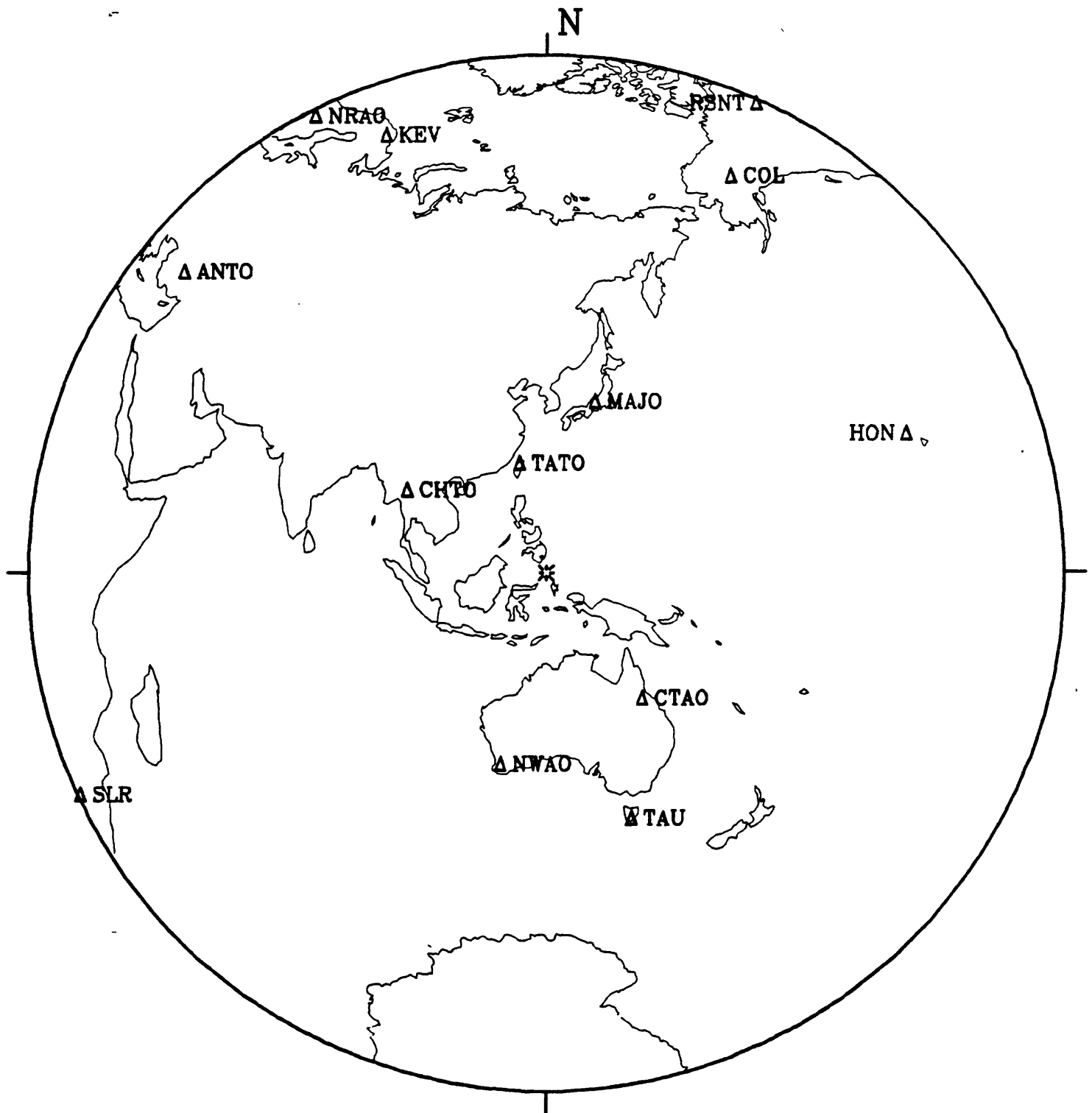
LPZ

West Irian Region  $h=33.0$   $m_b=5.5$   $M_{sz}=5.7$ 



14 December 1985 06:46:13.35

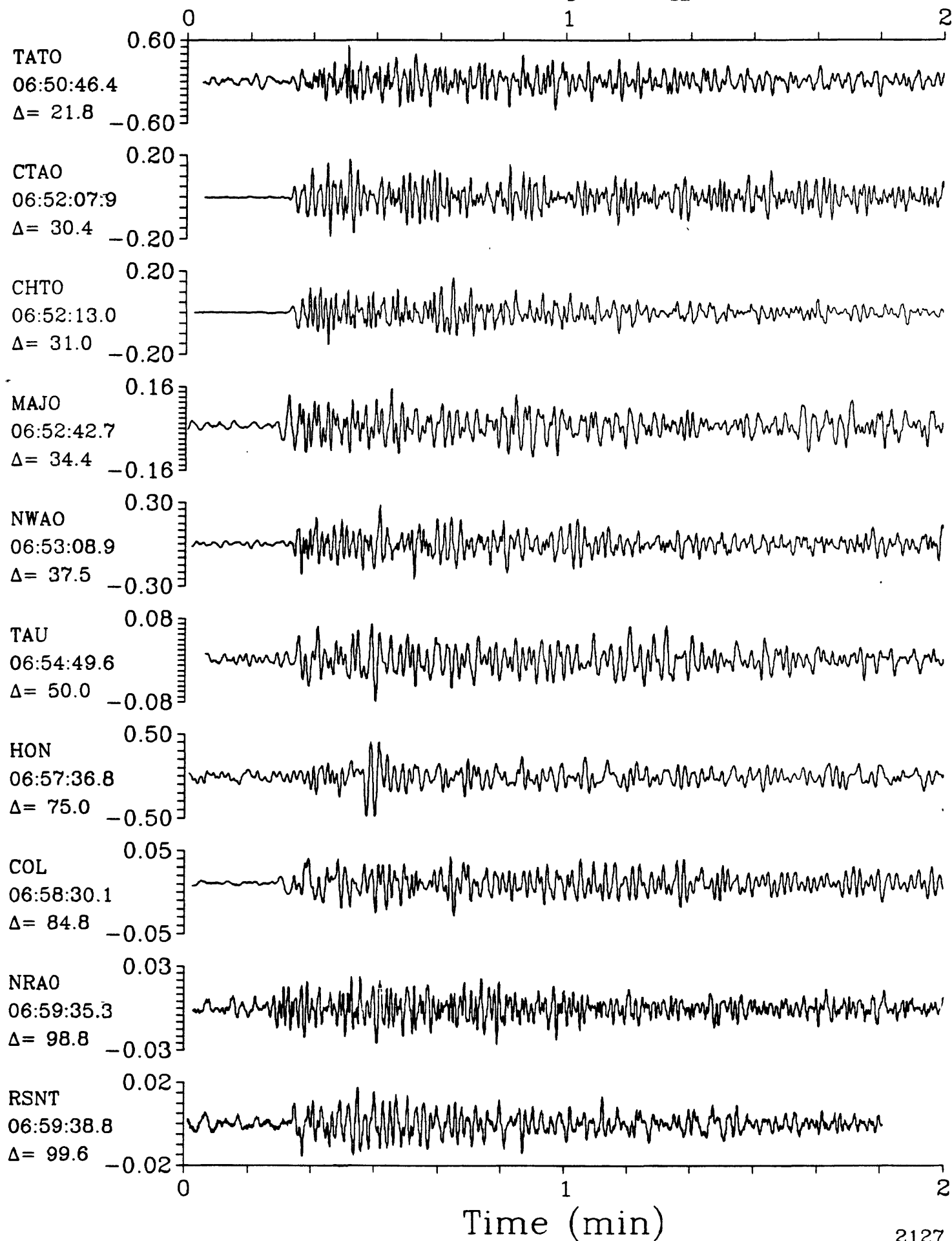
## Talau Islands



SPZ

14 December 1985 06:46:13.35

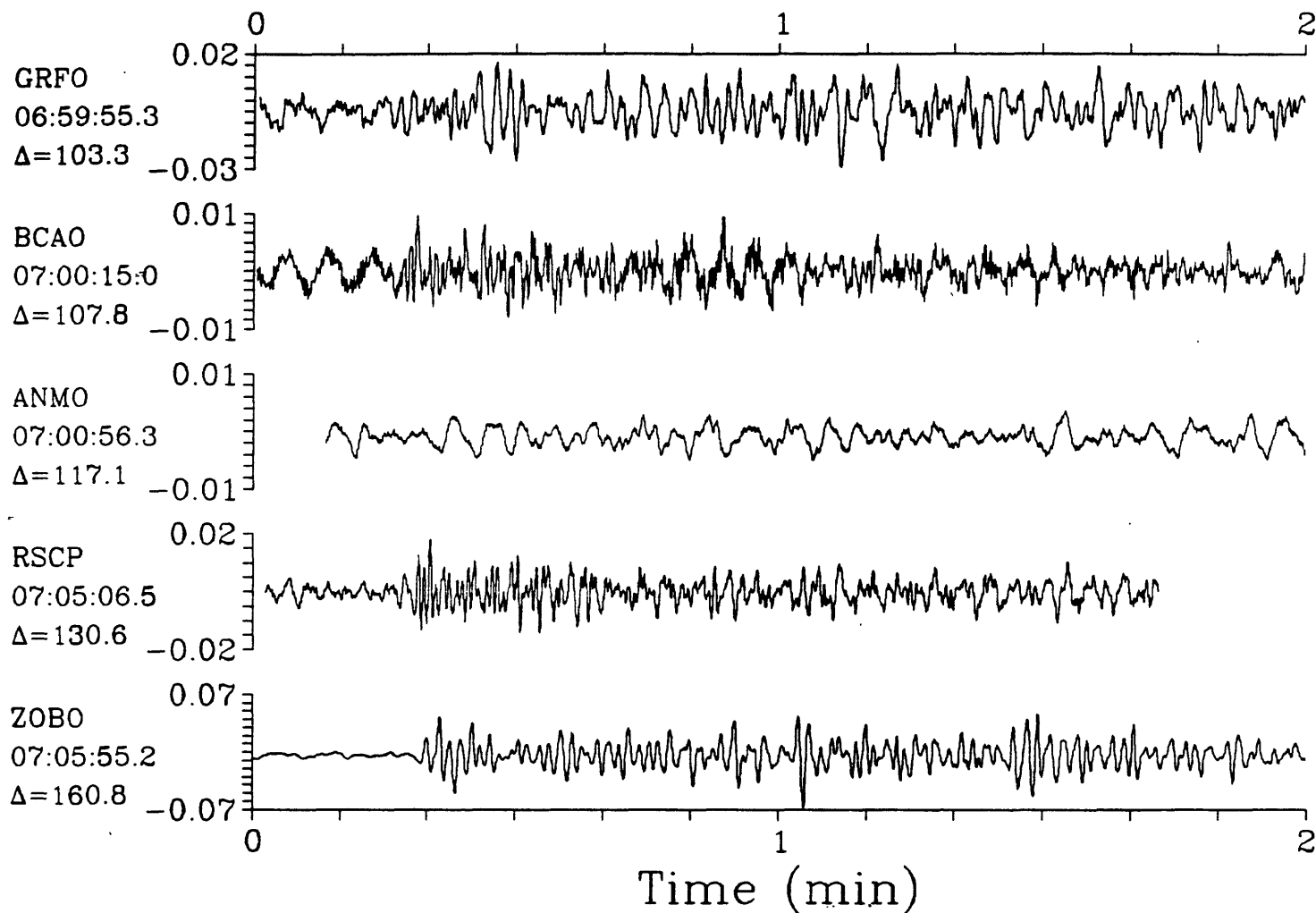
SPZ

Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

SPZ

14 December 1985 06:46:13.35  
Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{SZ}=6.0$ 

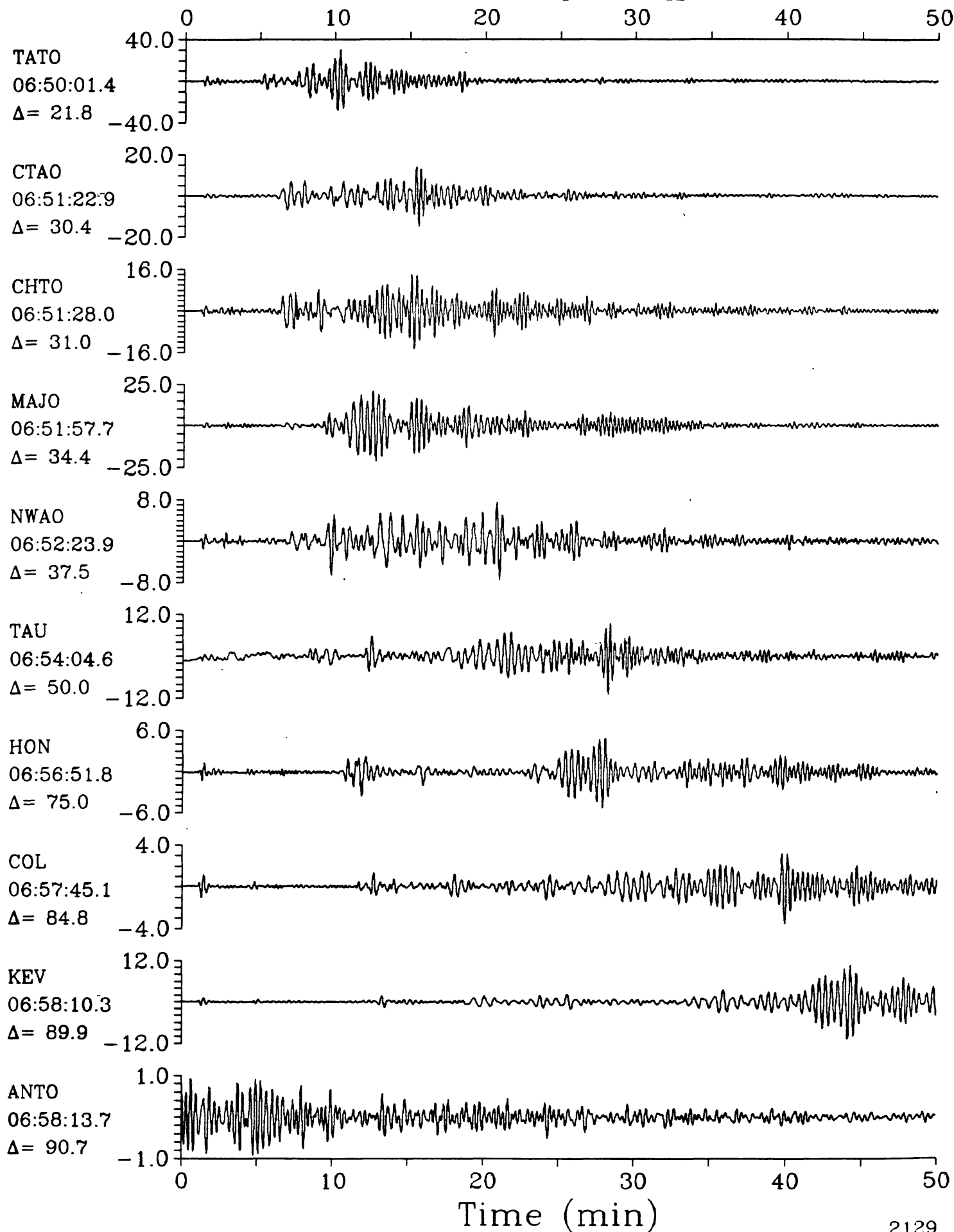
SPZ



LPZ

14 December 1985 06:46:13.35  
Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{SZ}=6.0$ 

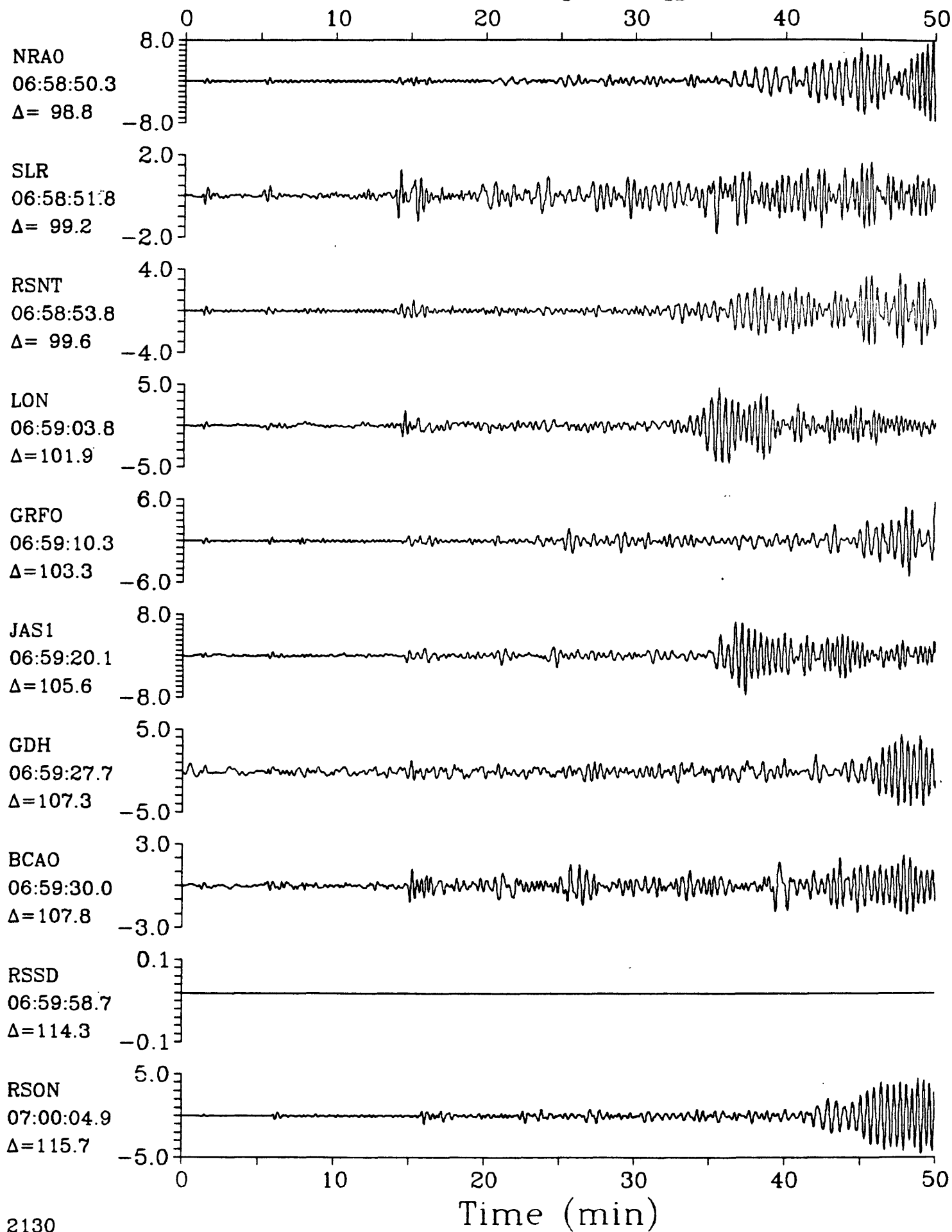
LPZ



LPZ

14 December 1985 06:46:13.35  
Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{SZ}=6.0$ 

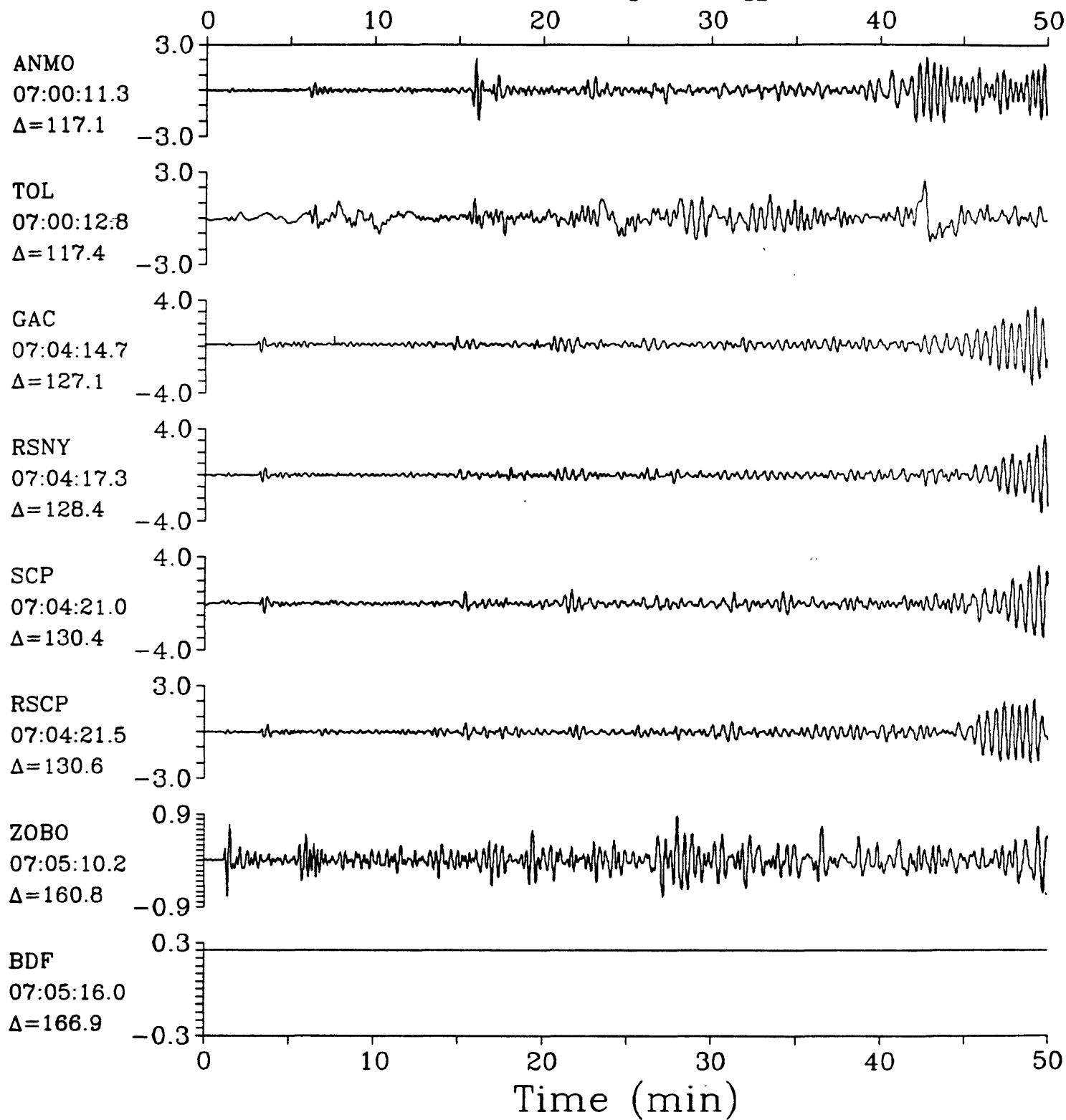
LPZ



LPZ

14 December 1985 06:46:13.35  
Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

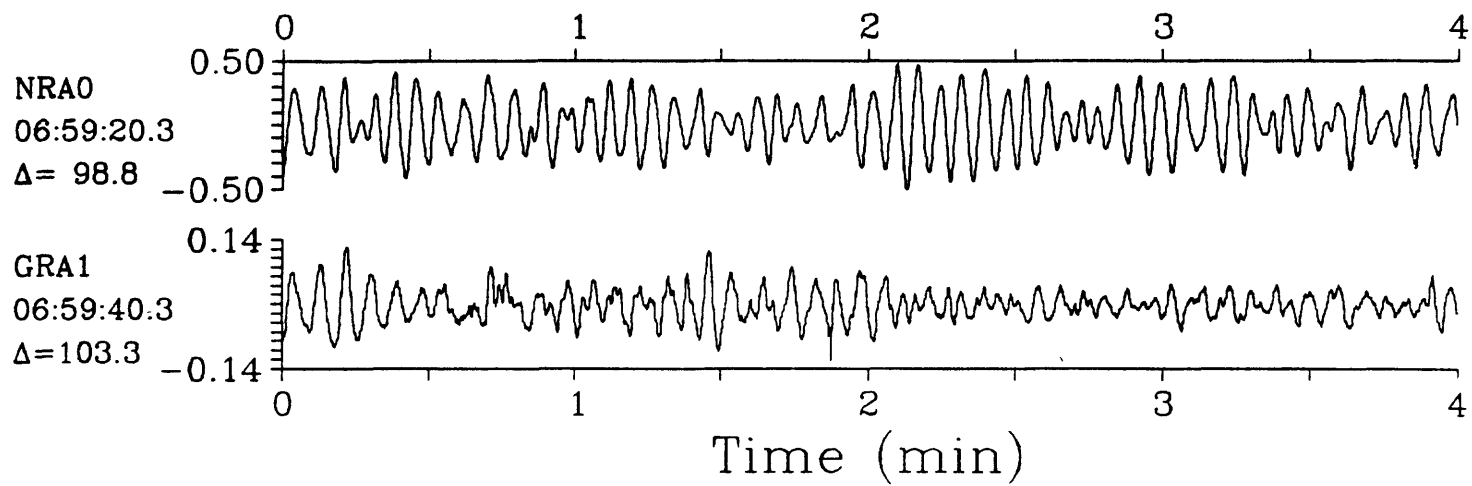
LPZ



IPZ

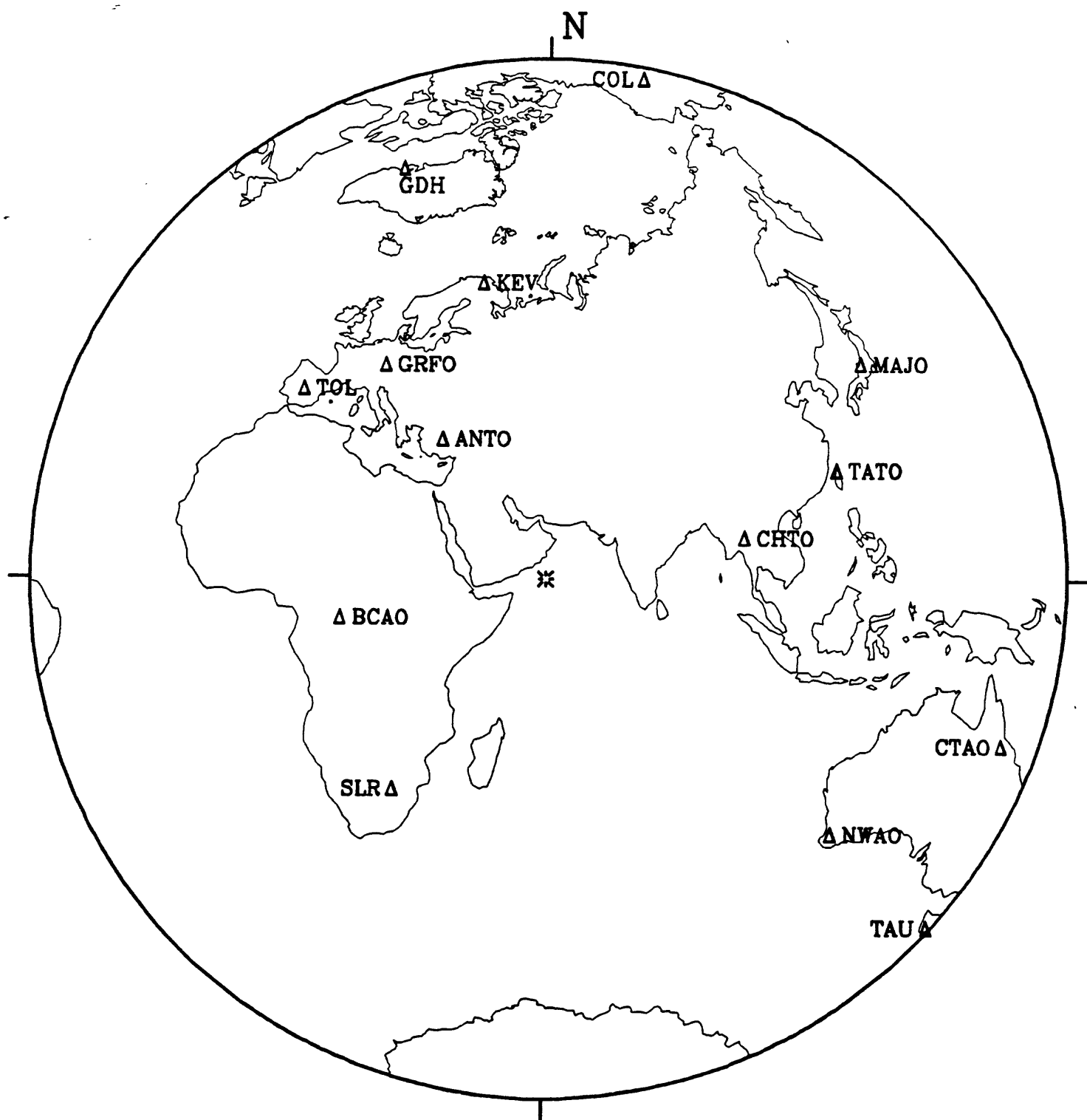
14 December 1985 06:46:13.35

IPZ

Talaud Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

14 December 1985 18:13:31.66

## Arabian Sea

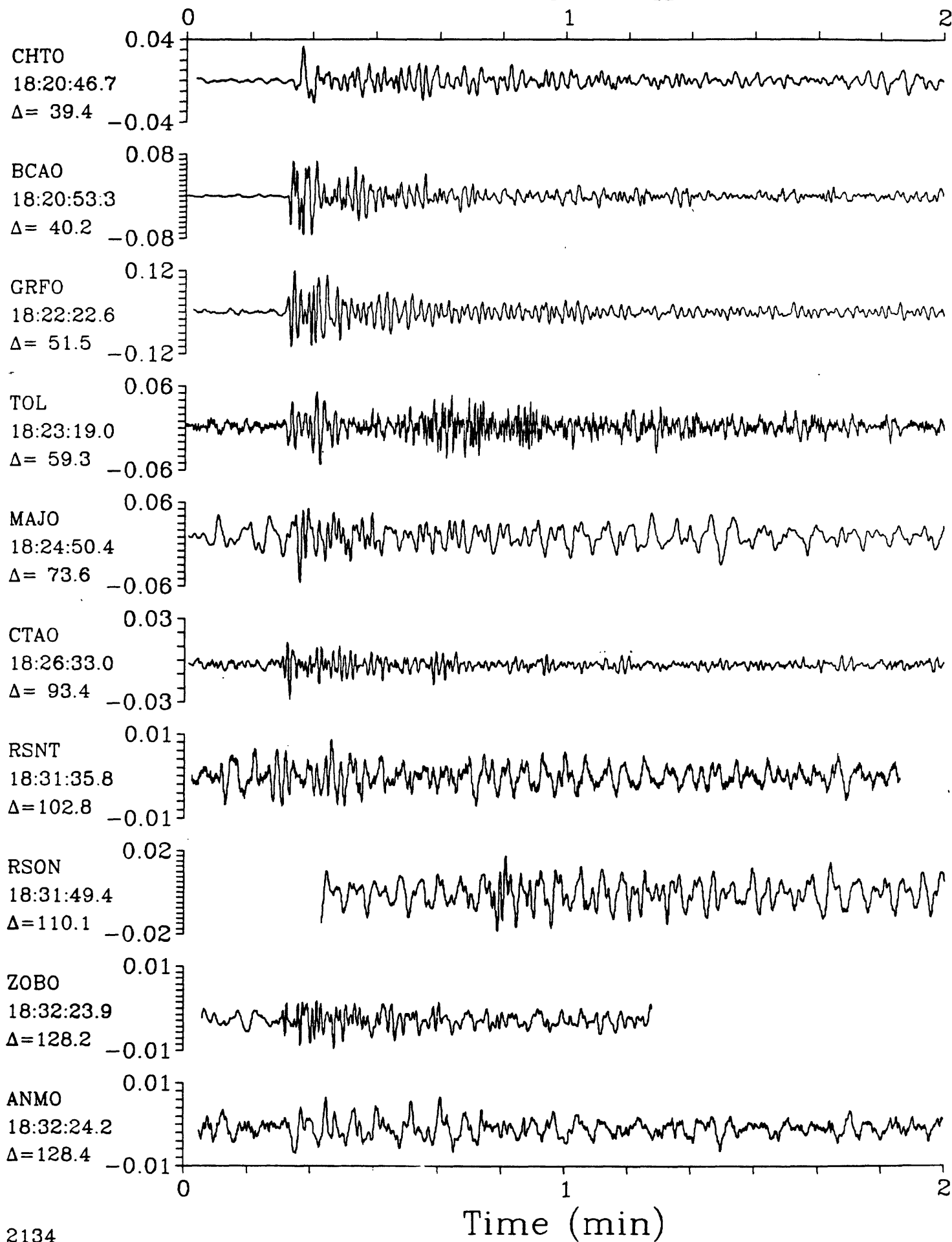




SPZ

14 December 1985 18:13:31.66  
Arabian Sea  $h=10.0$   $m_b=5.5$   $M_{sz}=5.3$ 

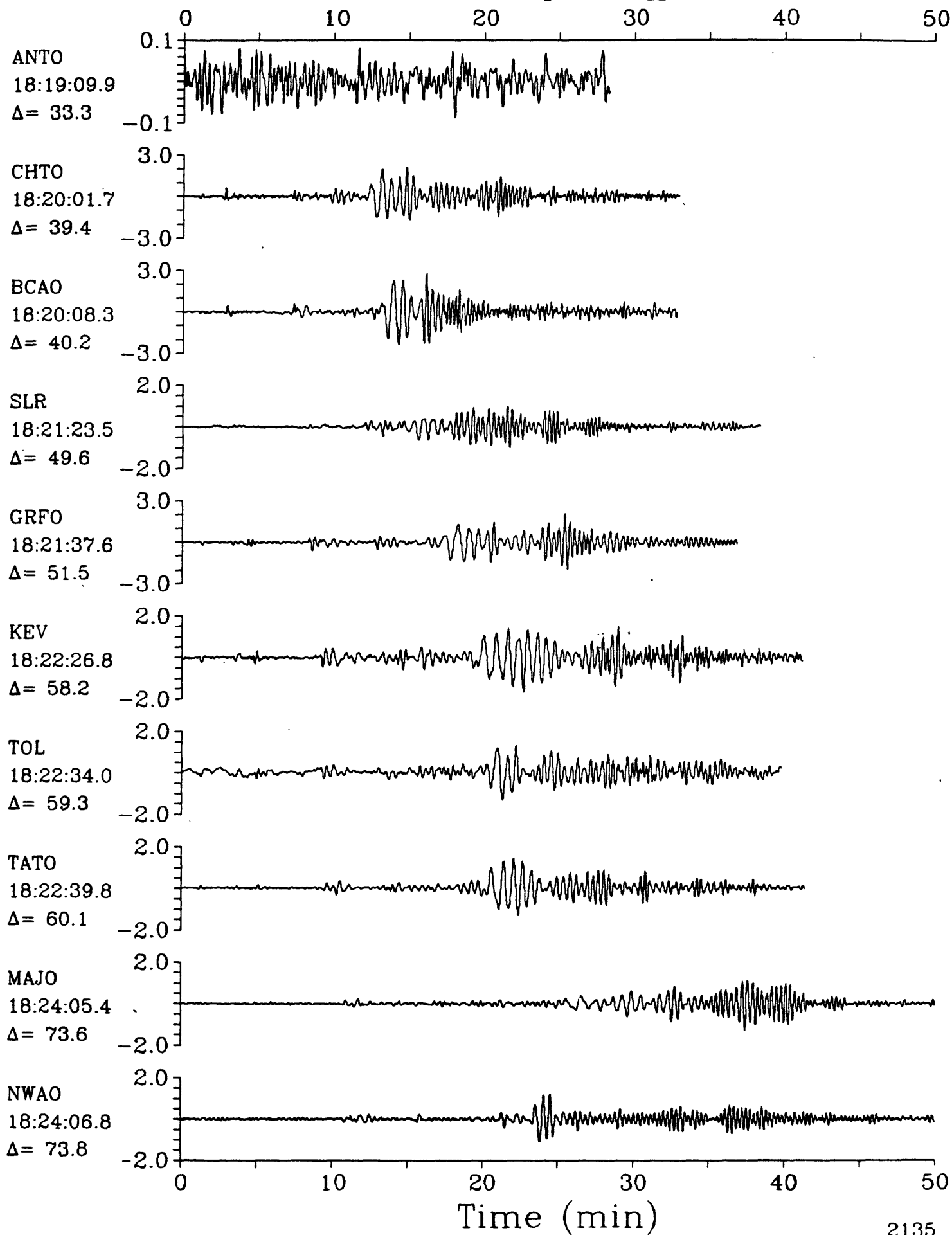
SPZ



LPZ

14 December 1985 18:13:31.66  
Arabian Sea  $h=10.0$   $m_b=5.5$   $M_{sz}=5.3$ 

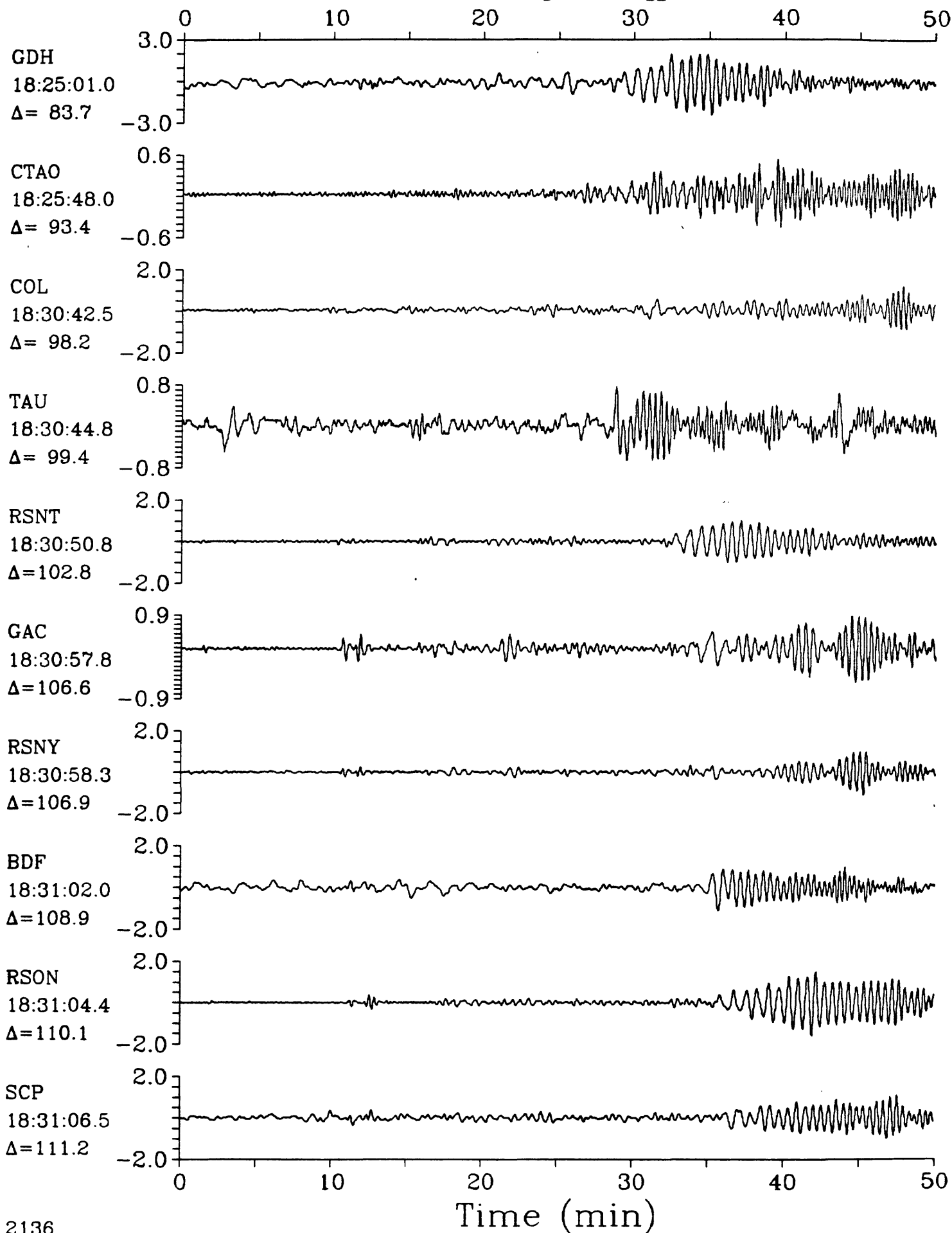
LPZ



LPZ

14 December 1985 18:13:31.66

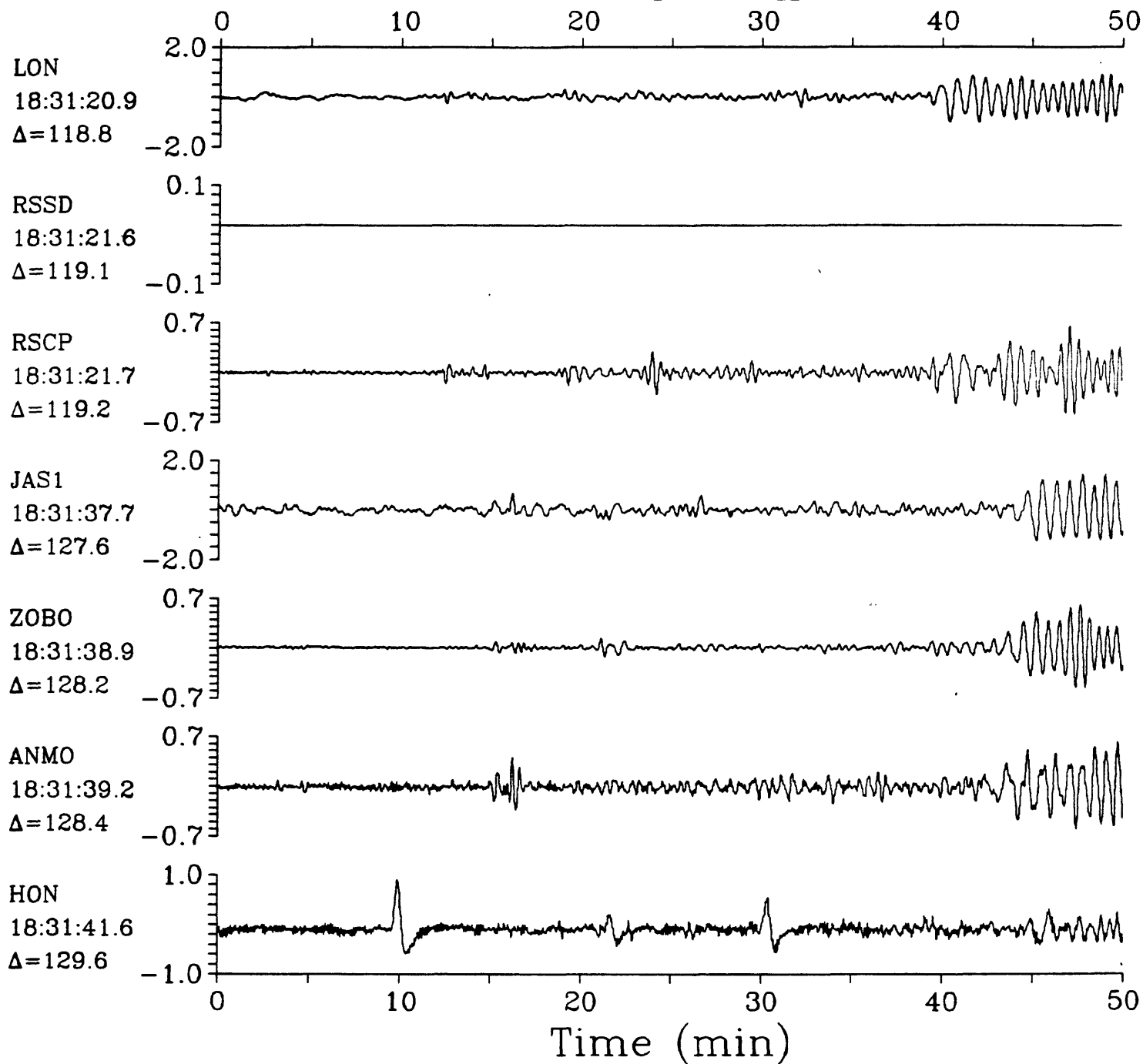
LPZ

Arabian Sea  $h=10.0$  m<sub>b</sub>=5.5 M<sub>sz</sub>=5.3

LPZ

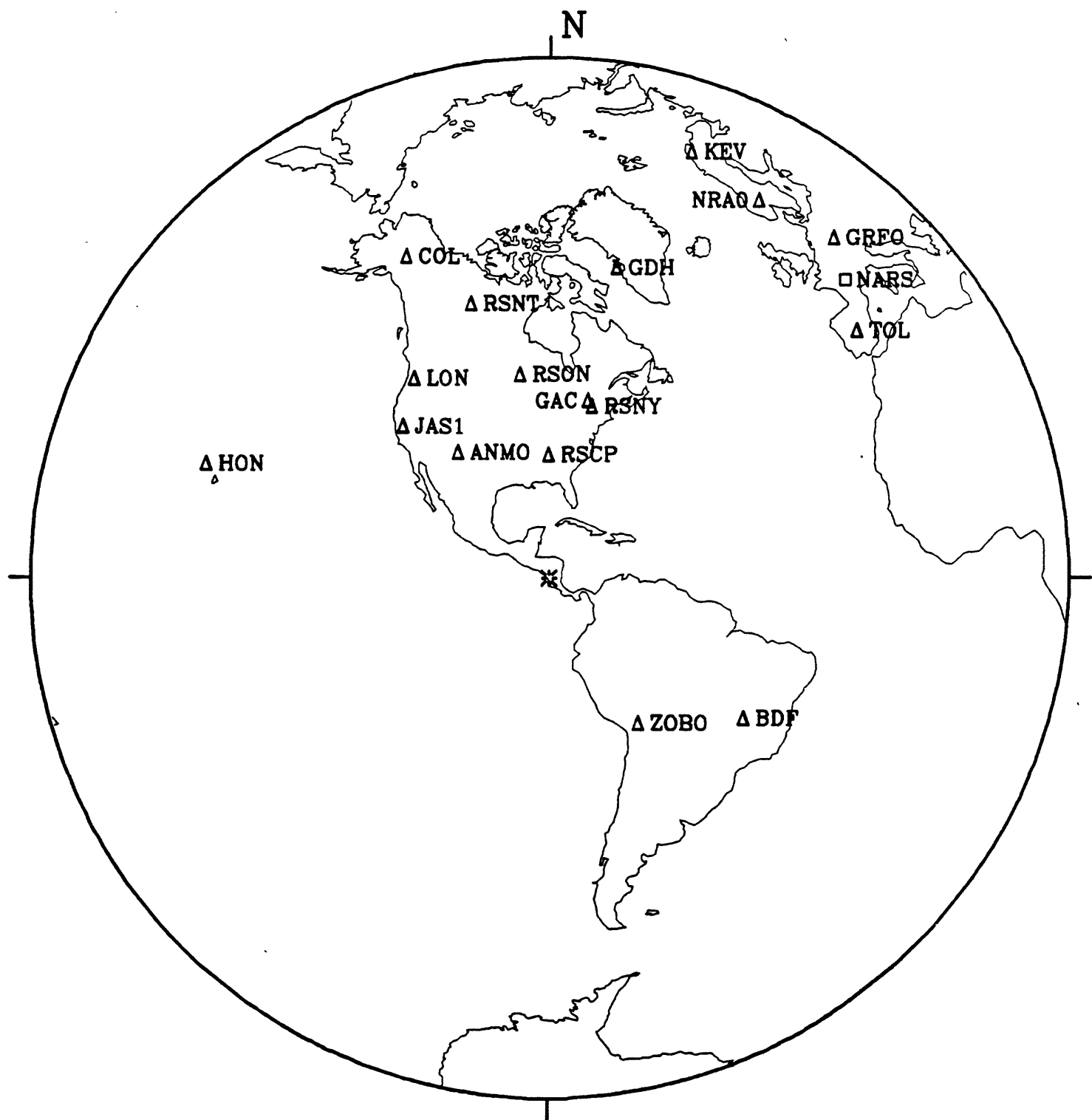
14 December 1985 18:13:31.66

LPZ

Arabian Sea  $h=10.0$   $m_b=5.5$   $M_{sz}=5.3$ 

16 December 1985 02:44:35.69

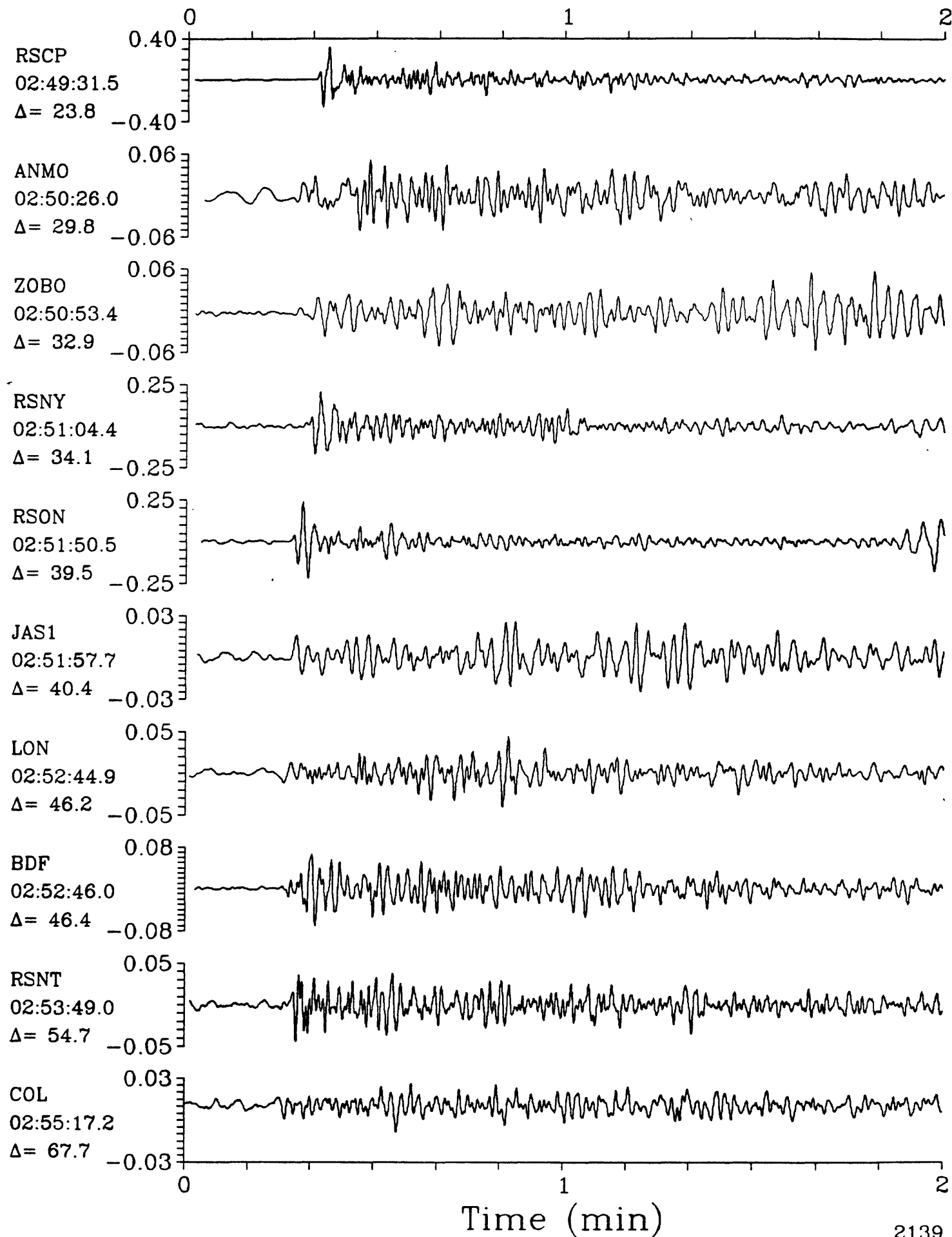
## Nicaragua



SPZ

16 December 1985 02:44:35.69  
Nicaragua  $h=20.5$   $m_b=5.9$   $M_{sz}=6.0$ 

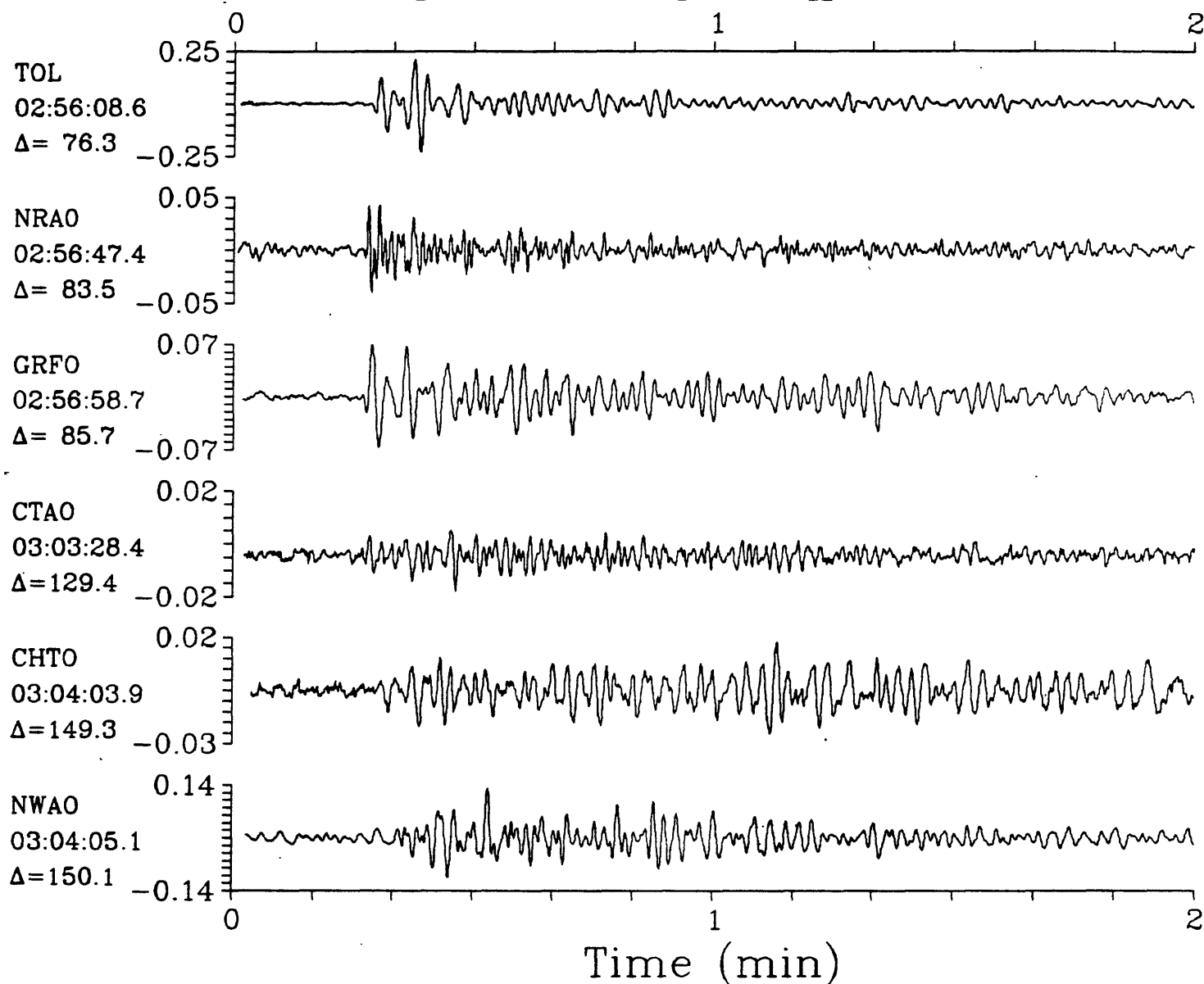
SPZ



SPZ

16 December 1985 02:44:35.69  
Nicaragua  $h=20.5$   $m_b=5.9$   $M_{sz}=6.0$ 

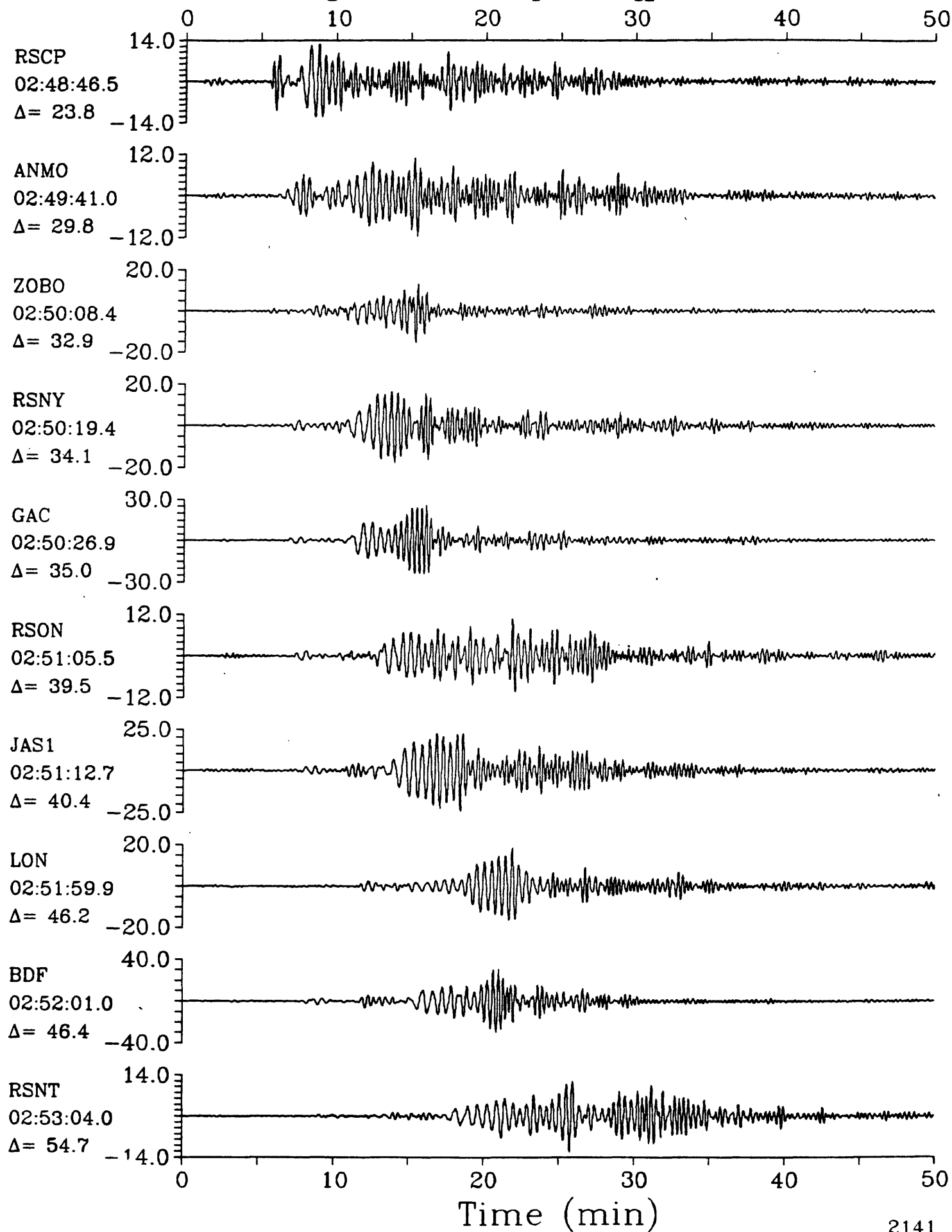
SPZ



LPZ

16 December 1985 02:44:35.69  
Nicaragua  $h=20.5$   $m_b=5.9$   $M_{sz}=6.0$ 

LPZ

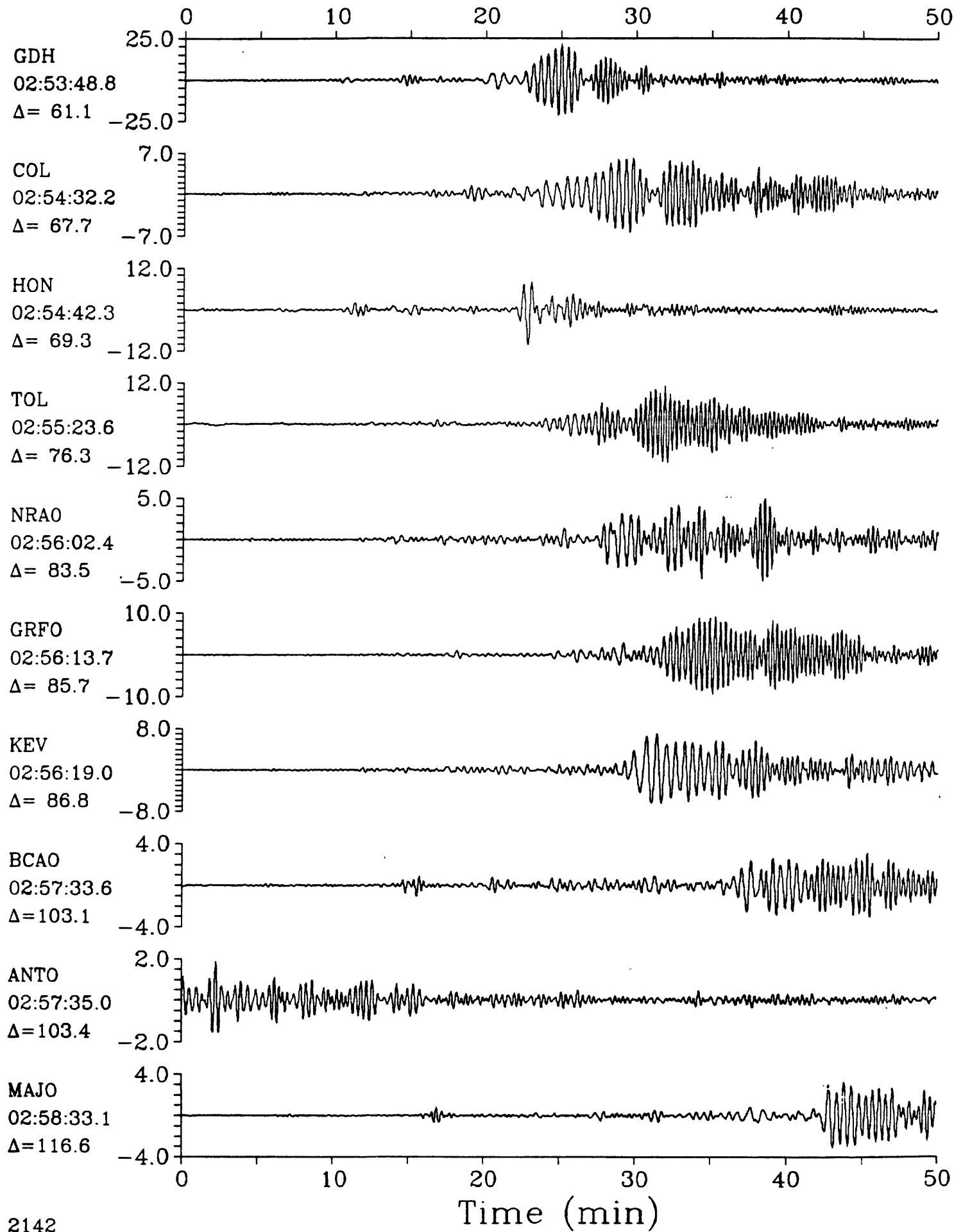




LPZ

16 December 1985 02:44:35.69  
Nicaragua  $h=20.5$   $m_b=5.9$   $M_{SZ}=6.0$ 

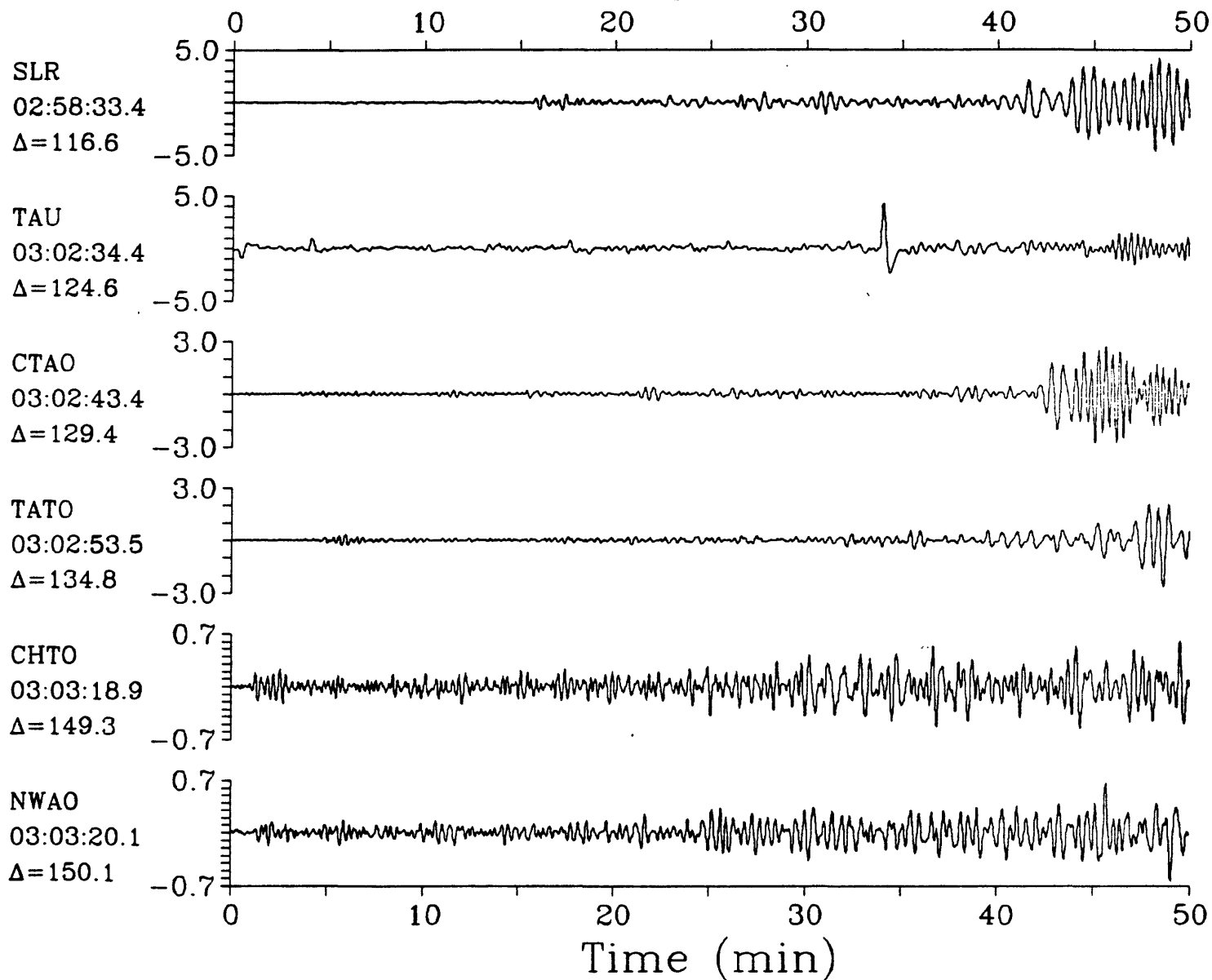
LPZ



LPZ

16 December 1985 02:44:35.69

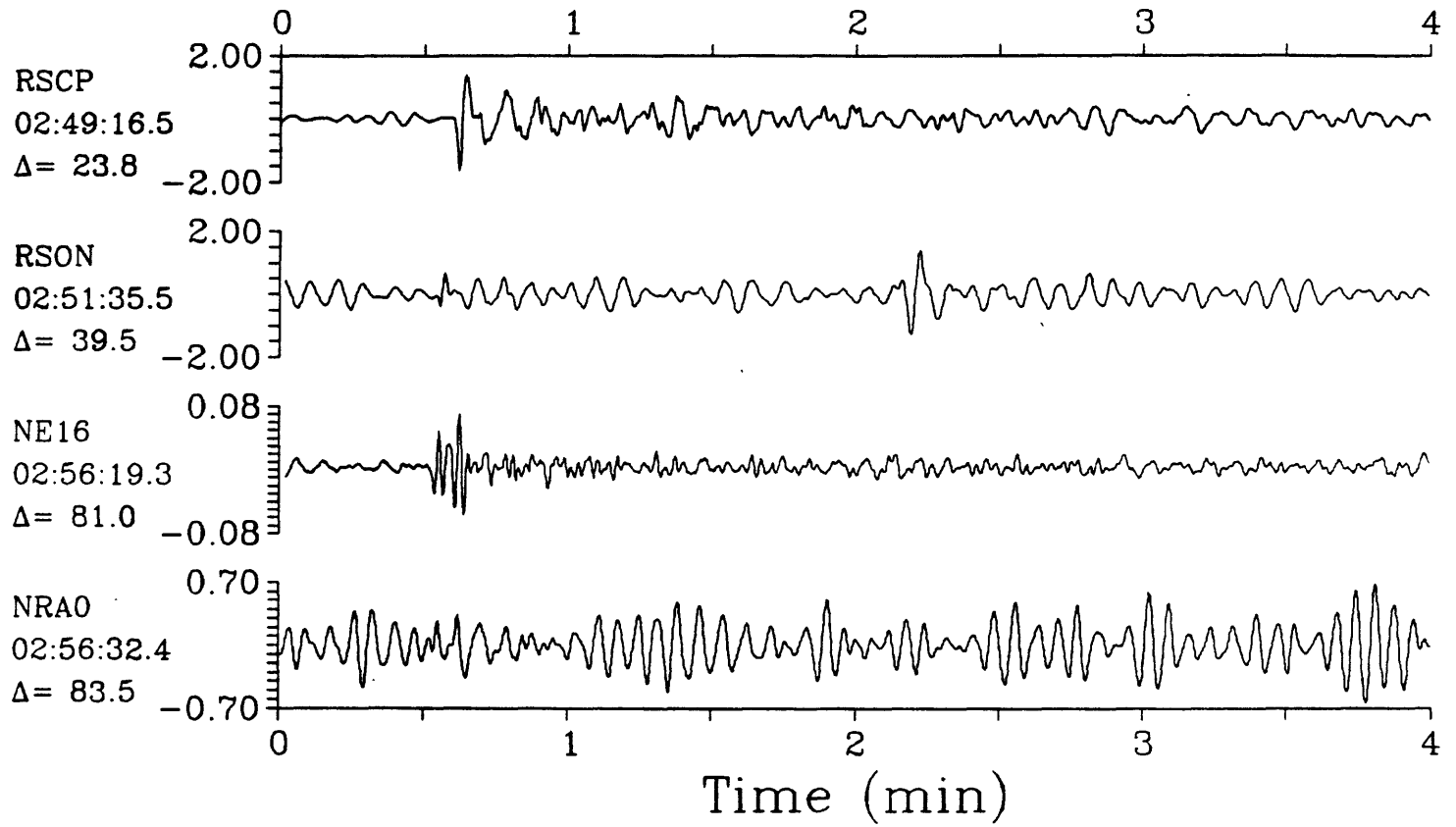
LPZ

Nicaragua  $h=20.5$   $m_b=5.9$   $M_{sz}=6.0$ 

IPZ

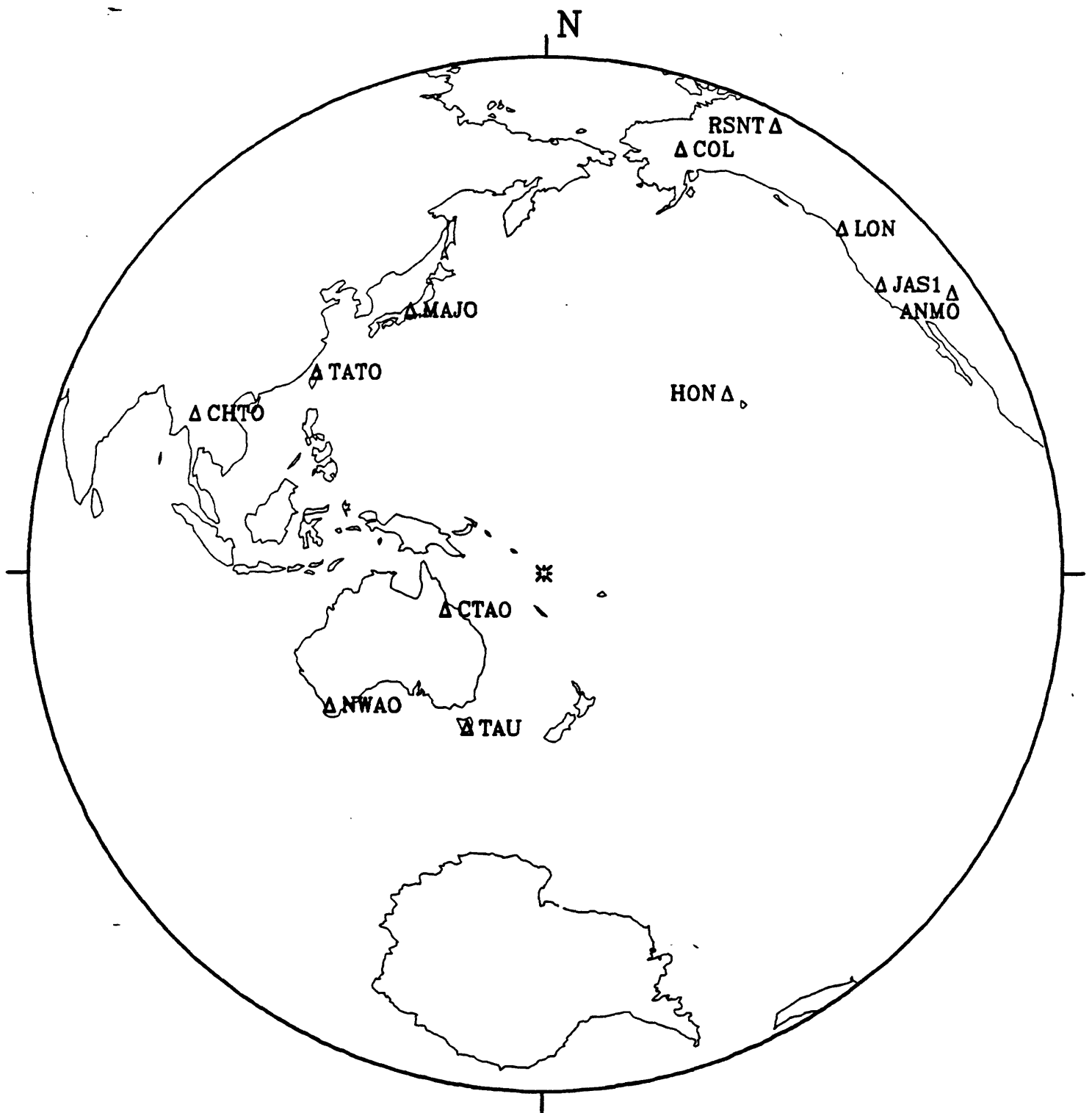
16 December 1985 02:44:35.69  
Nicaragua  $h=20.5$   $m_b=5.9$   $M_{sz}=6.0$ 

IPZ



16 December 1985 08:03:09.85

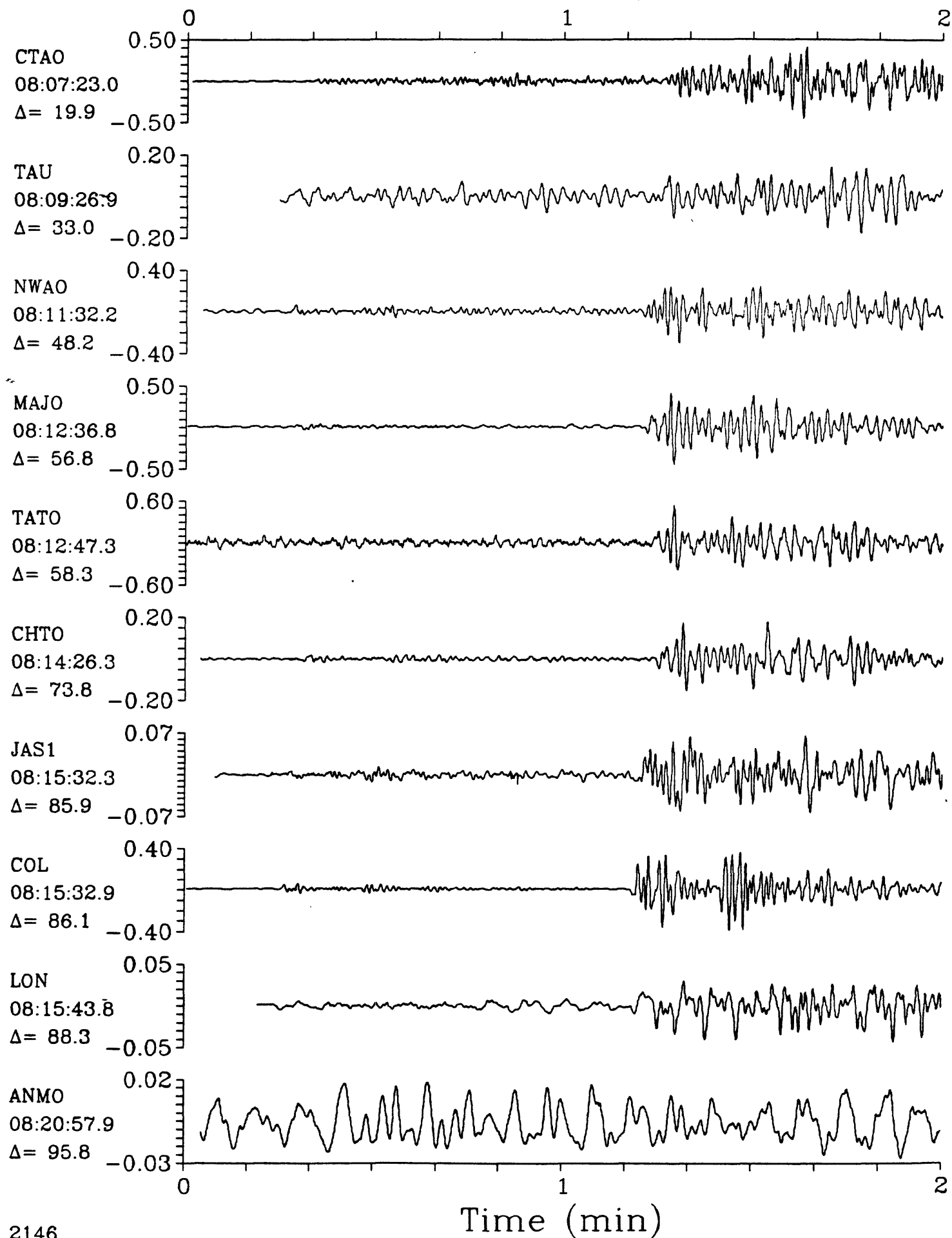
## Vanuatu Islands



SPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

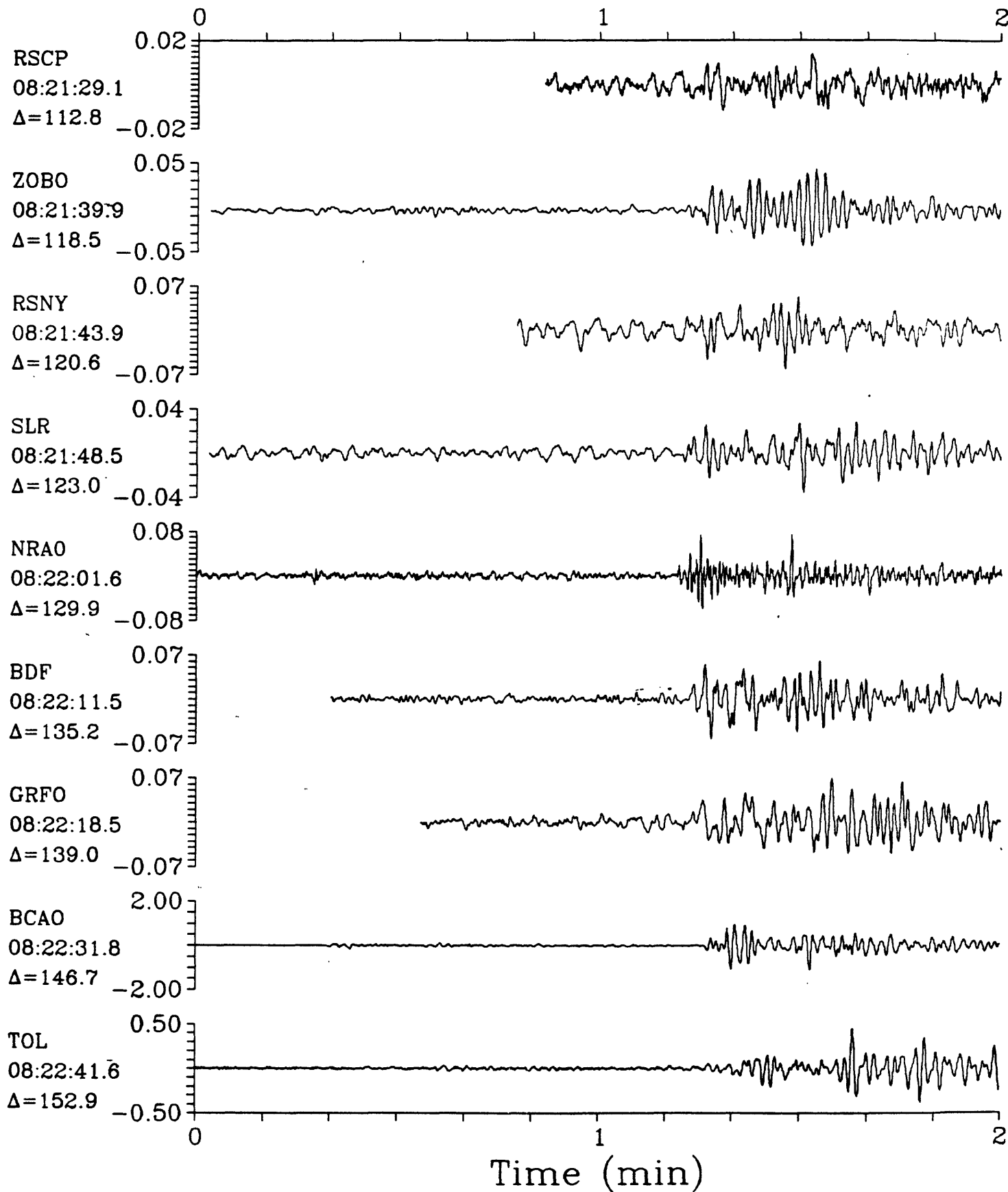
SPZ



SPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

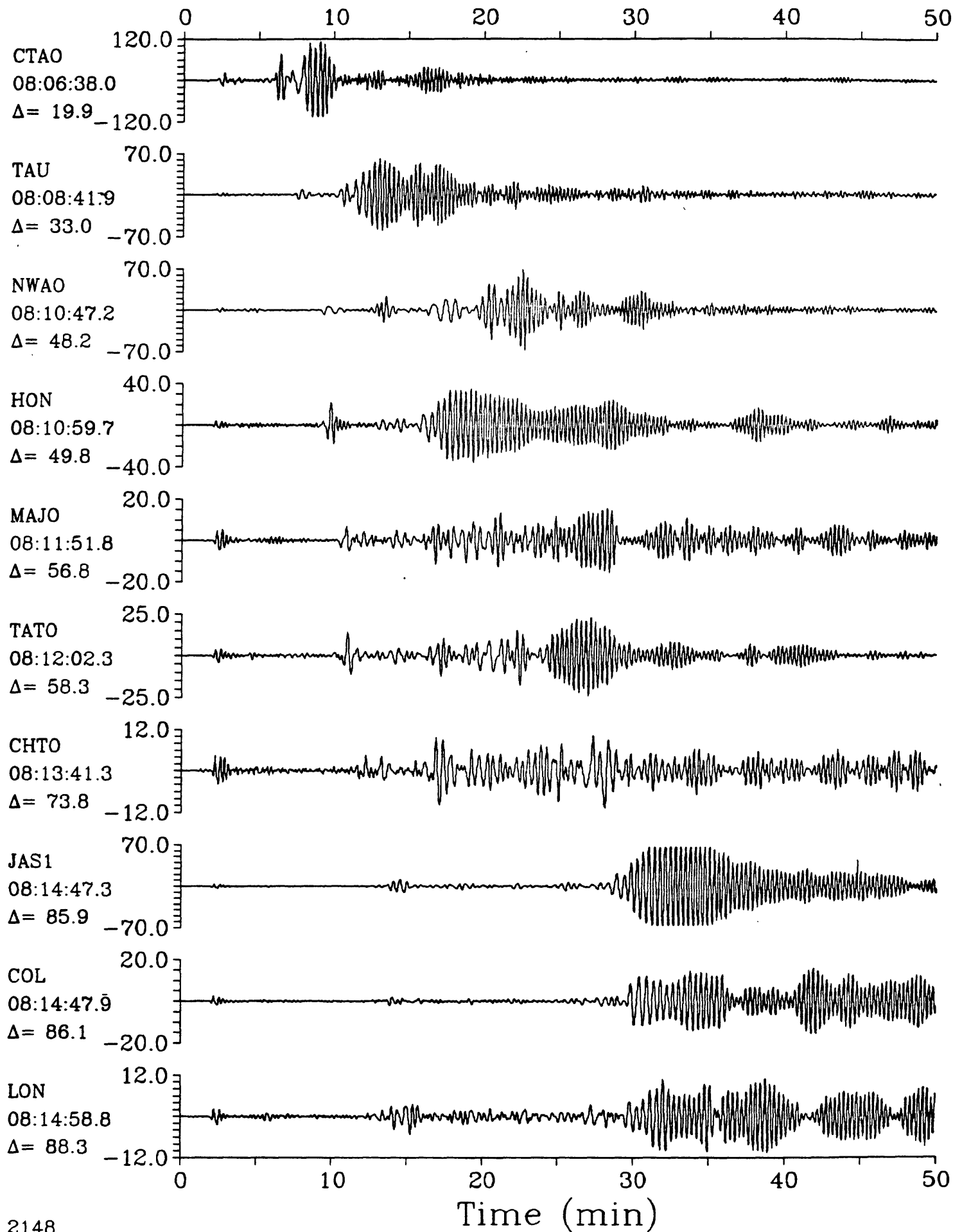
SPZ



LPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

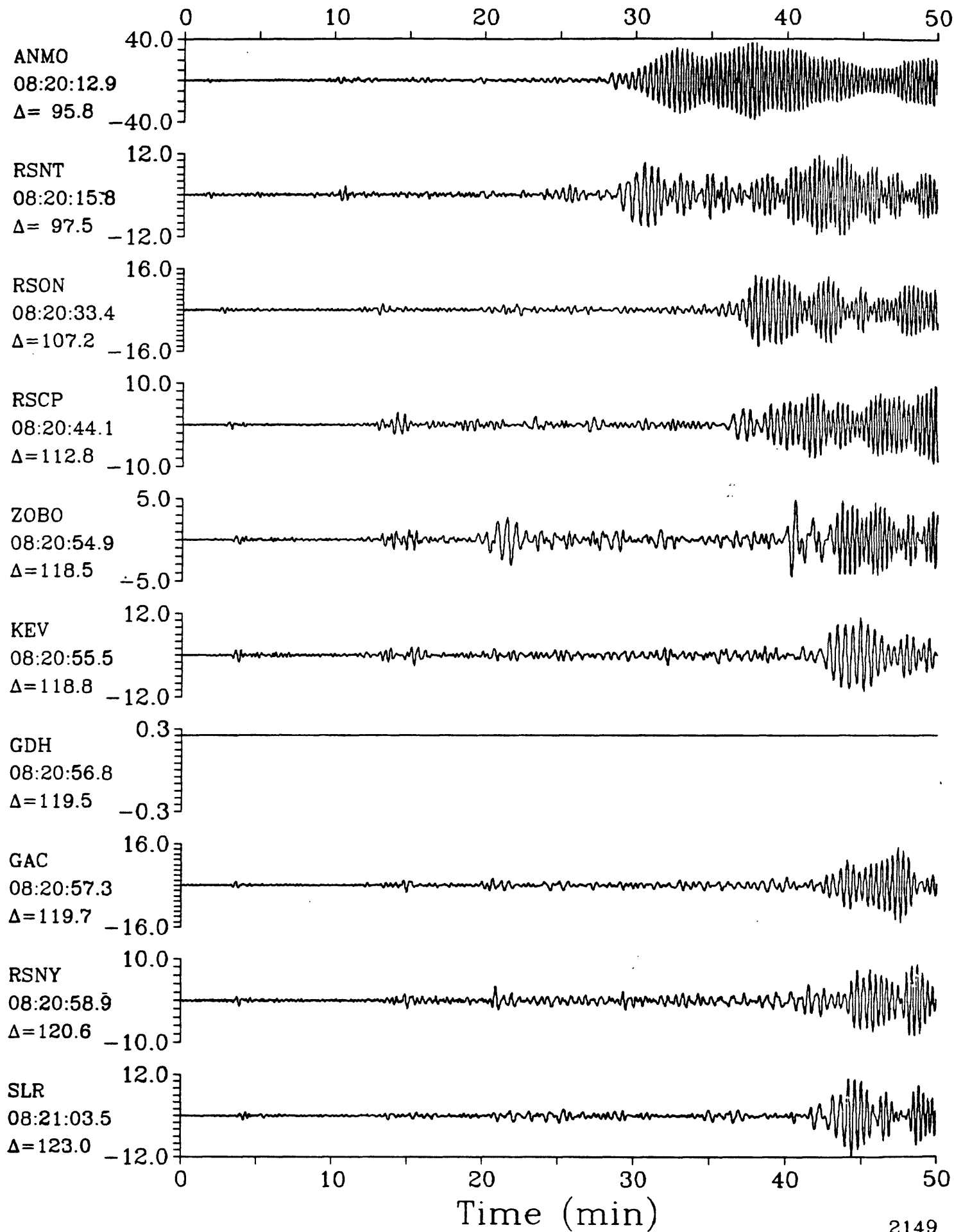
LPZ



LPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

LPZ

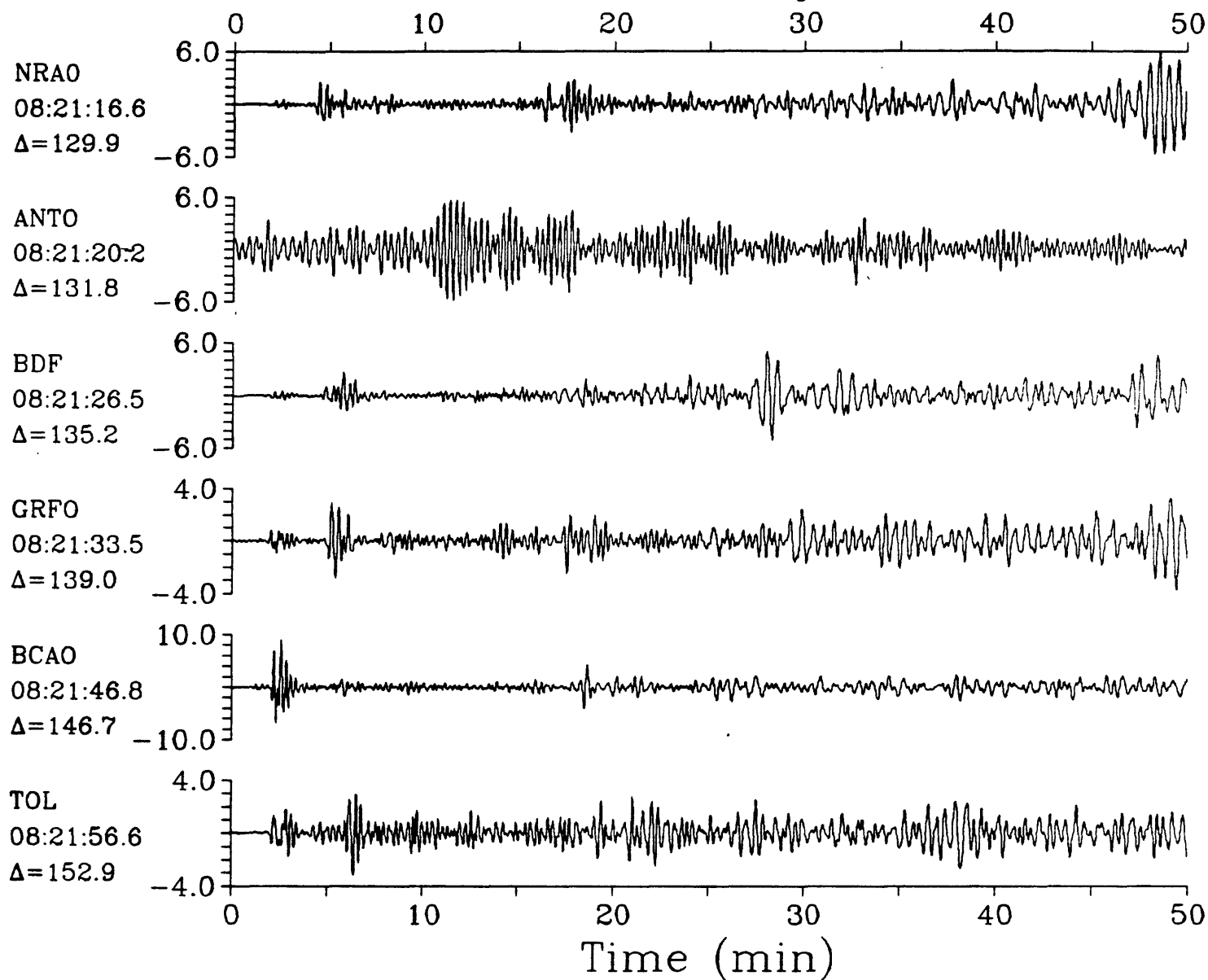




LPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

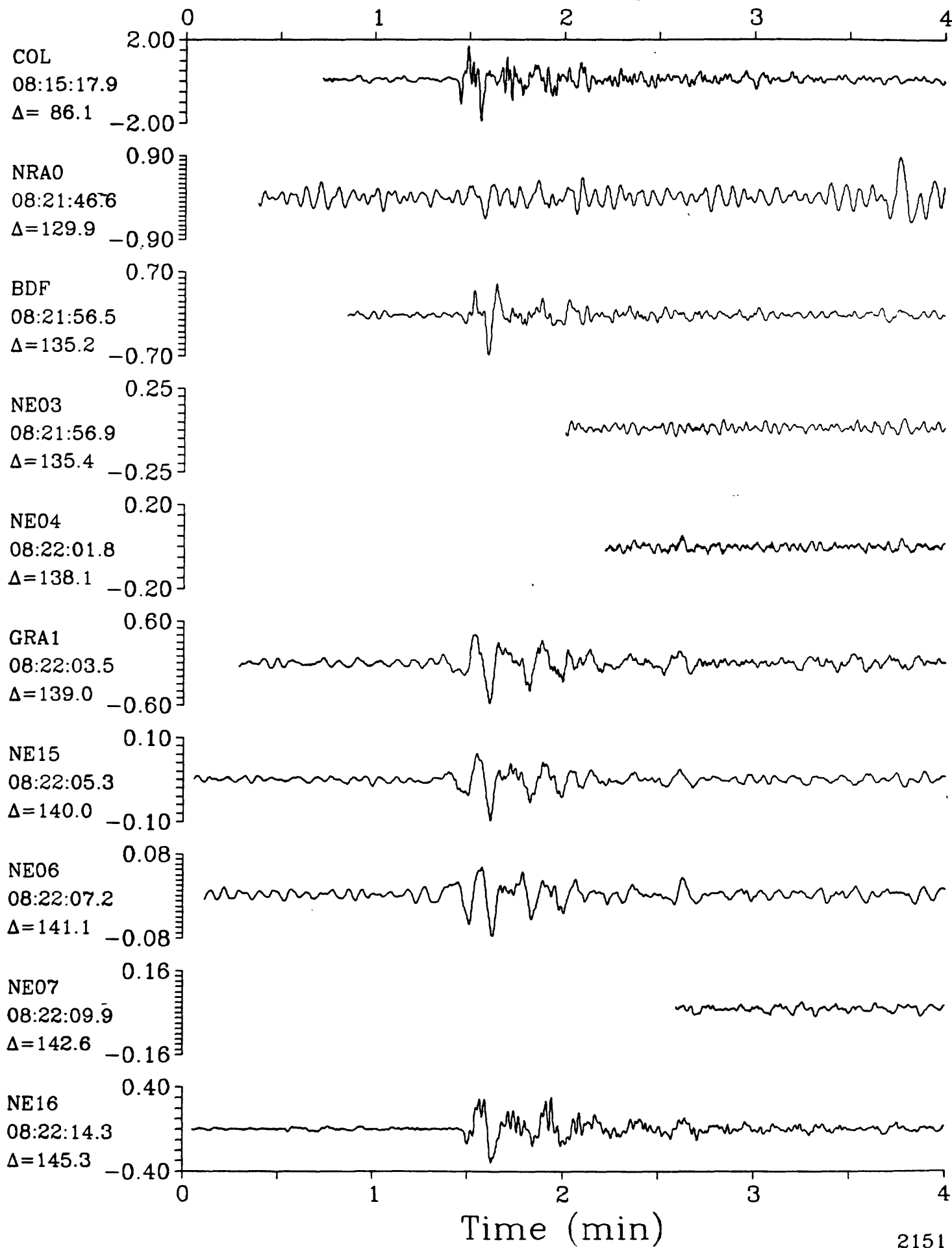
LPZ



IPZ

16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

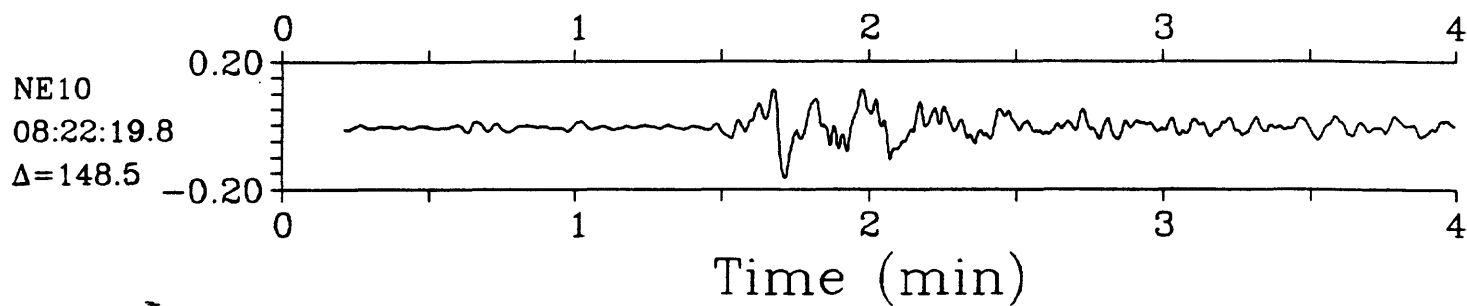
IPZ



IPZ

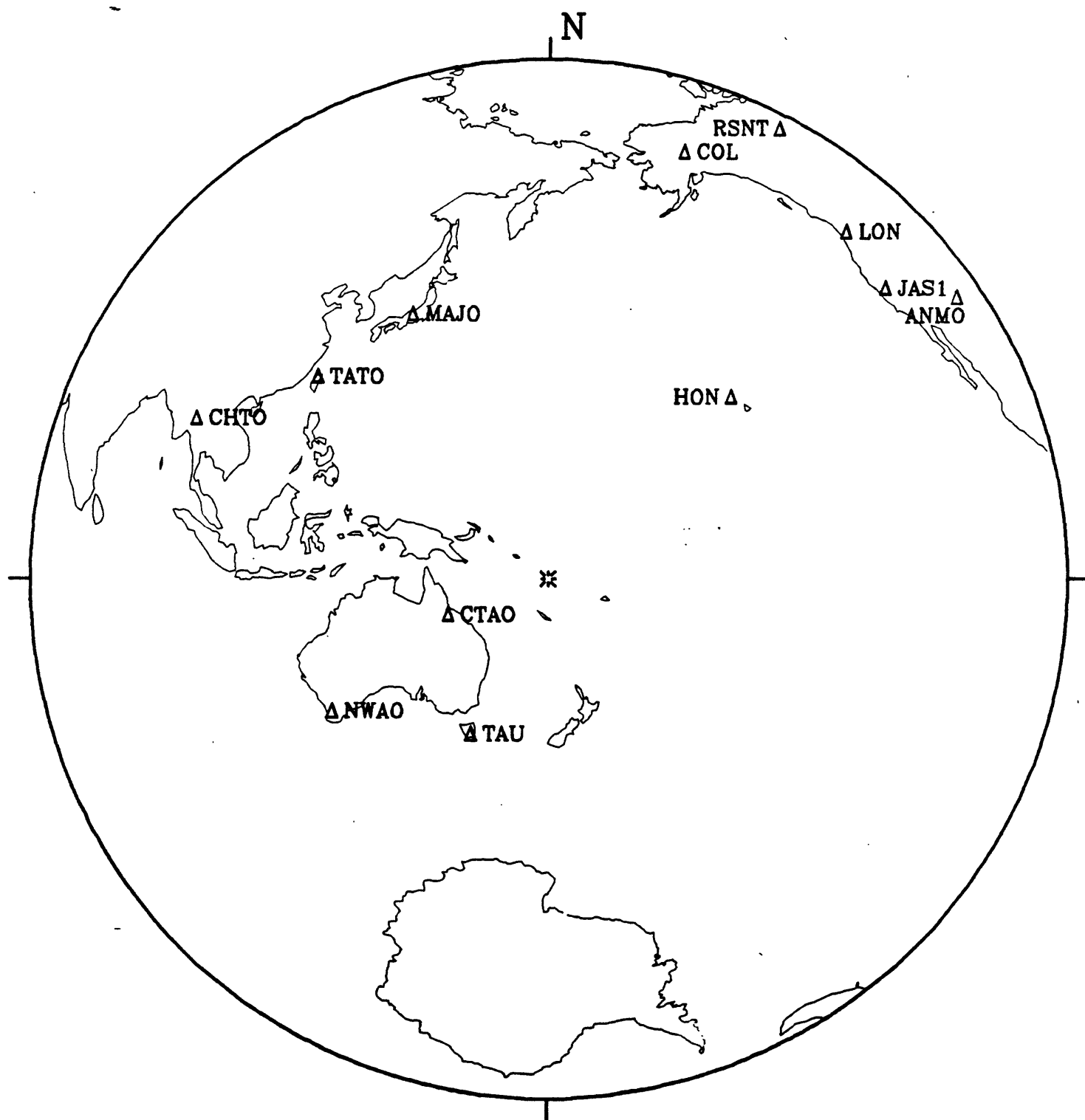
16 December 1985 08:03:09.85  
Vanuatu Islands  $h=33.0$   $m_b=5.5$

IPZ



16 December 1985 08:04:06.19

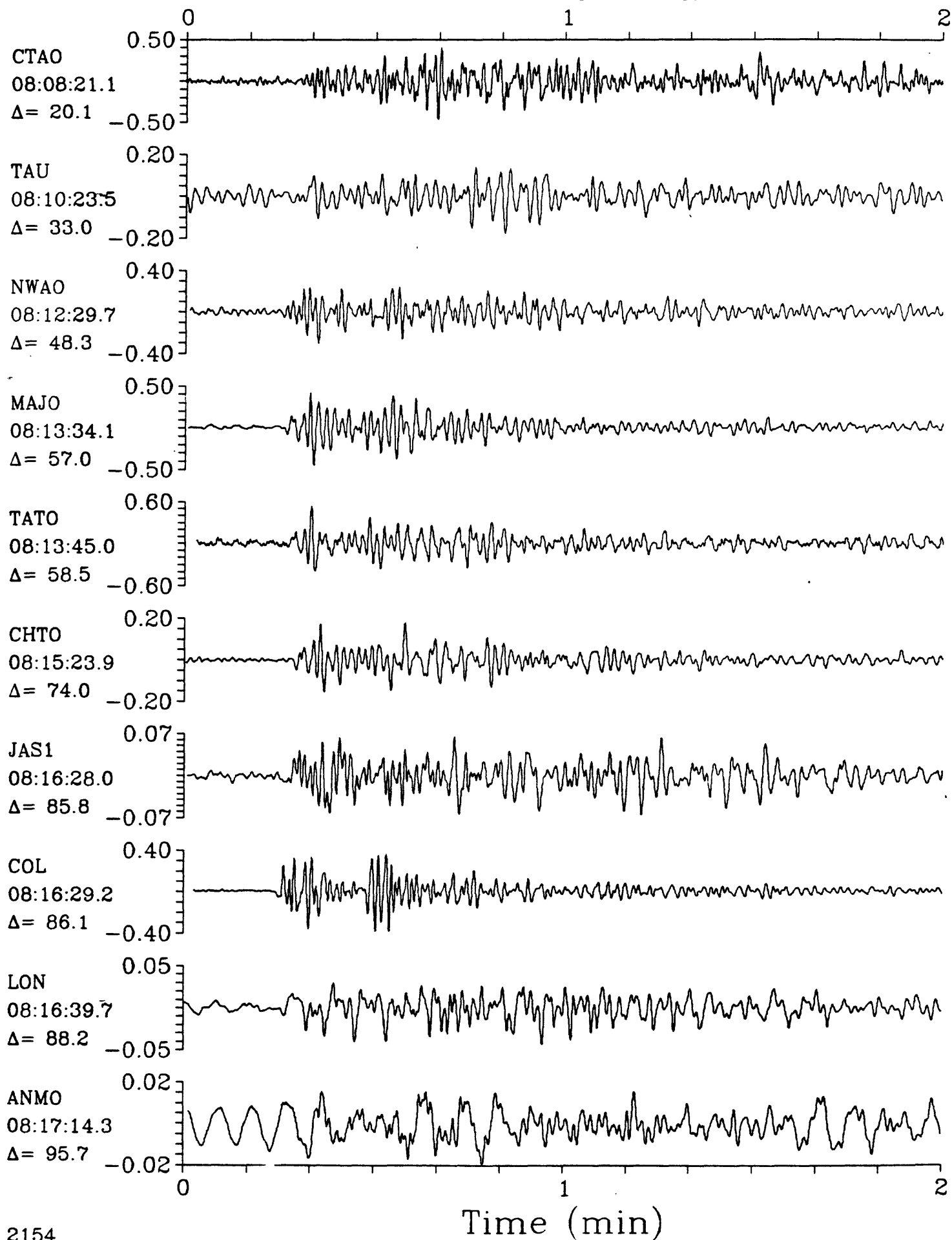
## Vanuatu Islands



SPZ

16 December 1985 08:04:06.19  
Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{SZ}=6.7$ 

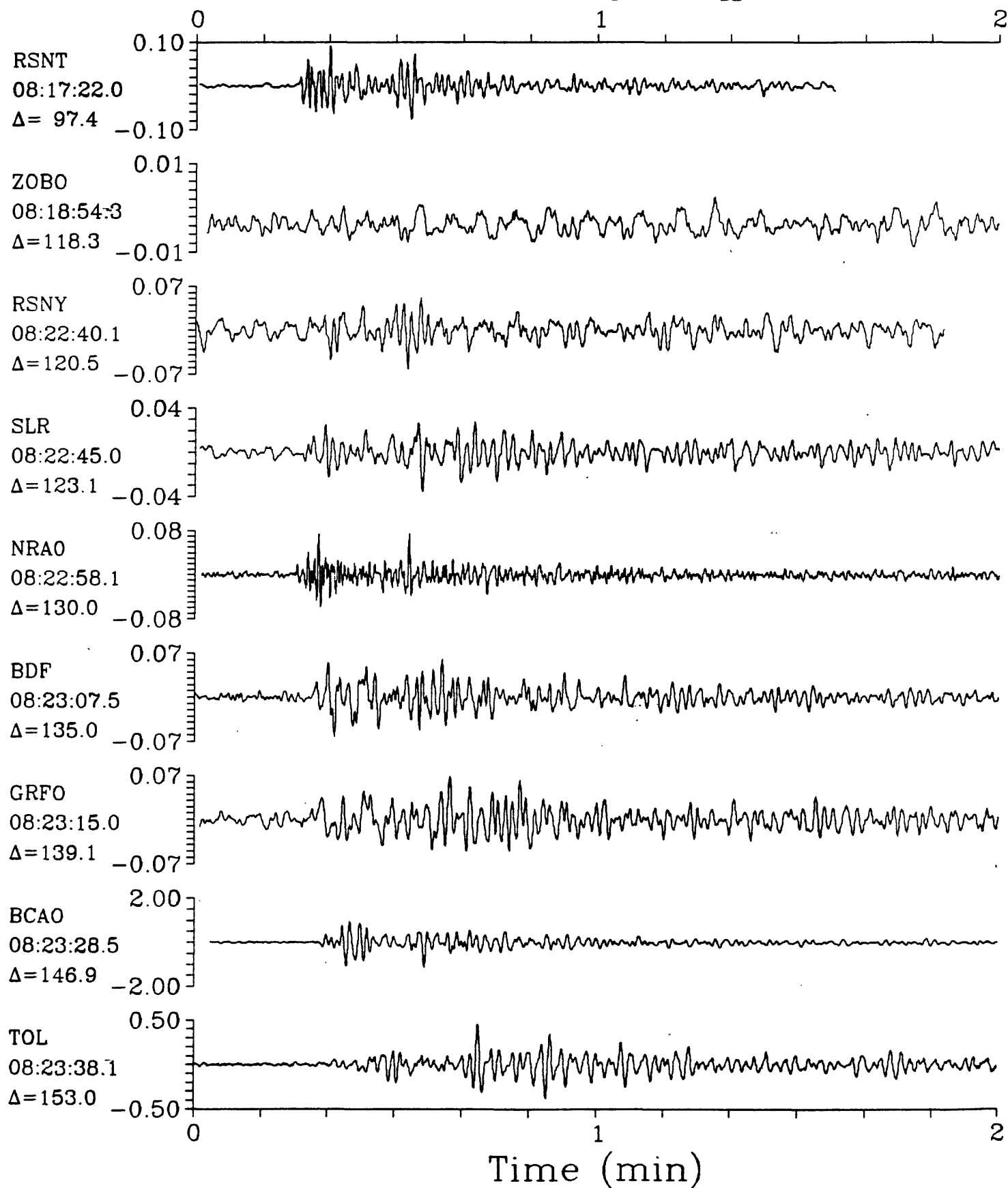
SPZ



SPZ

16 December 1985 08:04:06.19

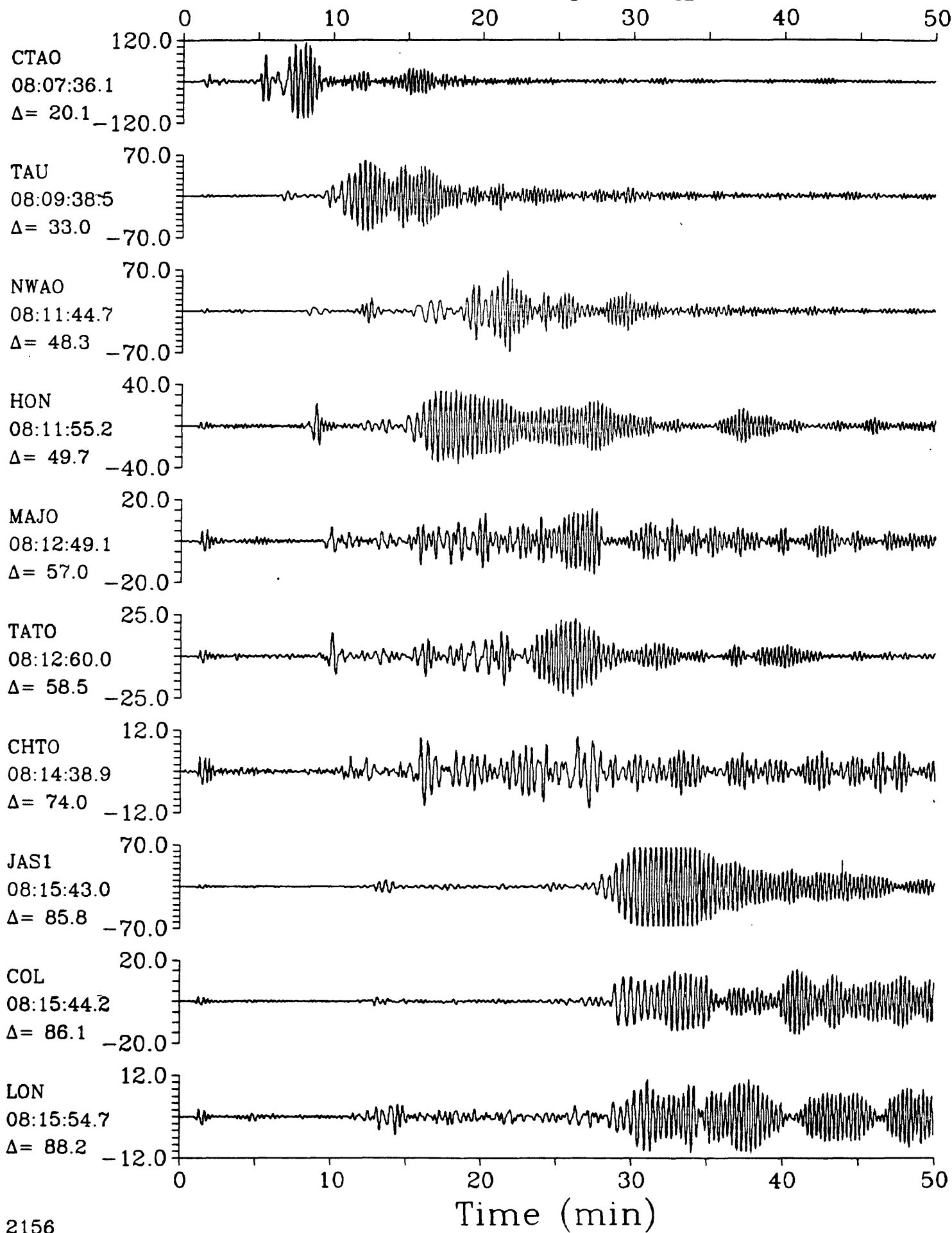
SPZ

Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{sz}=6.7$ 

LPZ

16 December 1985 08:04:06.19  
Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{SZ}=6.7$ 

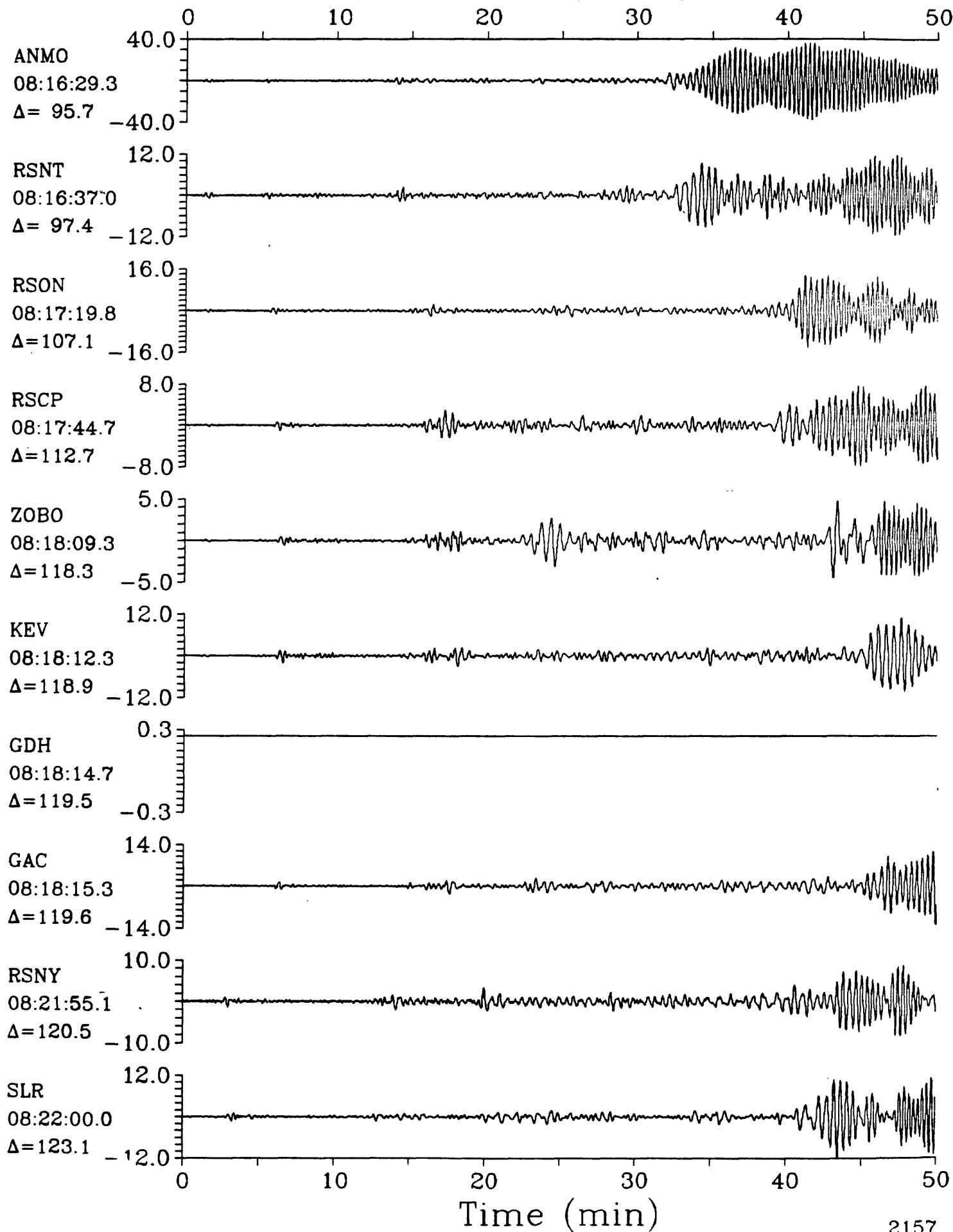
LPZ



LPZ

16 December 1985 08:04:06.19  
Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{sz}=6.7$ 

LPZ

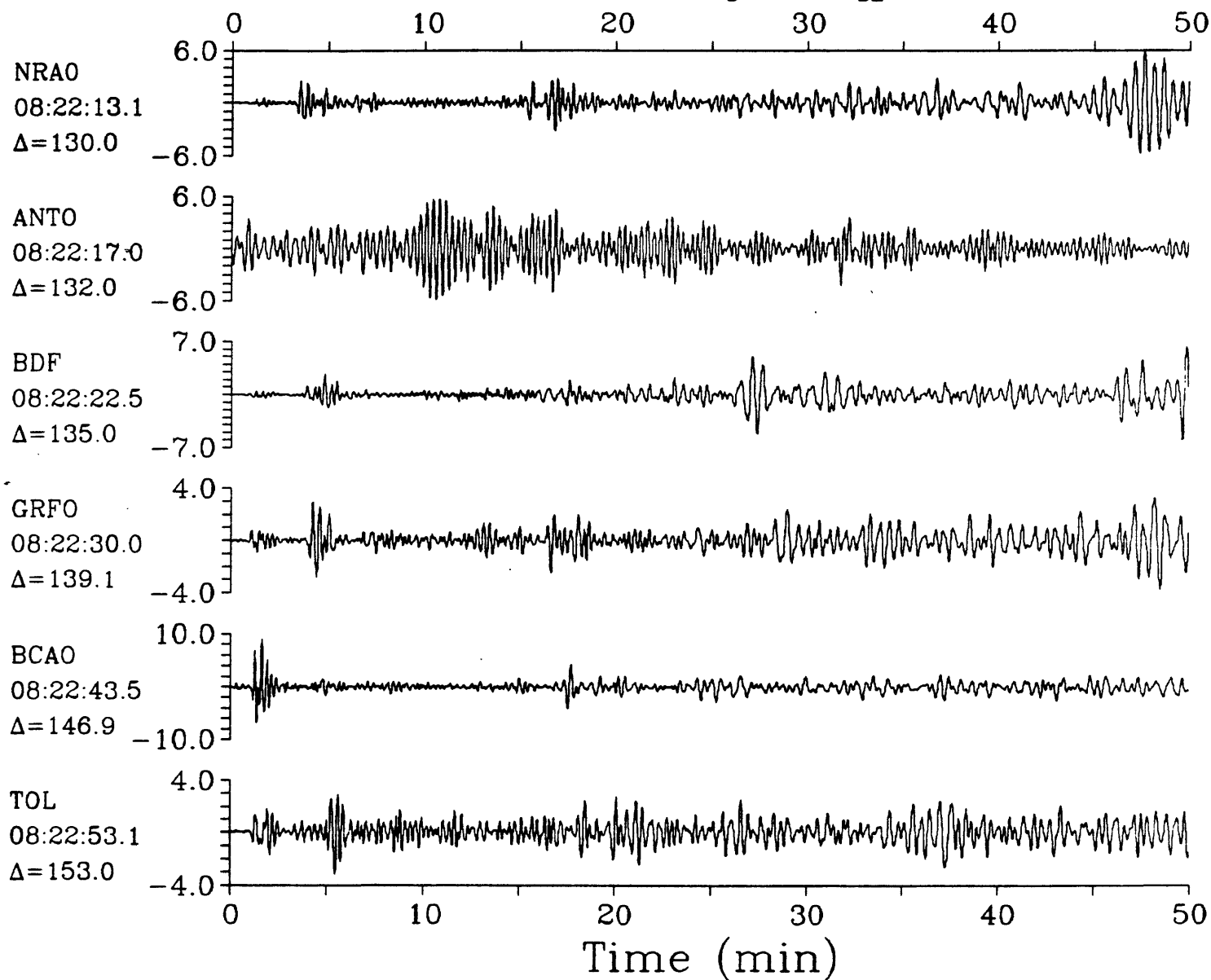




LPZ

16 December 1985 08:04:06.19

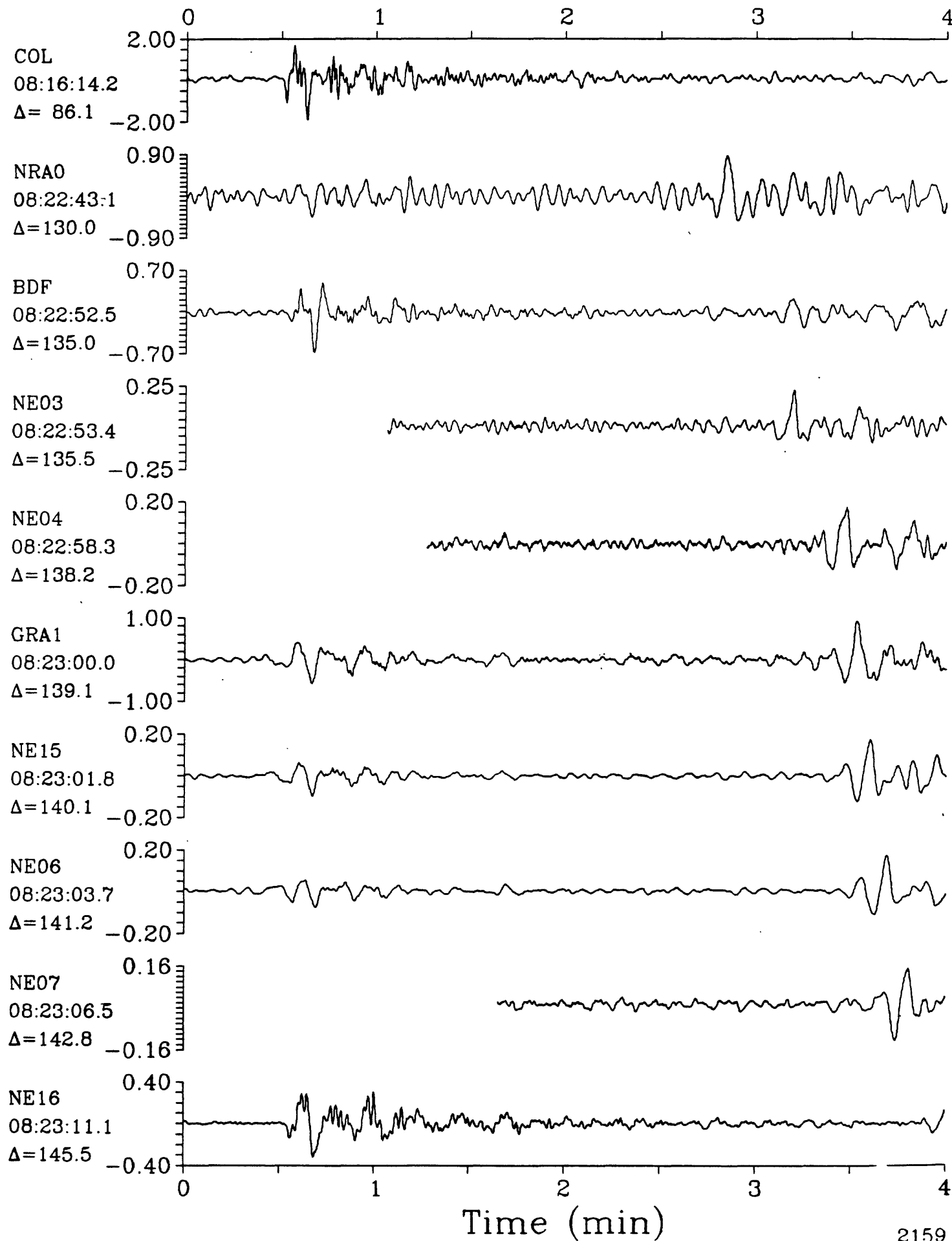
LPZ

Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{sz}=6.7$ 

IPZ

16 December 1985 08:04:06.19

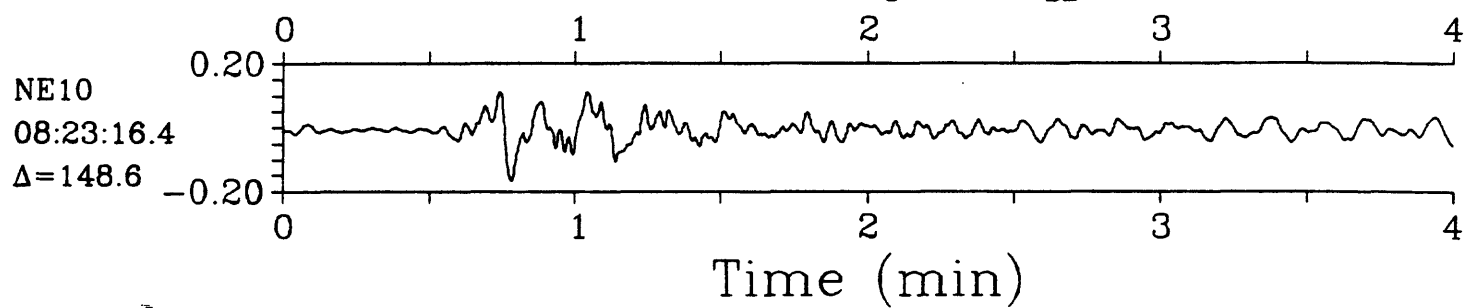
IPZ

Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{sz}=6.7$ 

IPZ

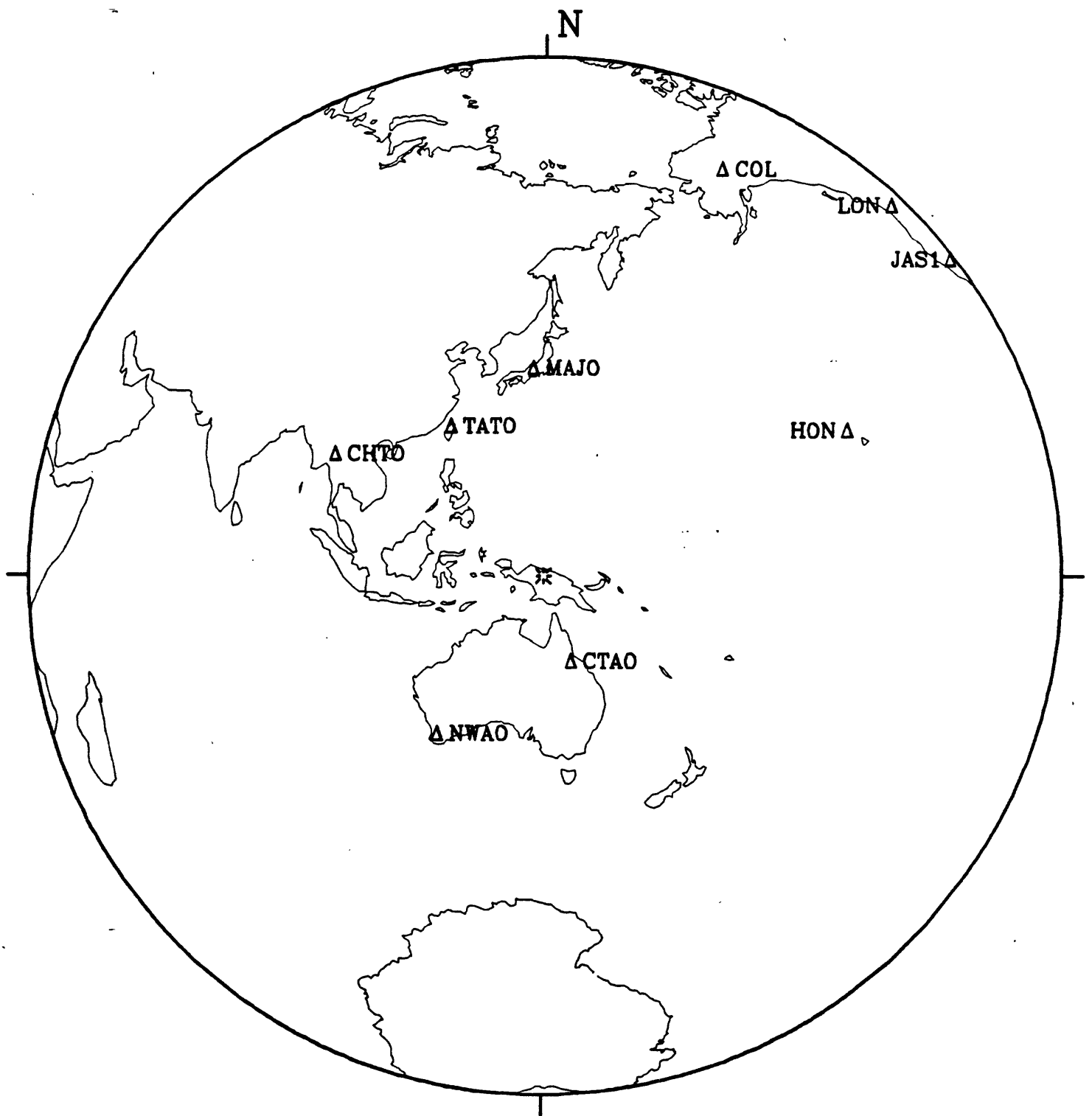
16 December 1985 08:04:06.19

IPZ

Vanuatu Islands  $h=33.0$   $m_b=6.0$   $M_{sz}=6.7$ 

20 December 1985 03:49:07.96

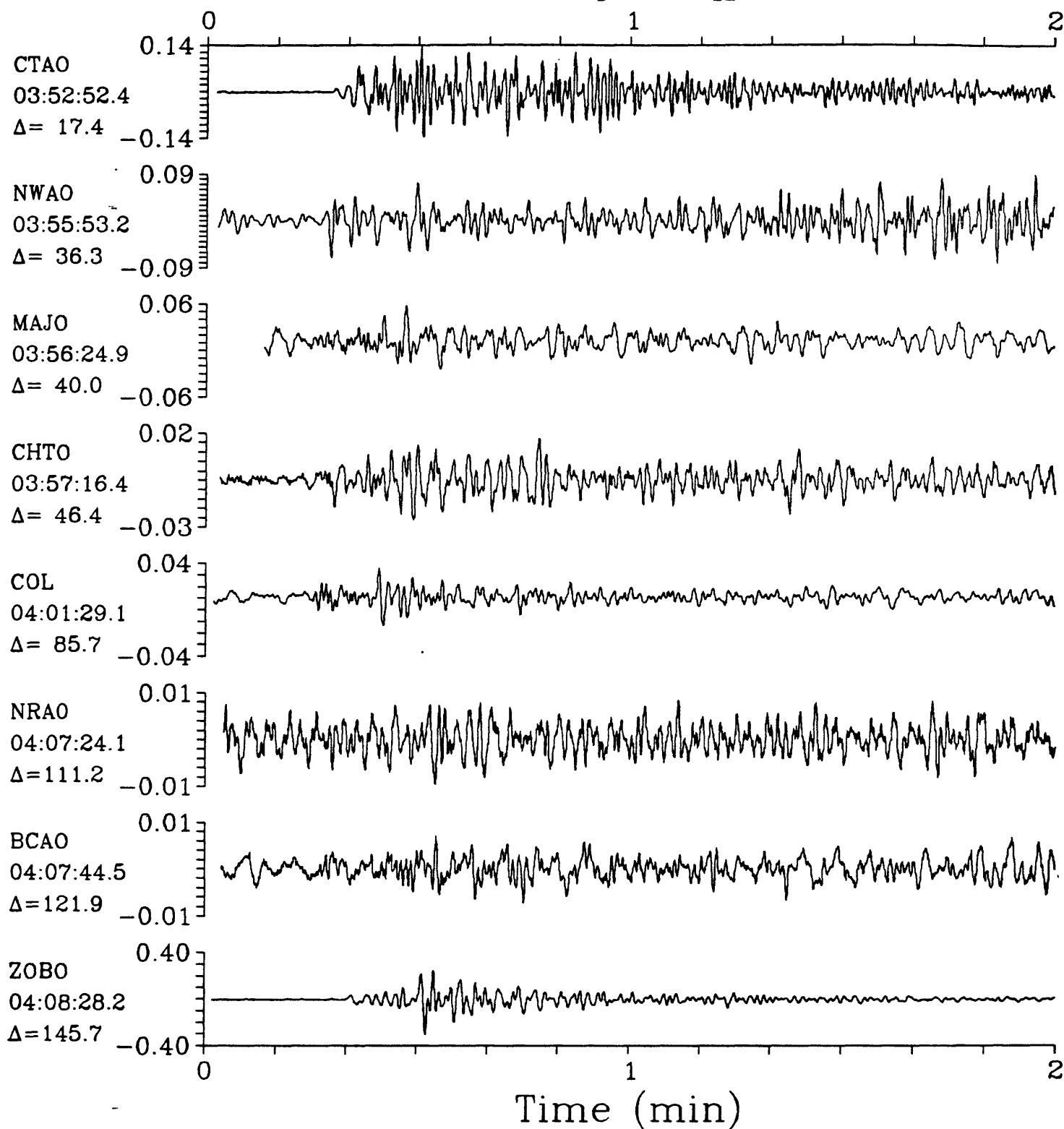
## West Irian



SPZ

20 December 1985 03:49:07.96  
West Irian  $h=33.0$   $m_b=5.5$   $M_{sz}=5.4$ 

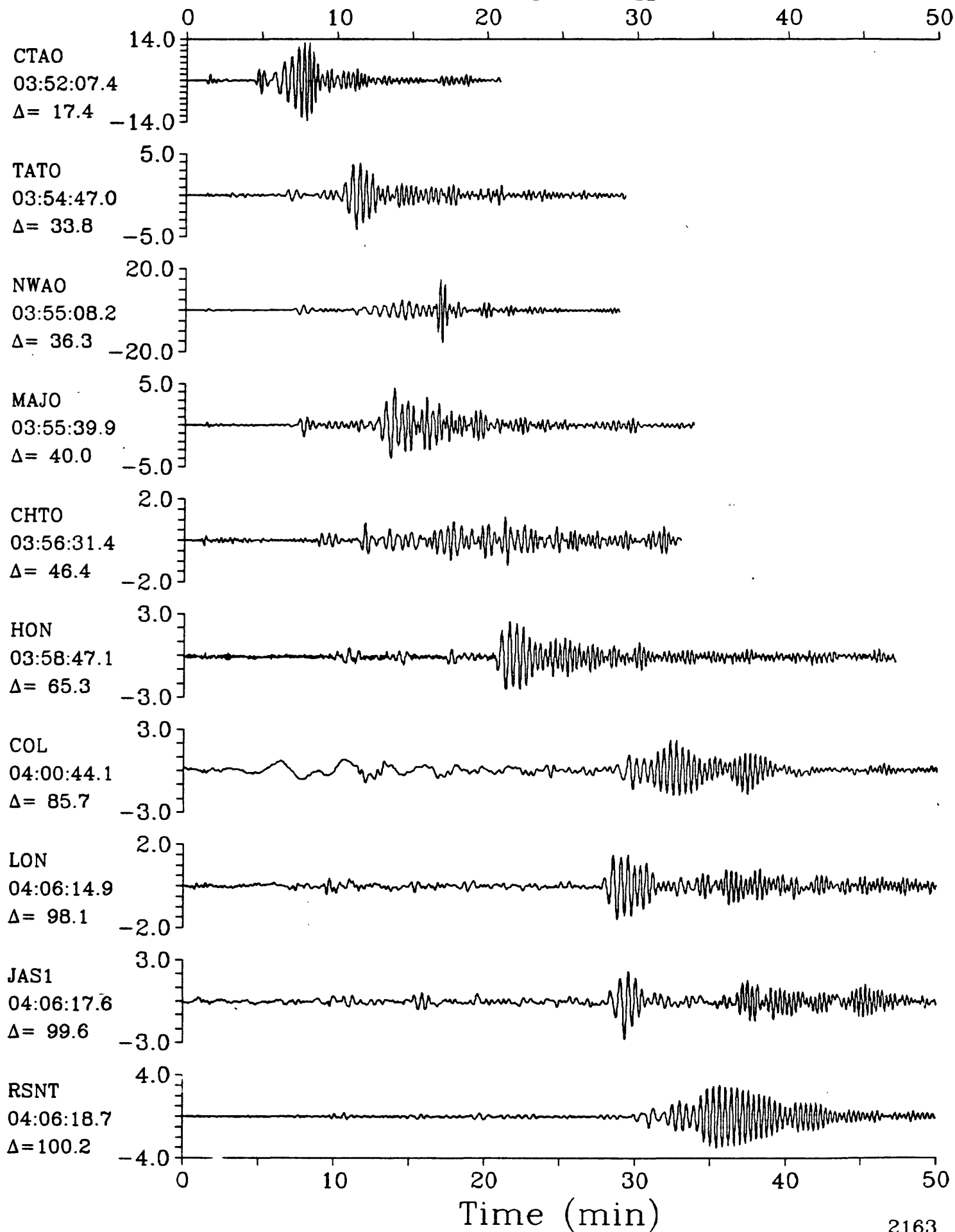
SPZ



LPZ

20 December 1985 03:49:07.96  
West Irian  $h=33.0$   $m_b=5.5$   $M_{SZ}=5.4$ 

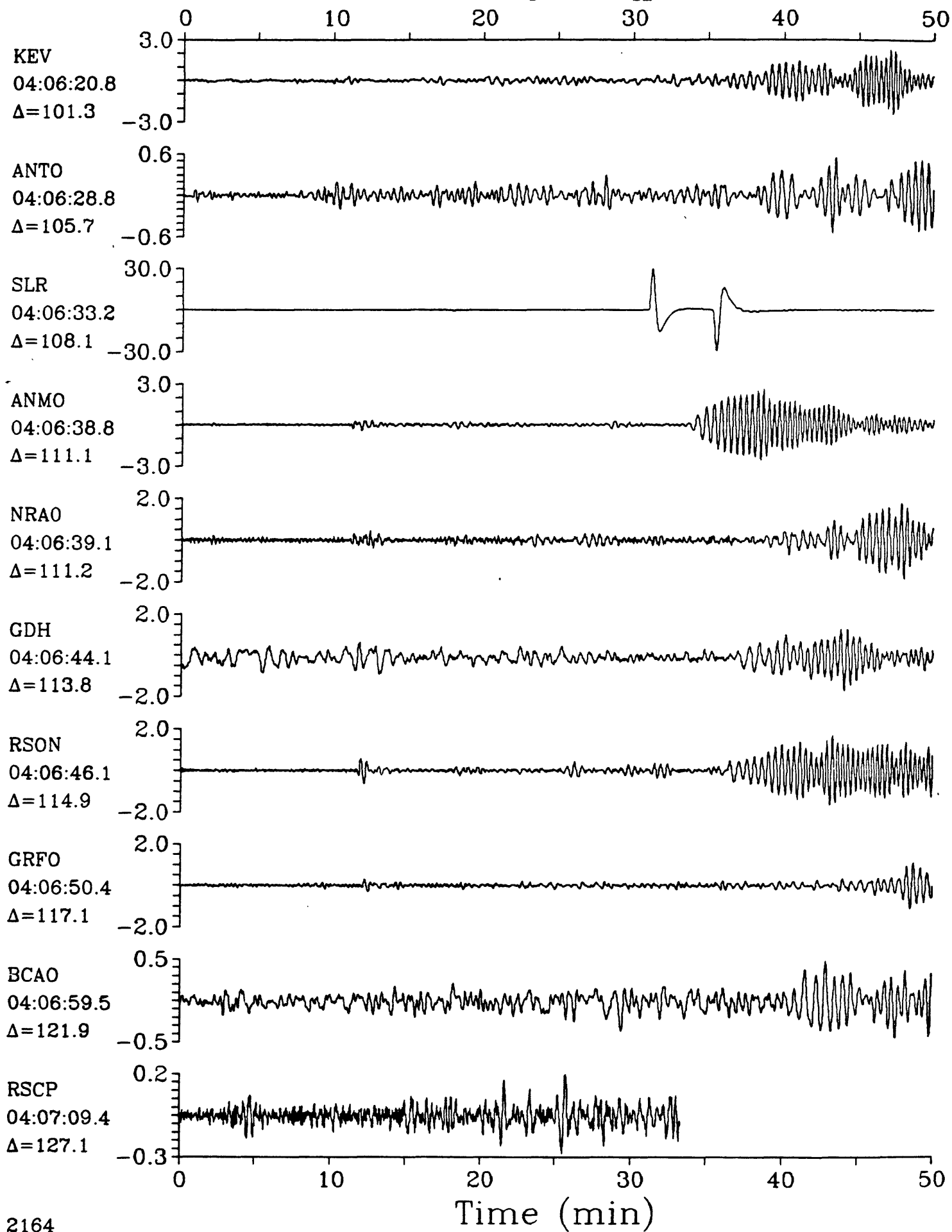
LPZ



LPZ

20 December 1985 03:49:07.96  
West Irian  $h=33.0$   $m_b=5.5$   $M_{sz}=5.4$ 

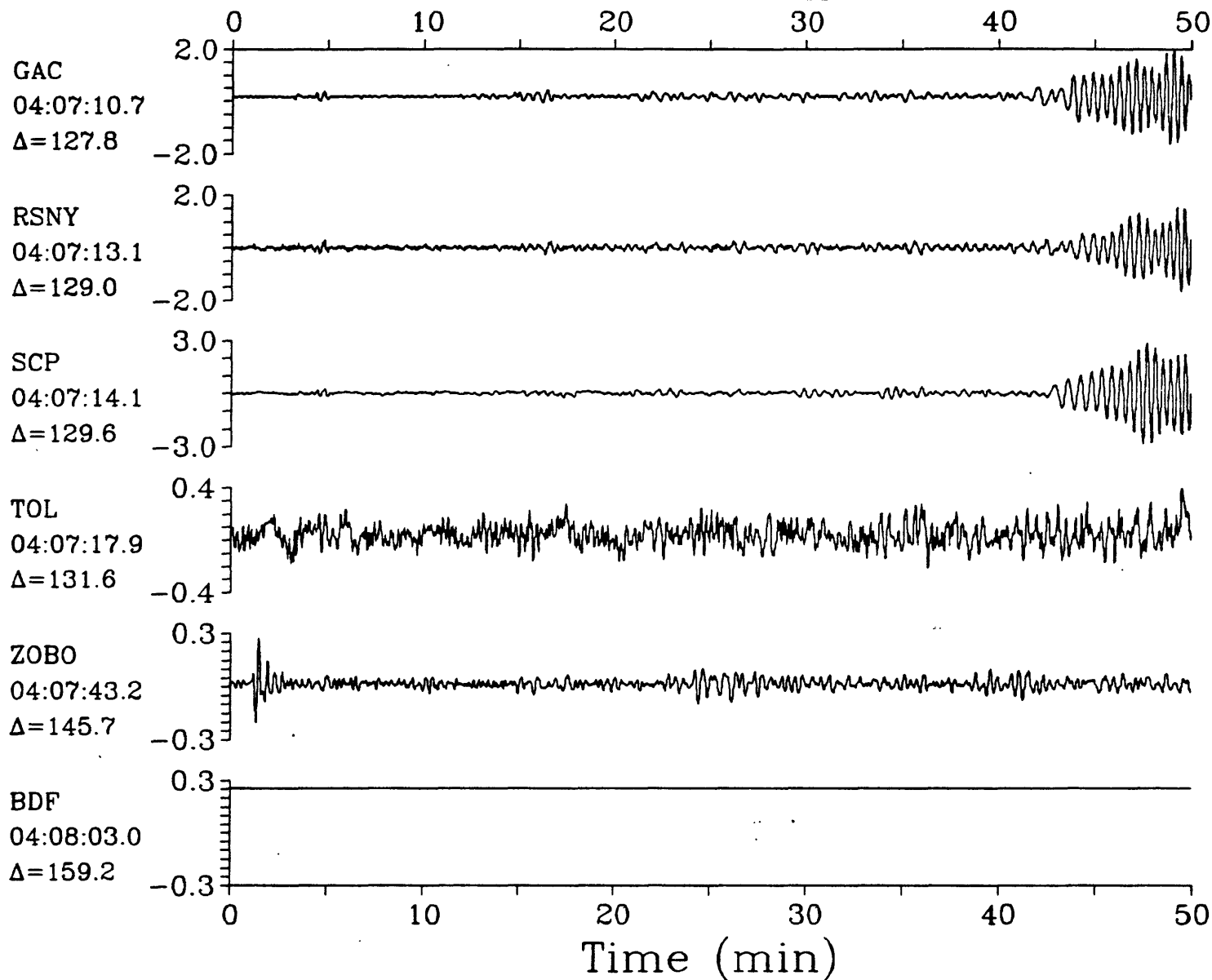
LPZ



LPZ

20 December 1985 03:49:07.96  
West Irian  $h=33.0$   $m_b=5.5$   $M_{sz}=5.4$ 

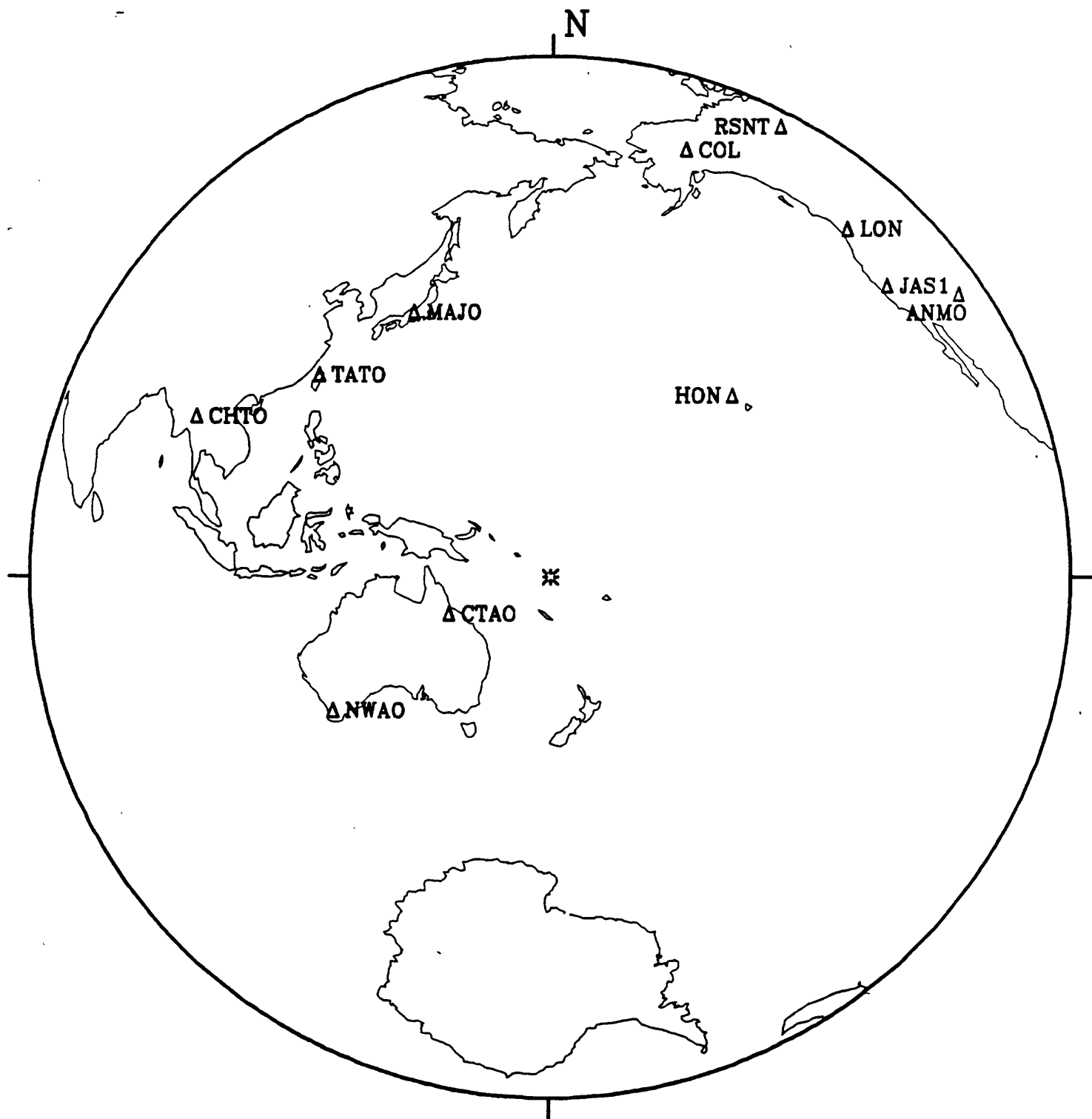
LPZ





21 December 1985 01:13:21.09

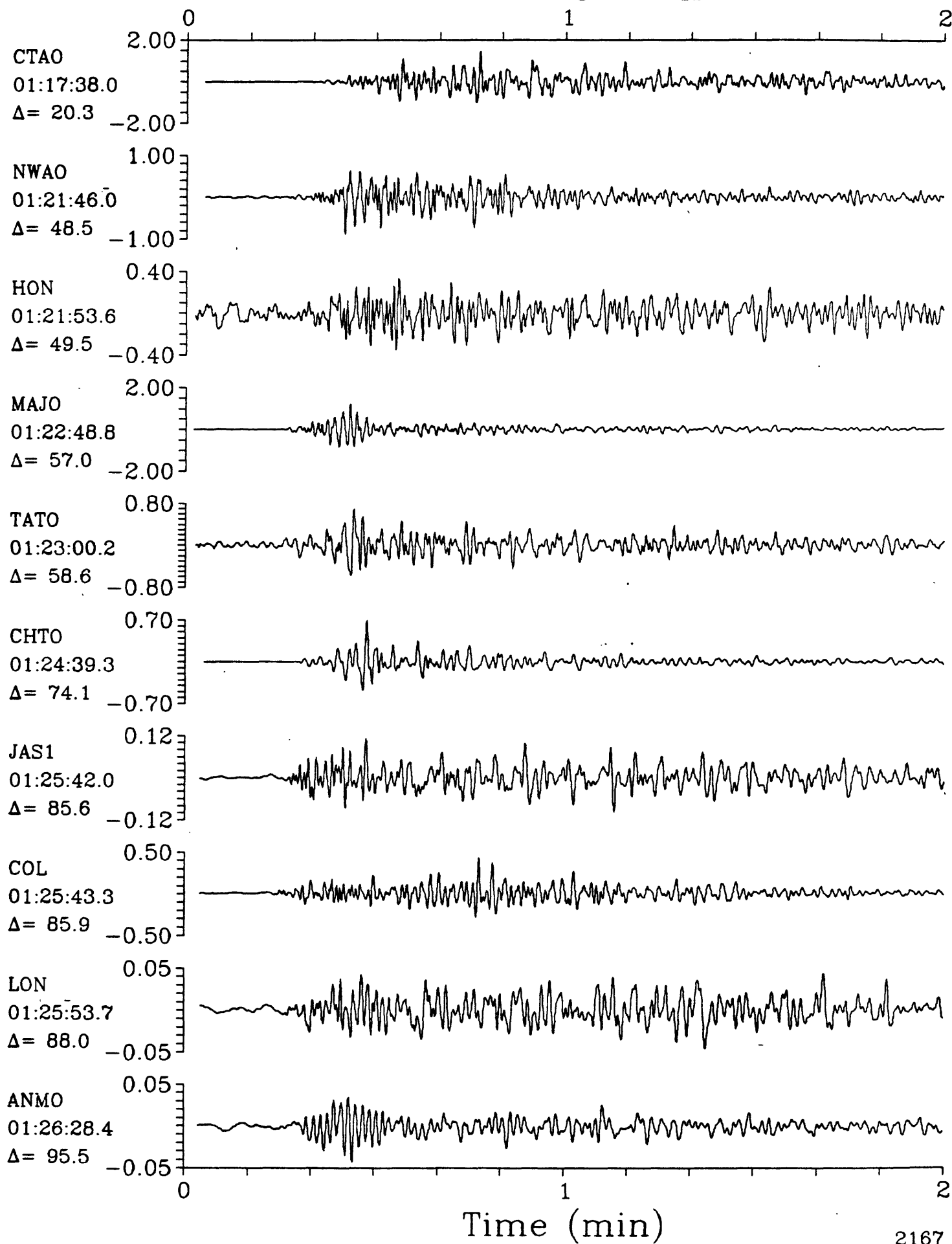
## Vanuatu Islands



SPZ

21 December 1985 01:13:21.09  
Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 

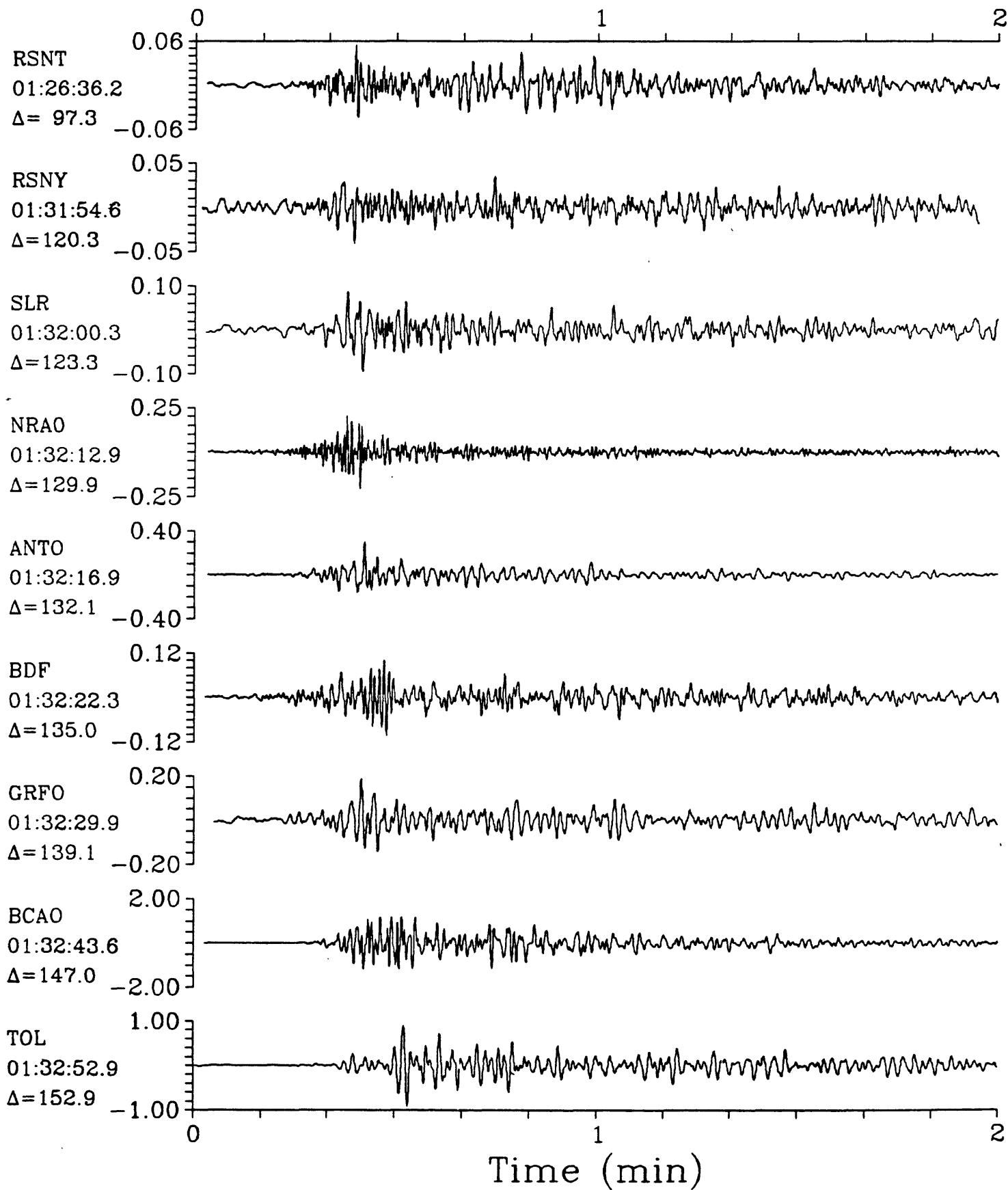
SPZ



SPZ

21 December 1985 01:13:21.09  
Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 

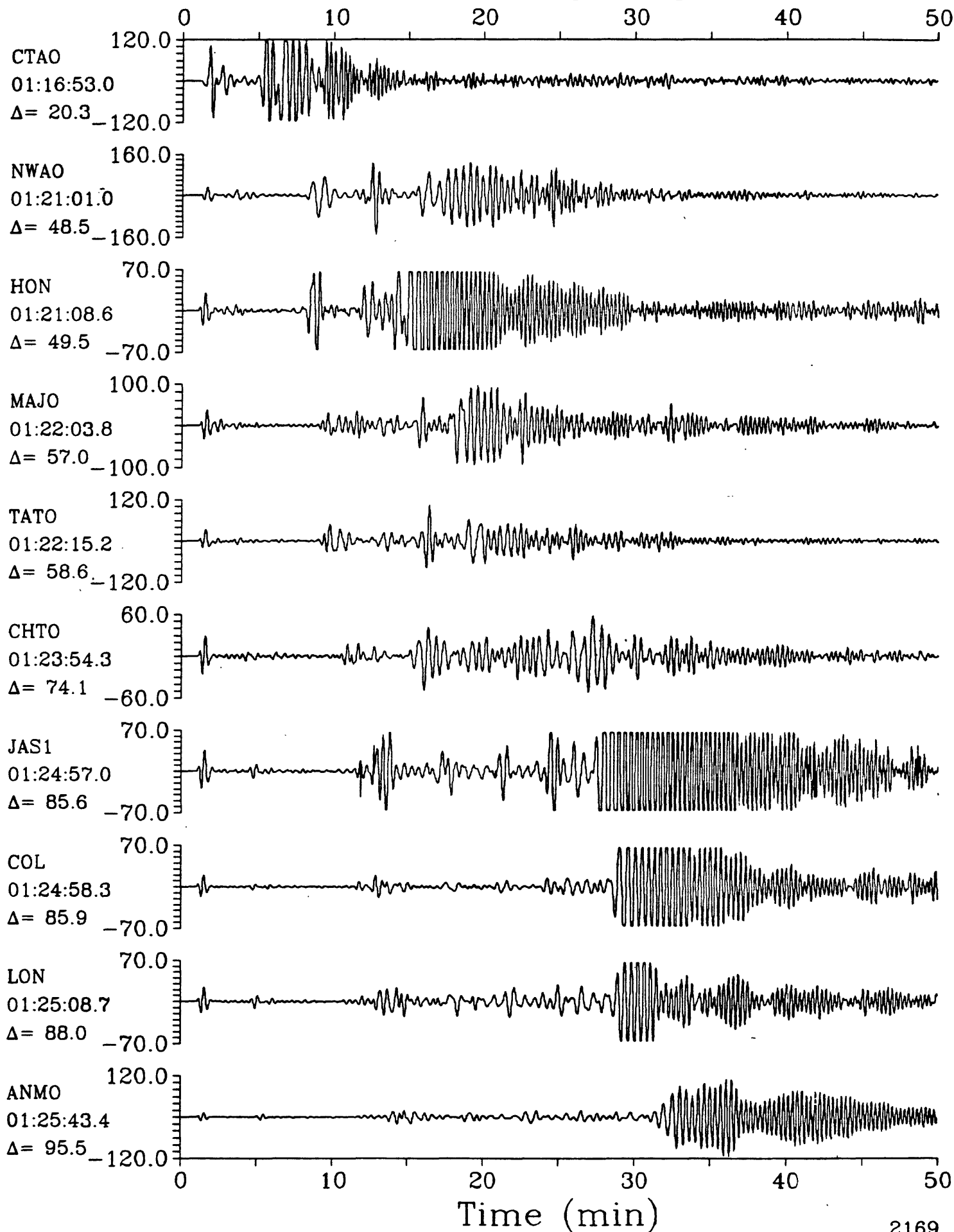
SPZ



LPZ

21 December 1985 01:13:21.09

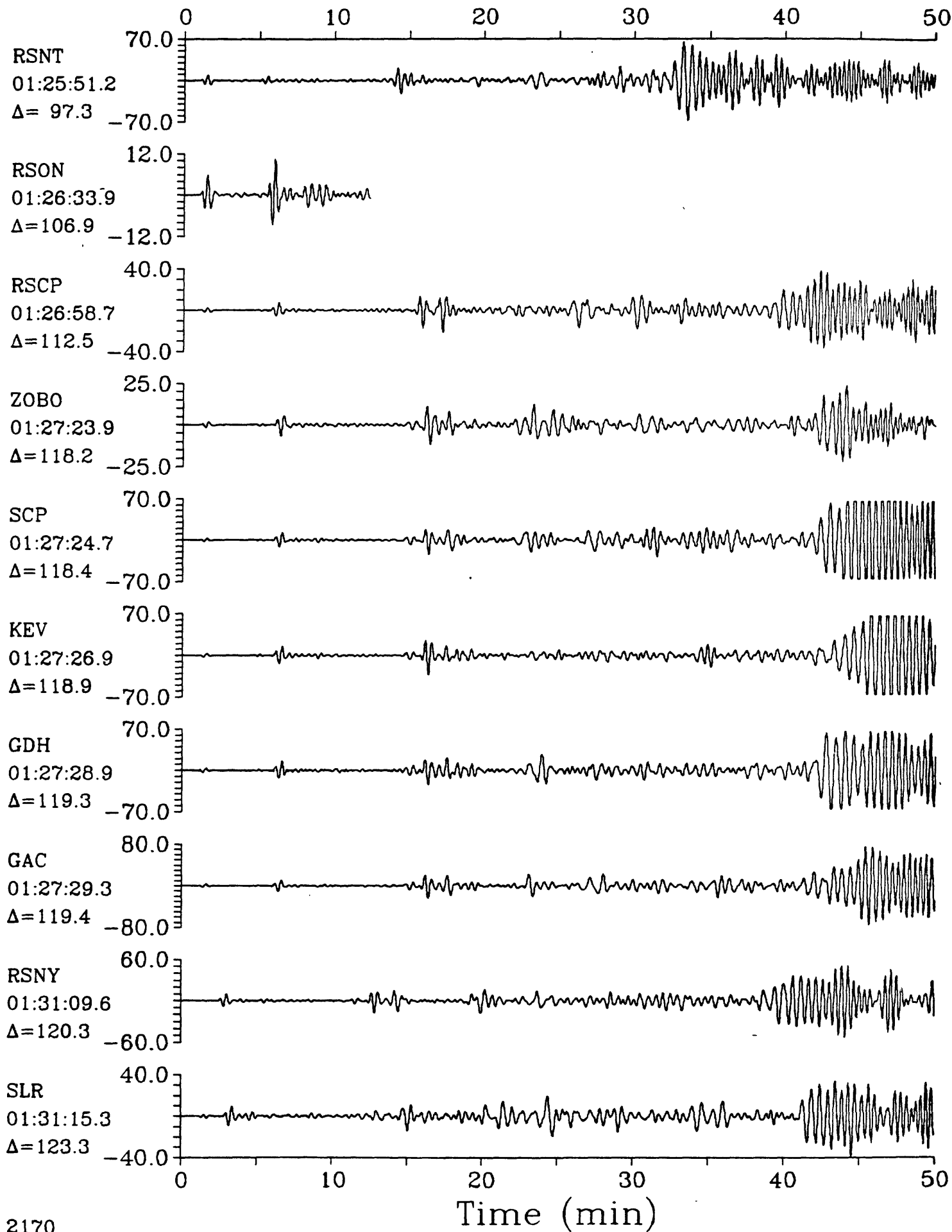
LPZ

Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 

LPZ

21 December 1985 01:13:21.09  
Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 

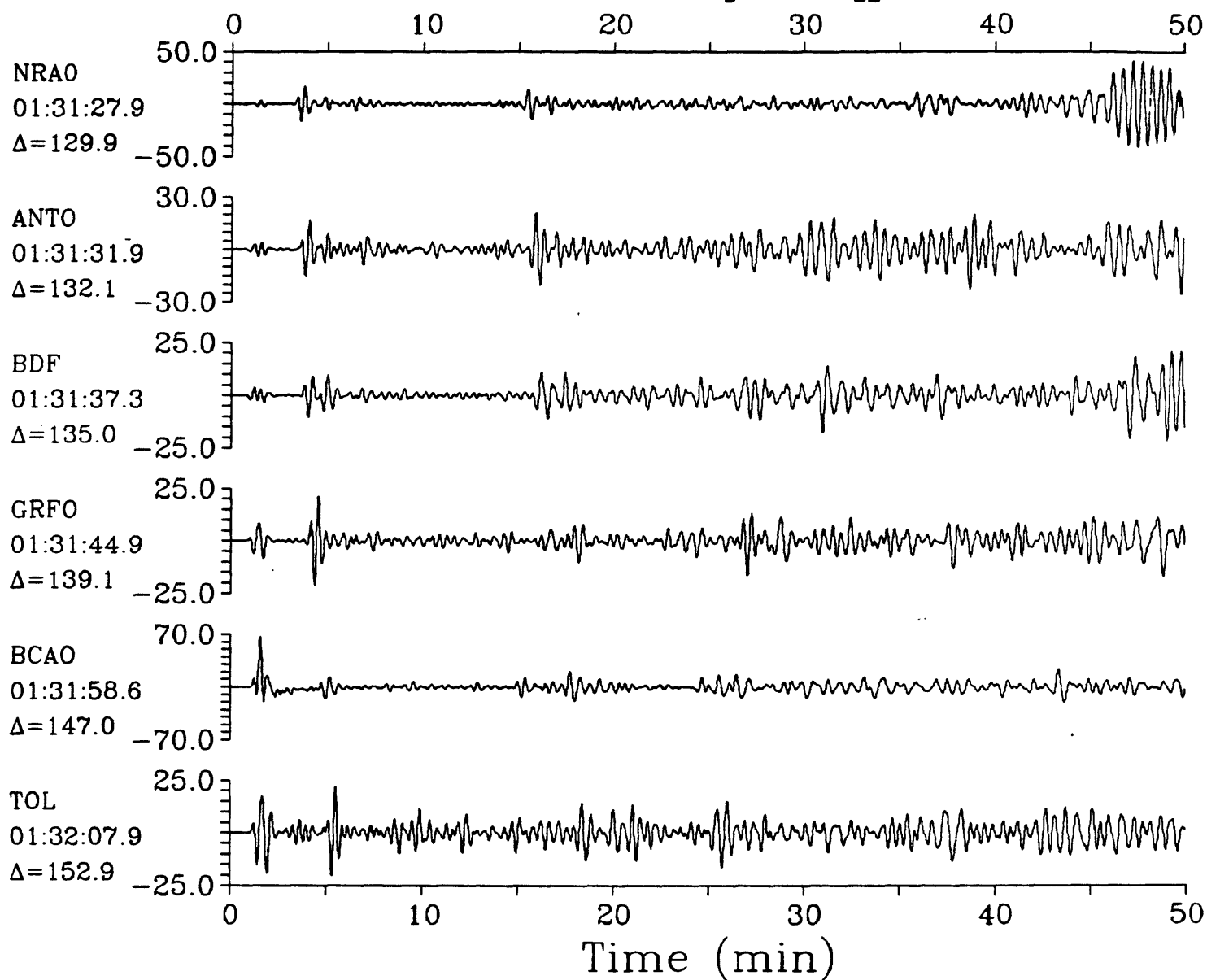
LPZ



LPZ

21 December 1985 01:13:21.09

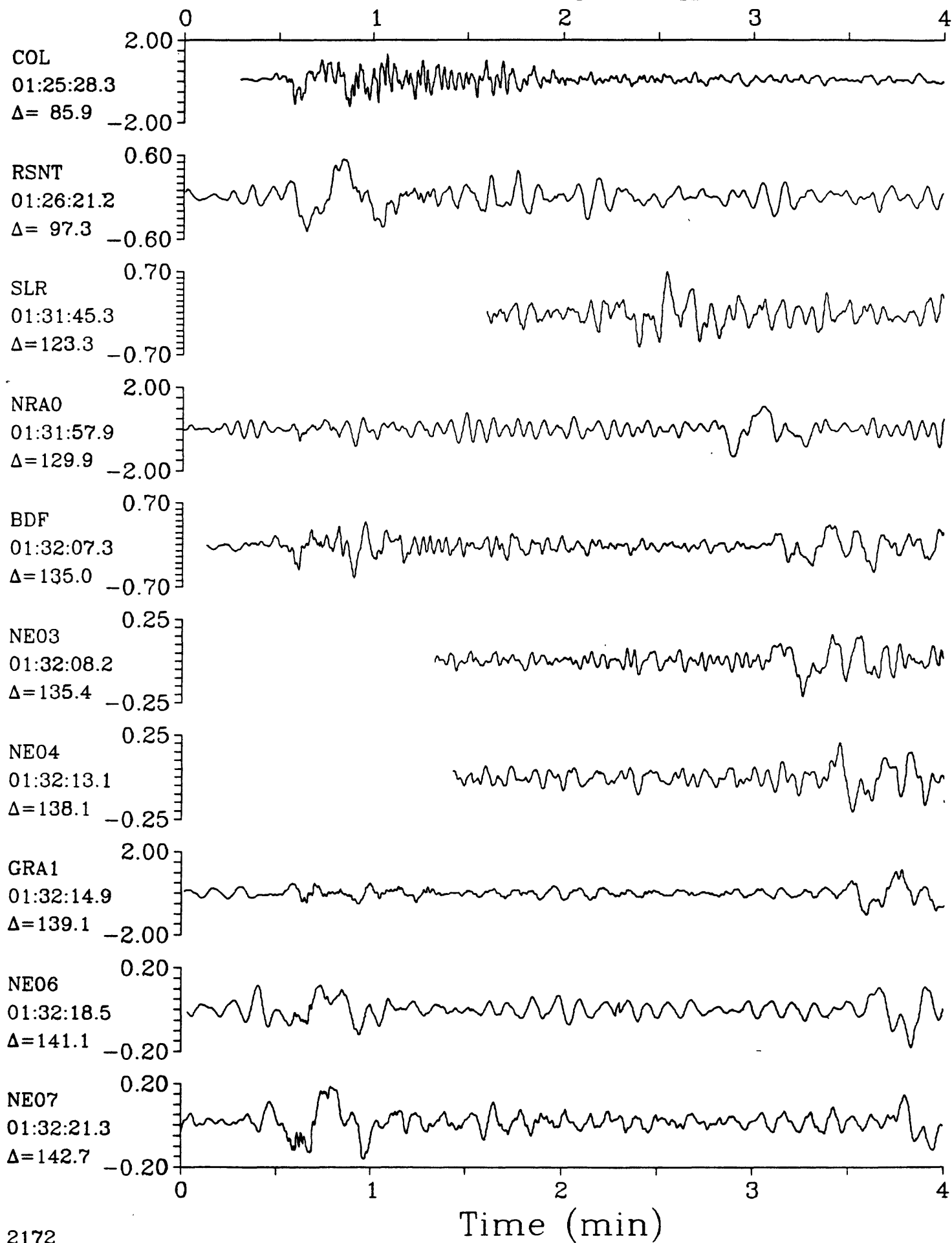
LPZ

Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 

IPZ

21 December 1985 01:13:21.09  
Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{SZ}=7.3$ 

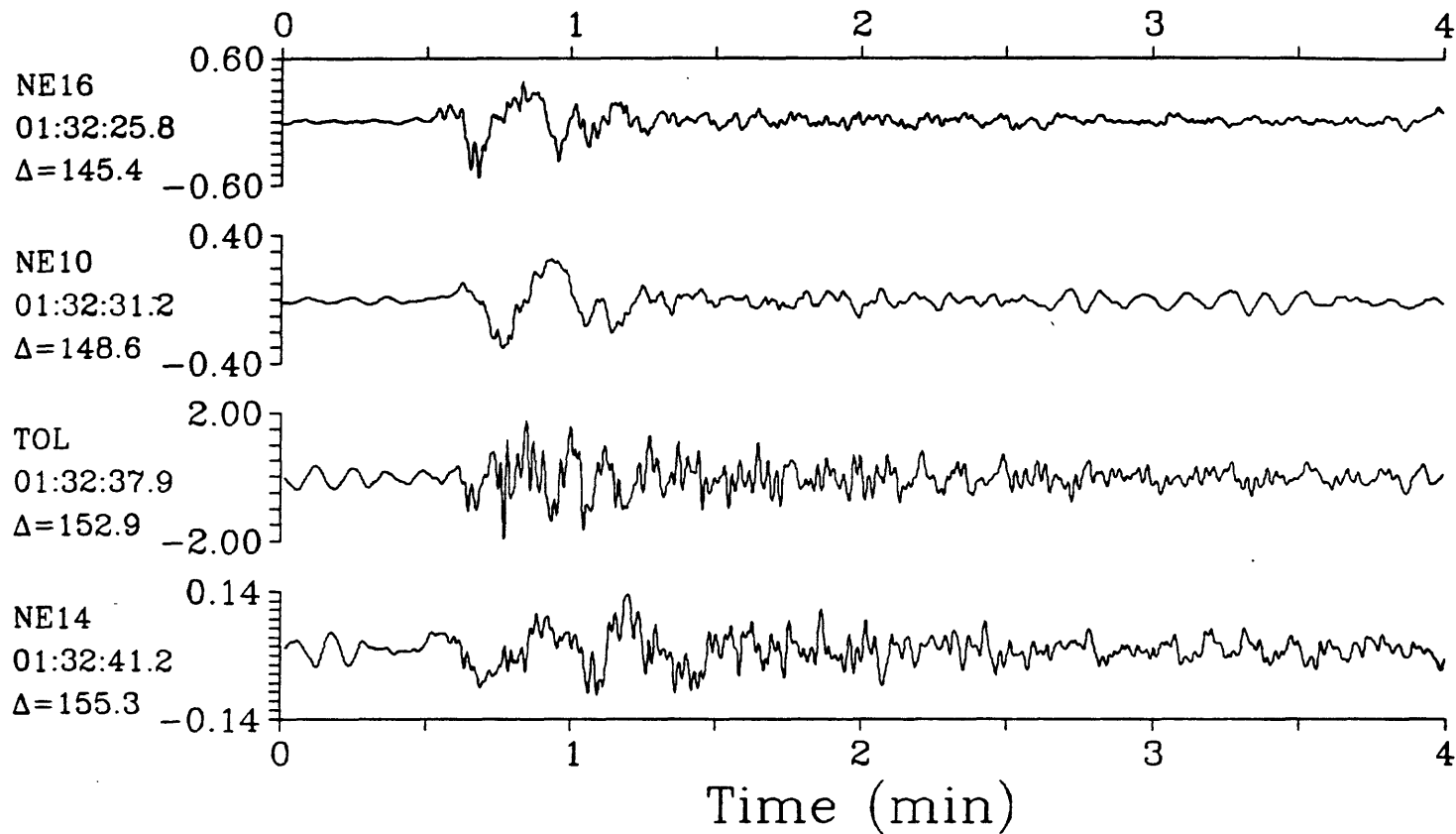
IPZ



IPZ

21 December 1985 01:13:21.09

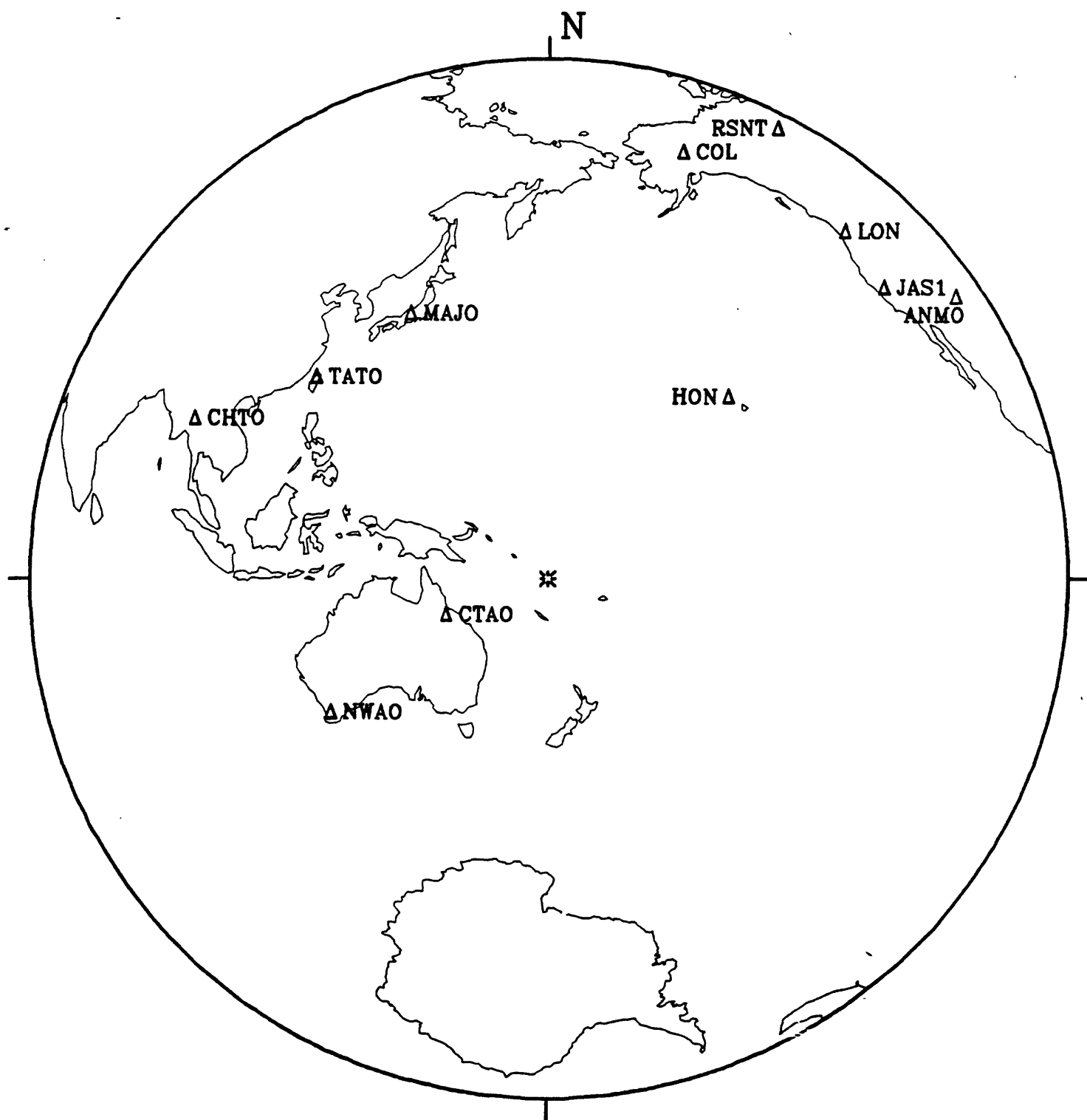
IPZ

Vanuatu Islands  $h=33.0$   $m_b=6.1$   $M_{sz}=7.3$ 



21 December 1985 02:46:32.73

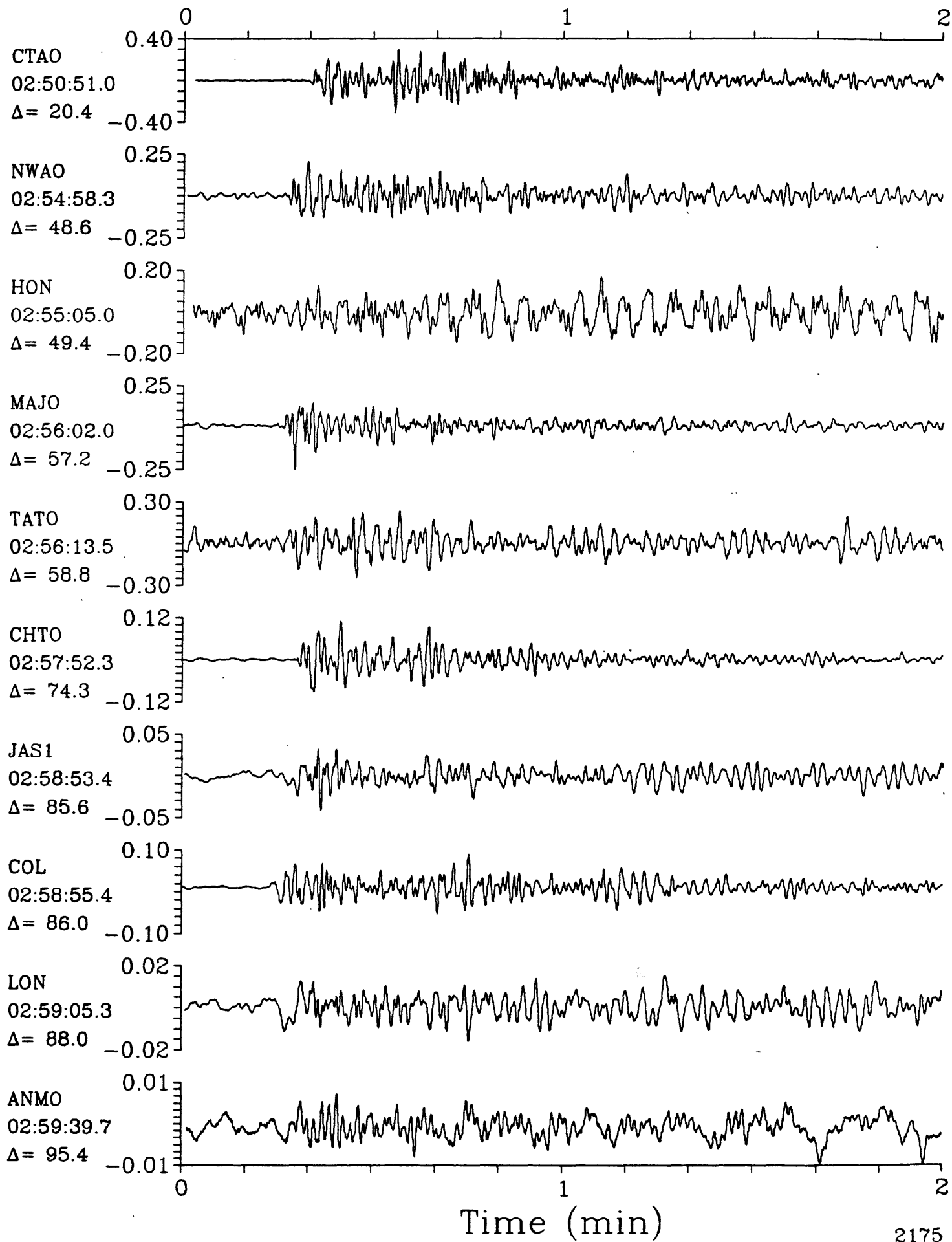
## Vanuatu Islands



SPZ

21 December 1985 02:46:32.73  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

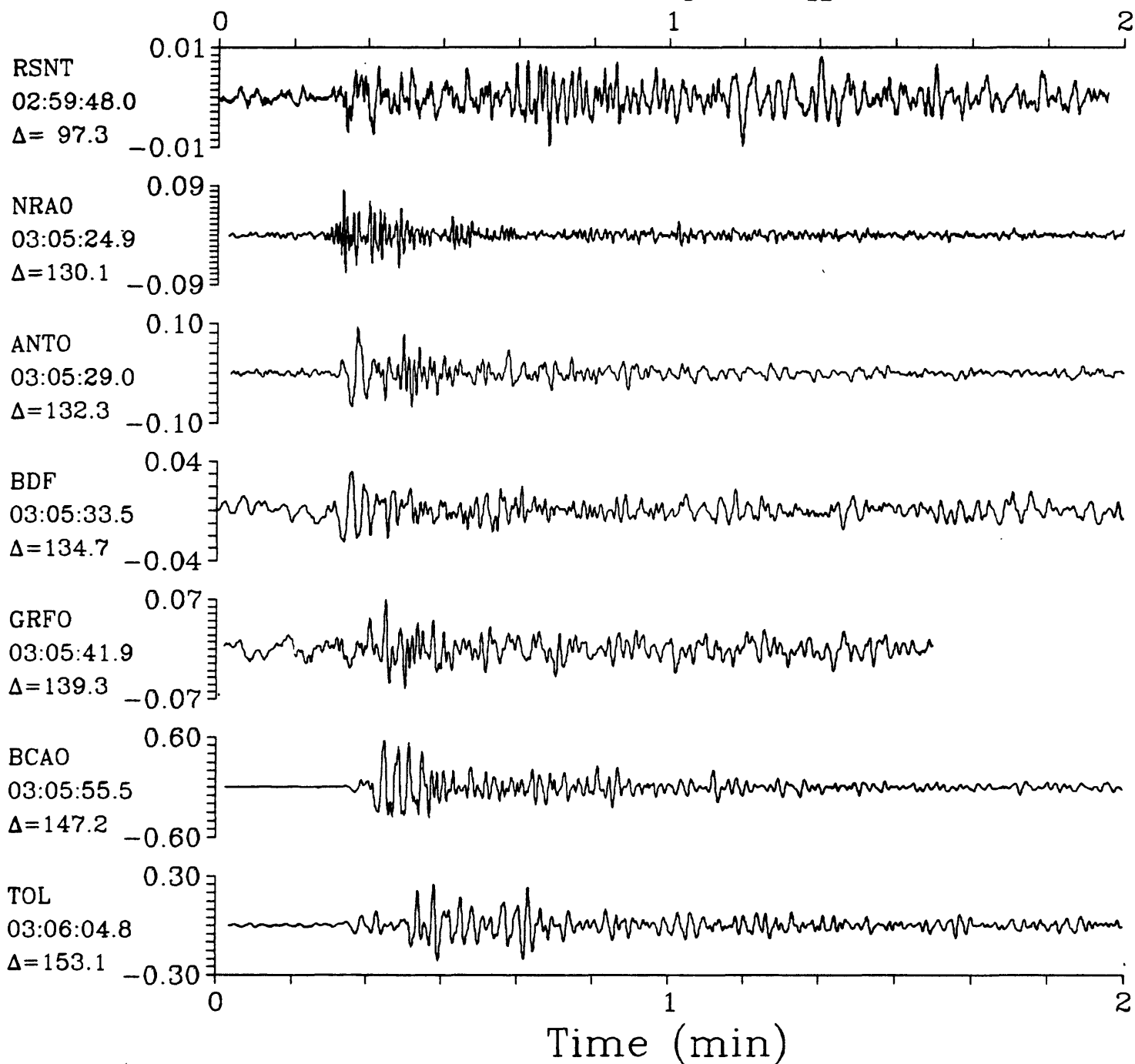
SPZ



SPZ

21 December 1985 02:46:32.73

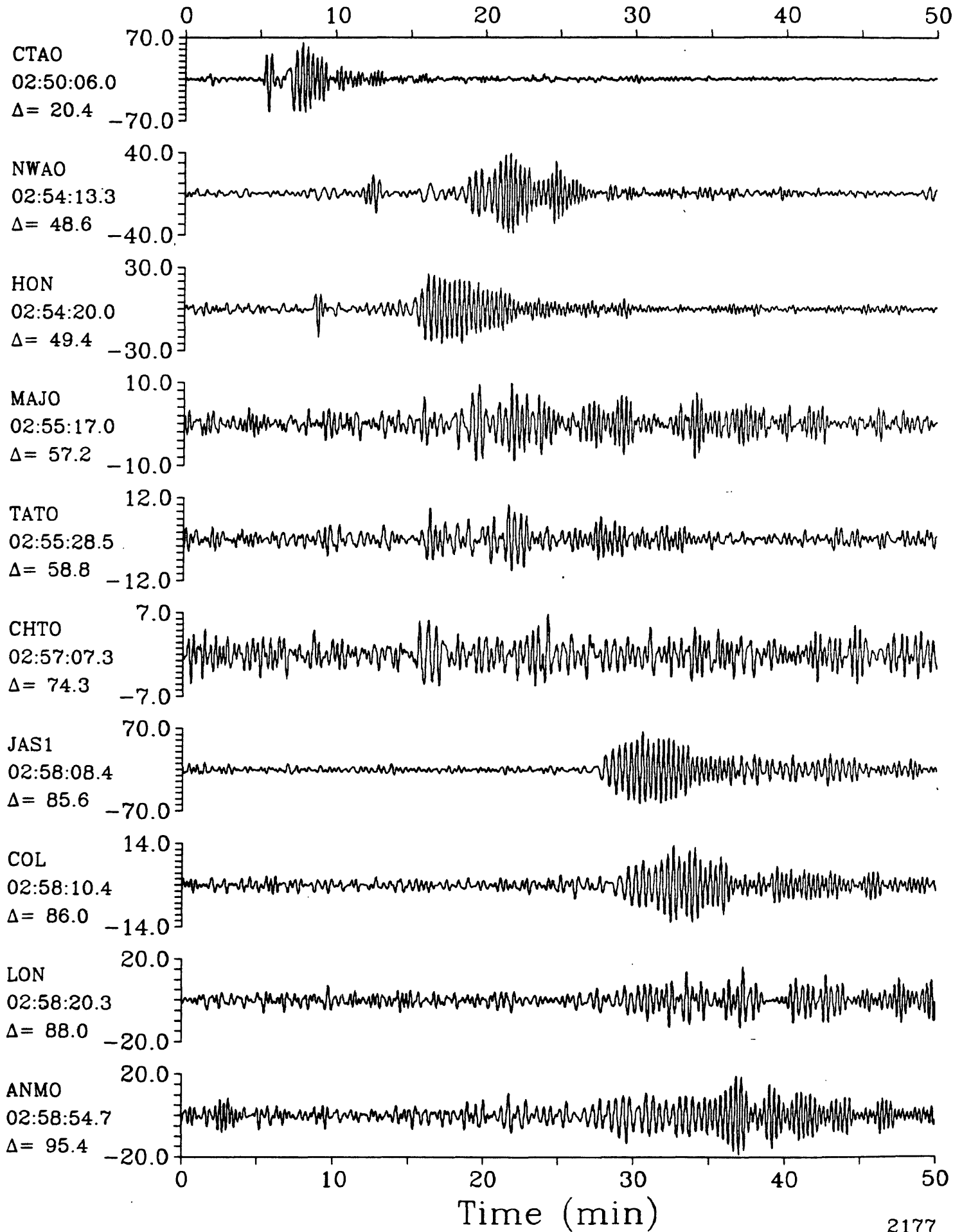
SPZ

Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

LPZ

21 December 1985 02:46:32.73  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

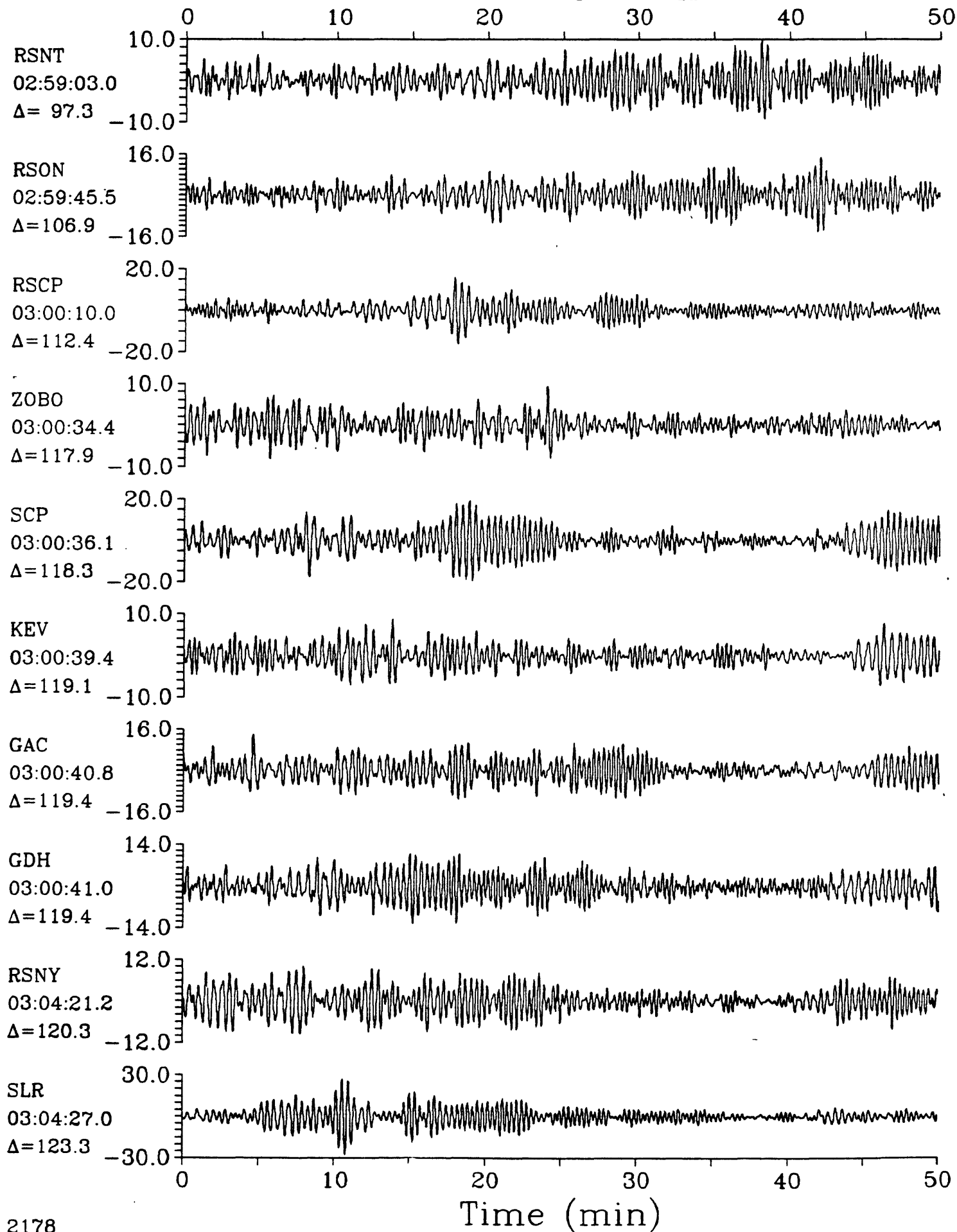
LPZ



LPZ

21 December 1985 02:46:32.73  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

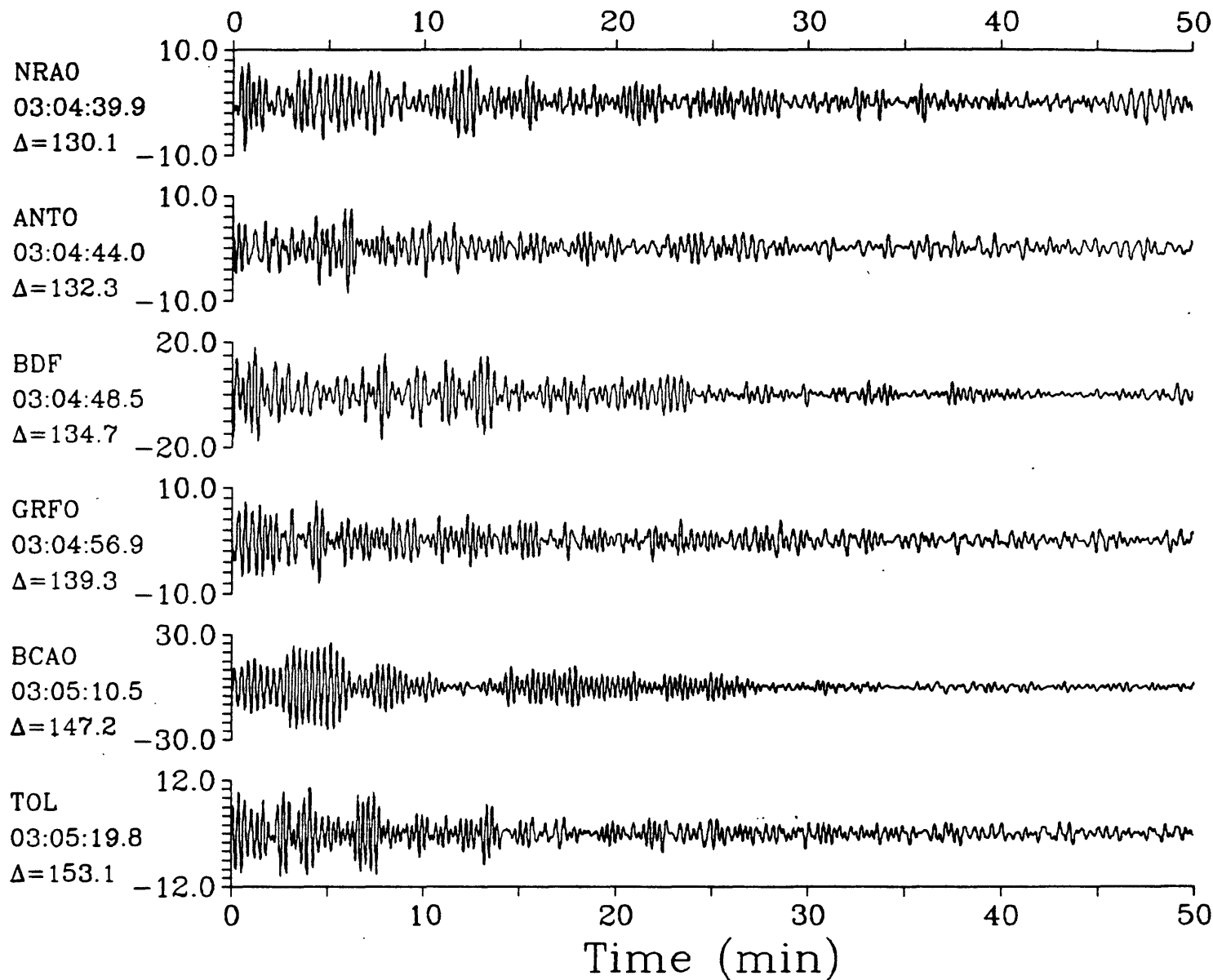
LPZ



LPZ

21 December 1985 02:46:32.73  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

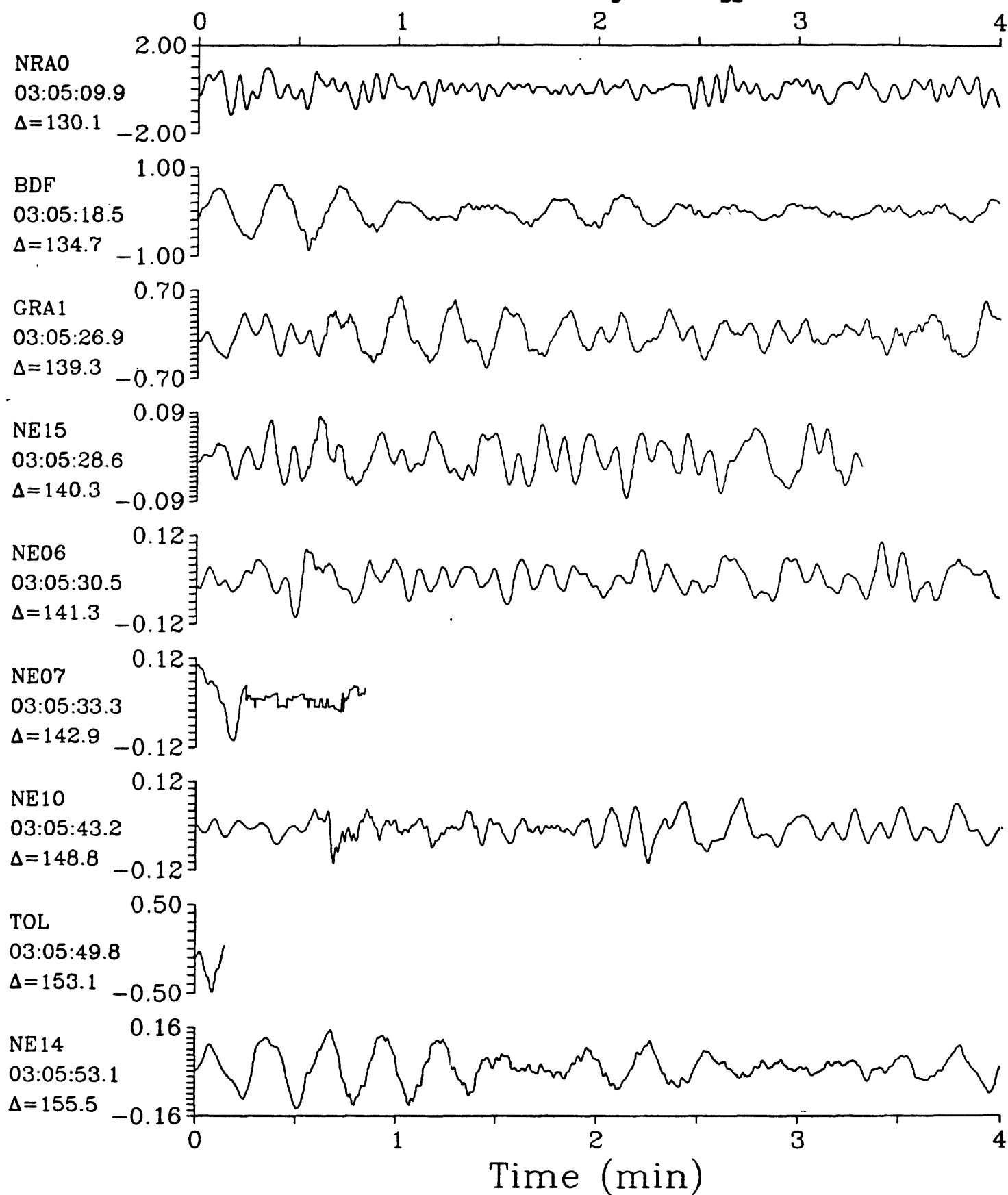
LPZ



IPZ

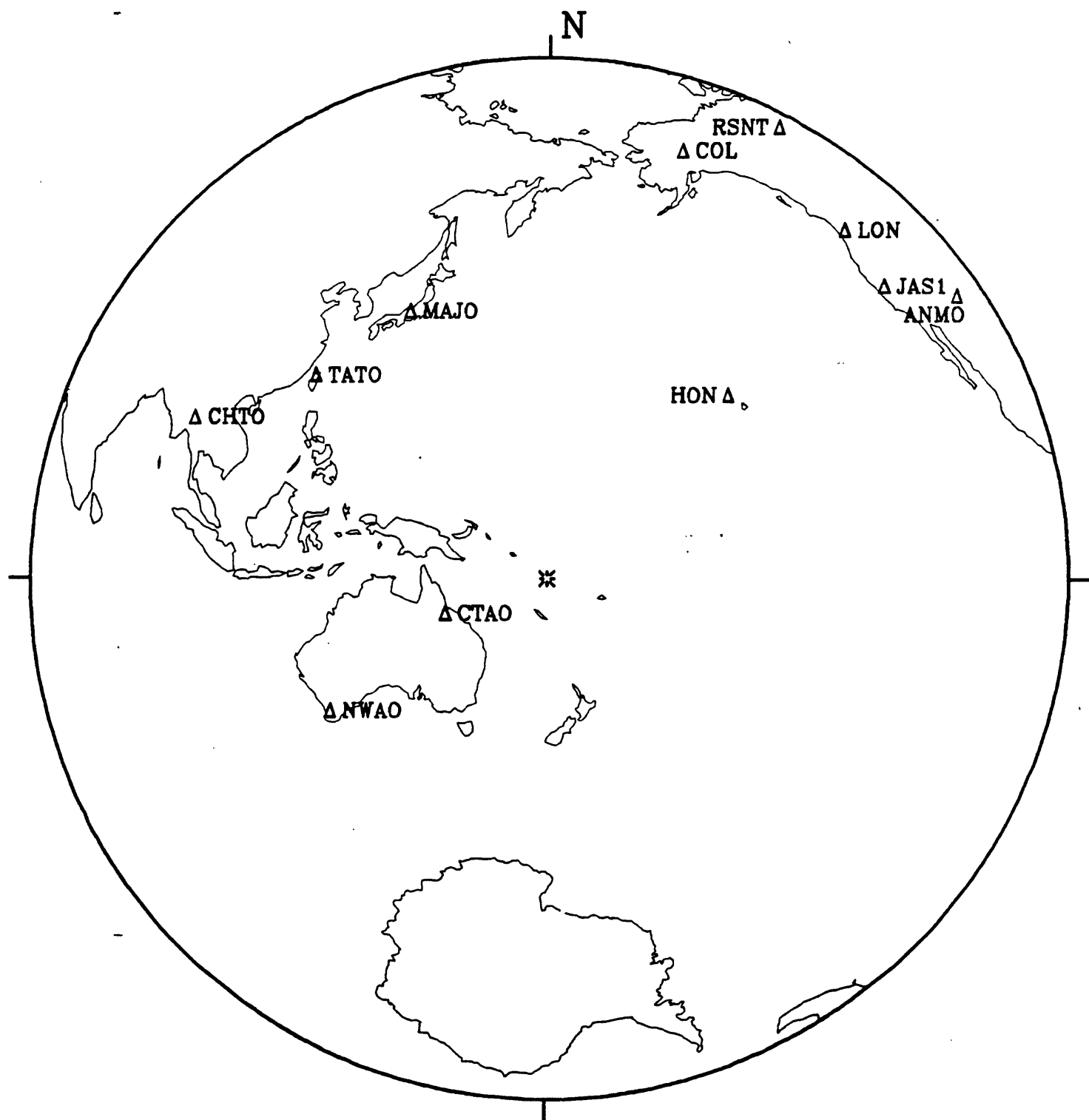
21 December 1985 02:46:32.73  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=6.5$ 

IPZ



21 December 1985 10:01:57.93

## Vanuatu Islands

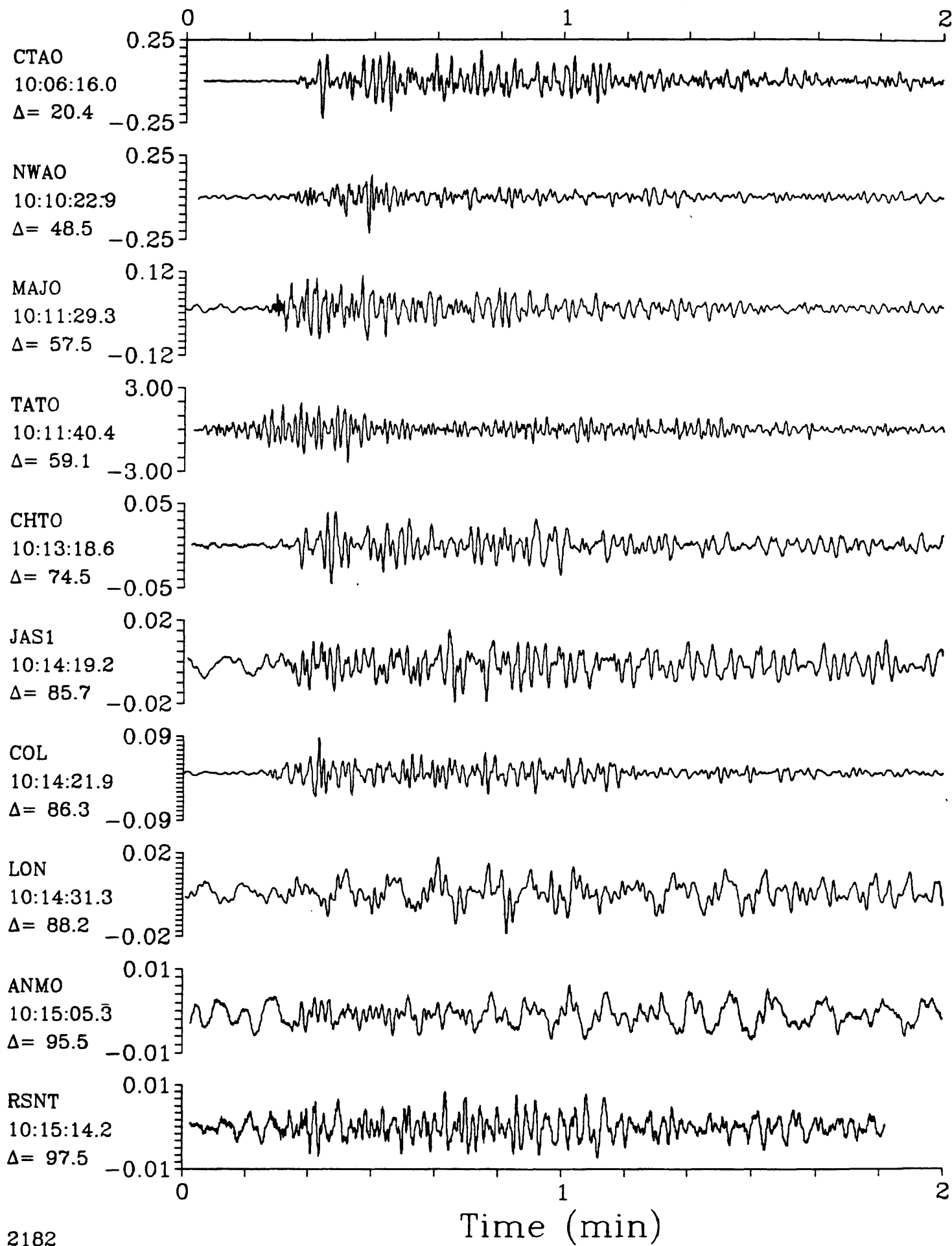




SPZ

21 December 1985 10:01:57.93  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

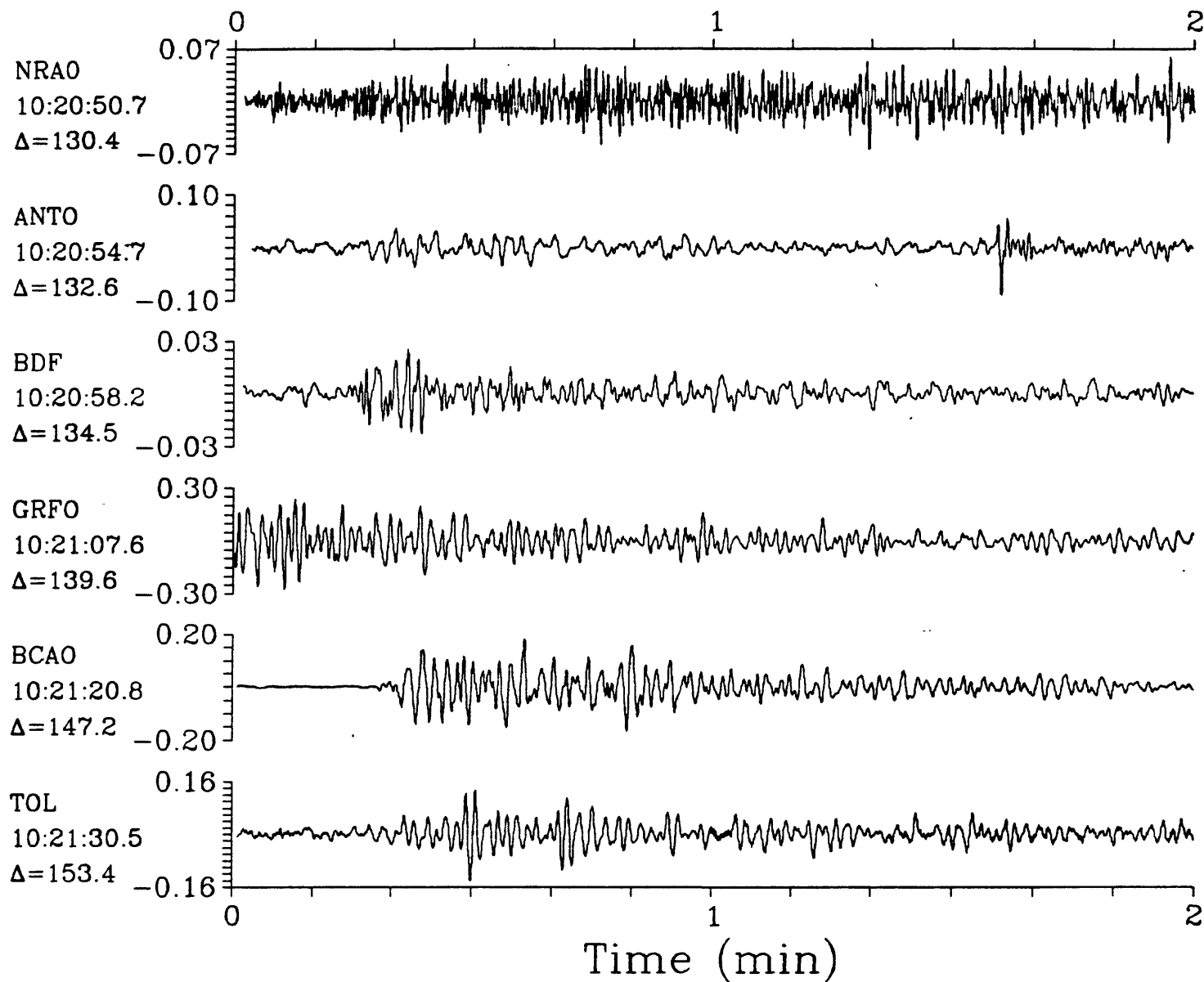
SPZ



SPZ

21 December 1985 10:01:57.93

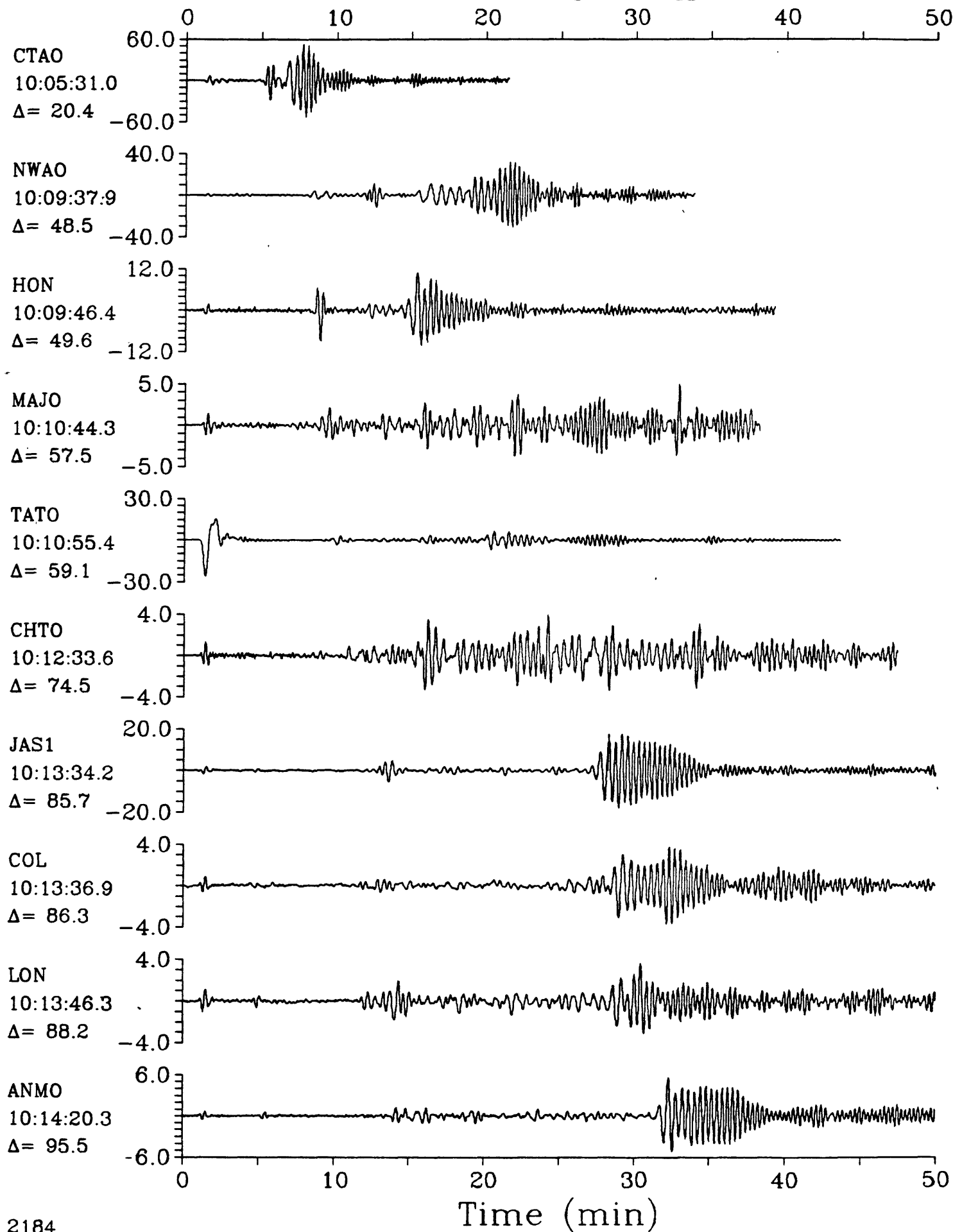
SPZ

Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

LPZ

21 December 1985 10:01:57.93  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

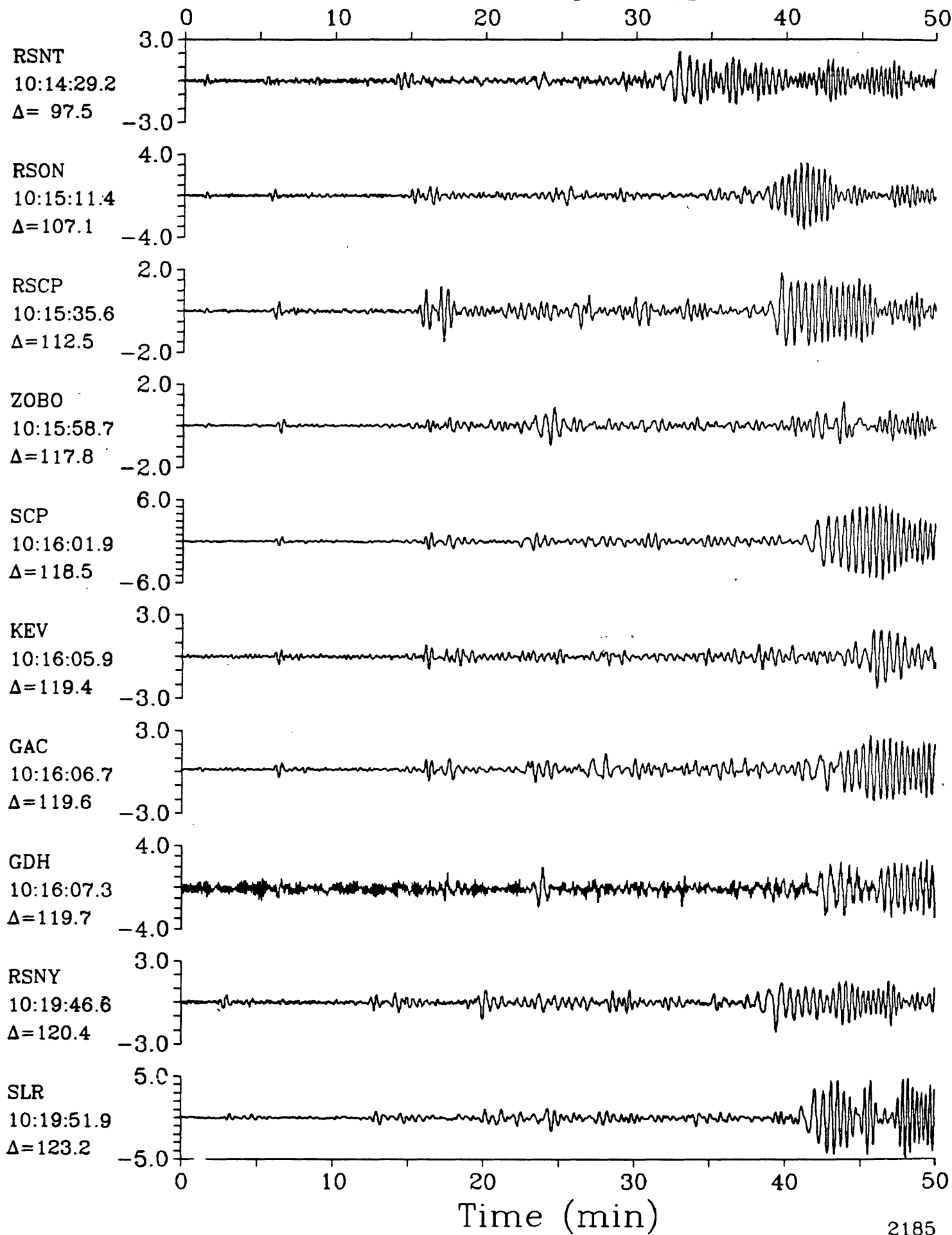
LPZ



LPZ

21 December 1985 10:01:57.93  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

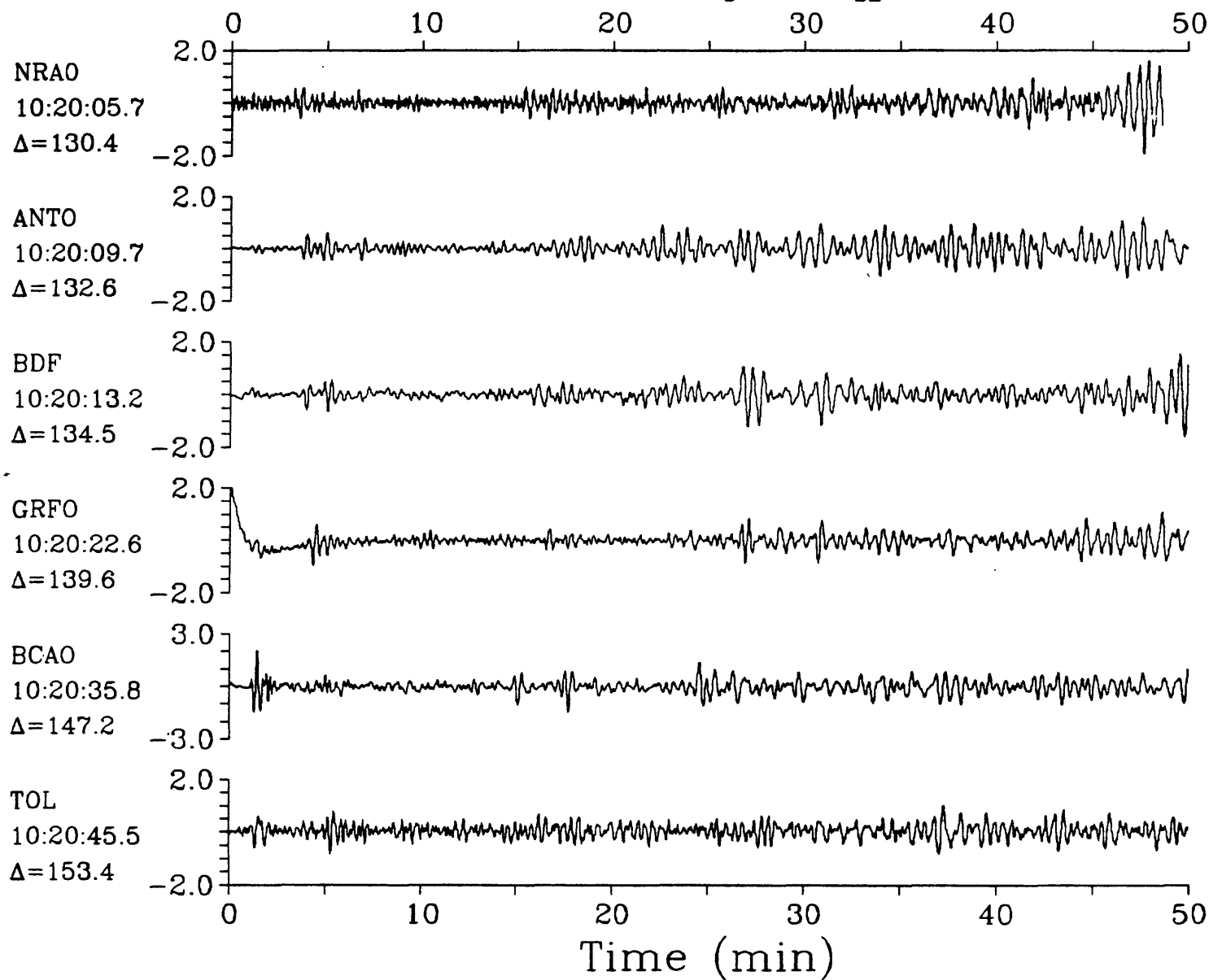
LPZ



LPZ

21 December 1985 10:01:57.93  
Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

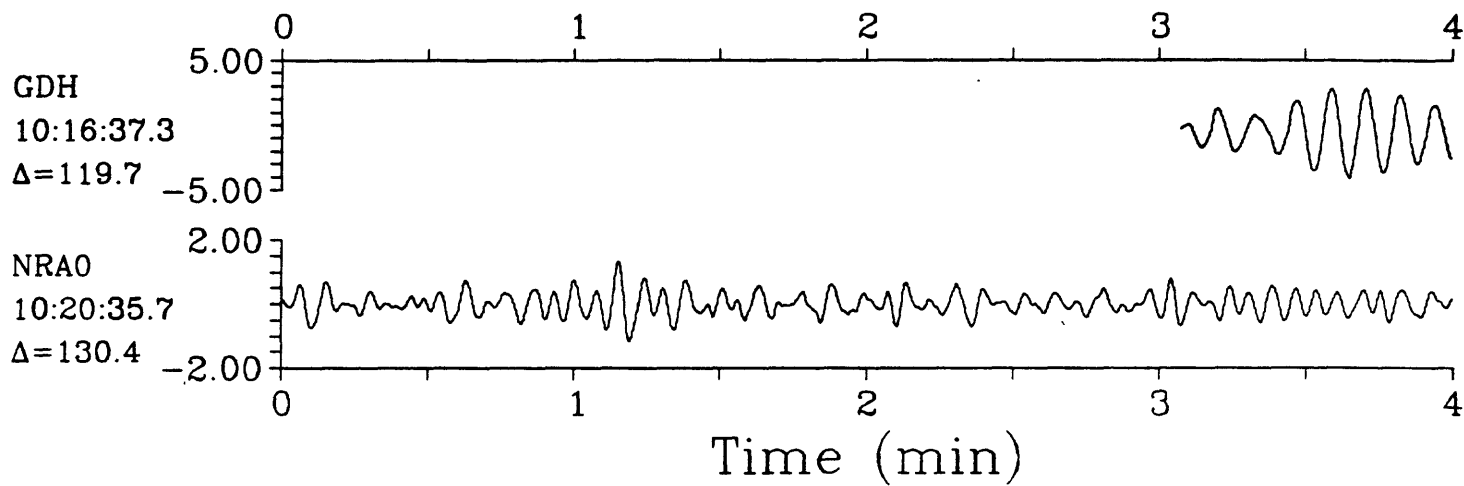
LPZ



IPZ

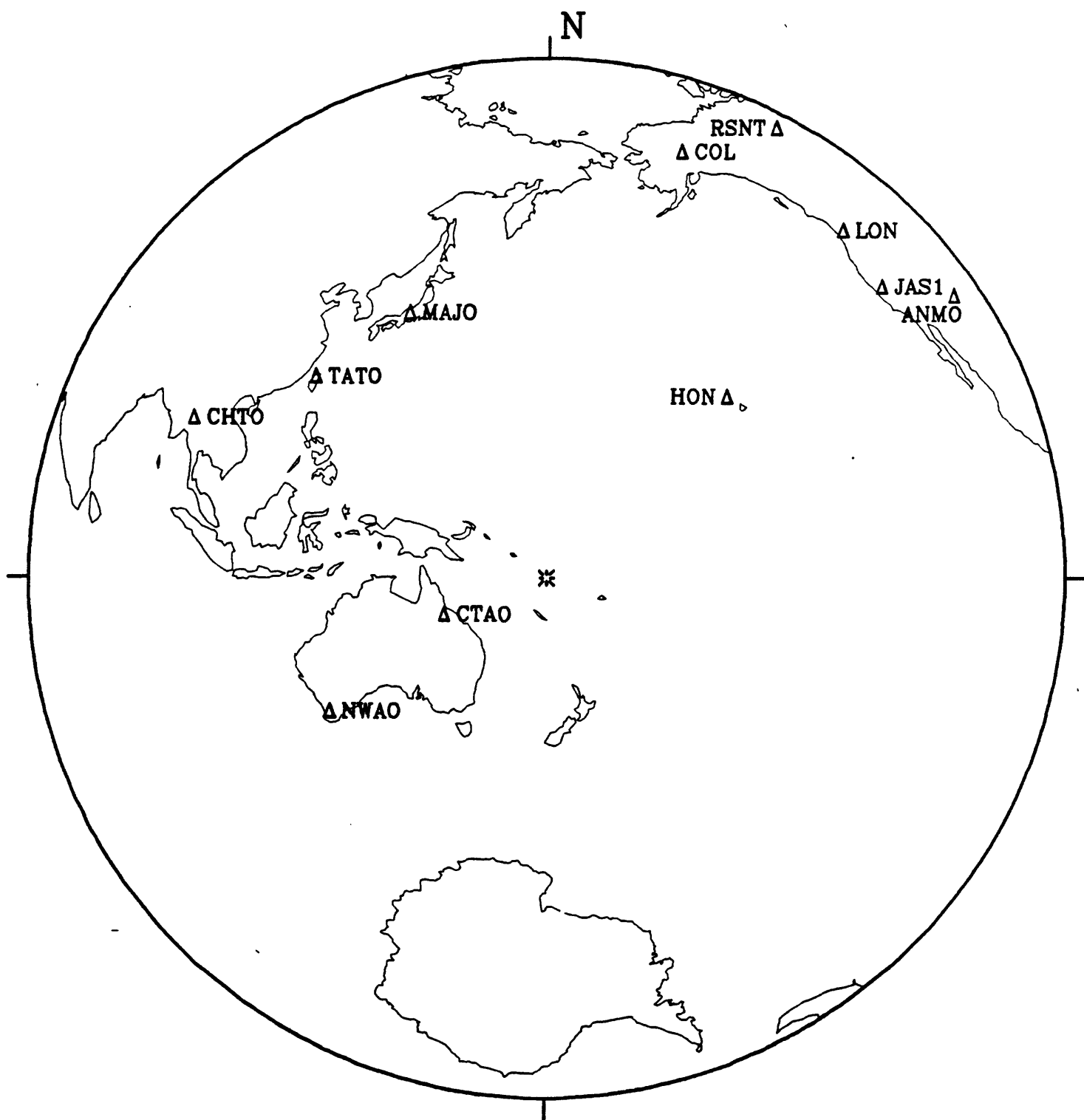
21 December 1985 10:01:57.93

IPZ

Vanuatu Islands  $h=33.0$   $m_b=5.7$   $M_{sz}=5.8$ 

21 December 1985 11:09:51.43

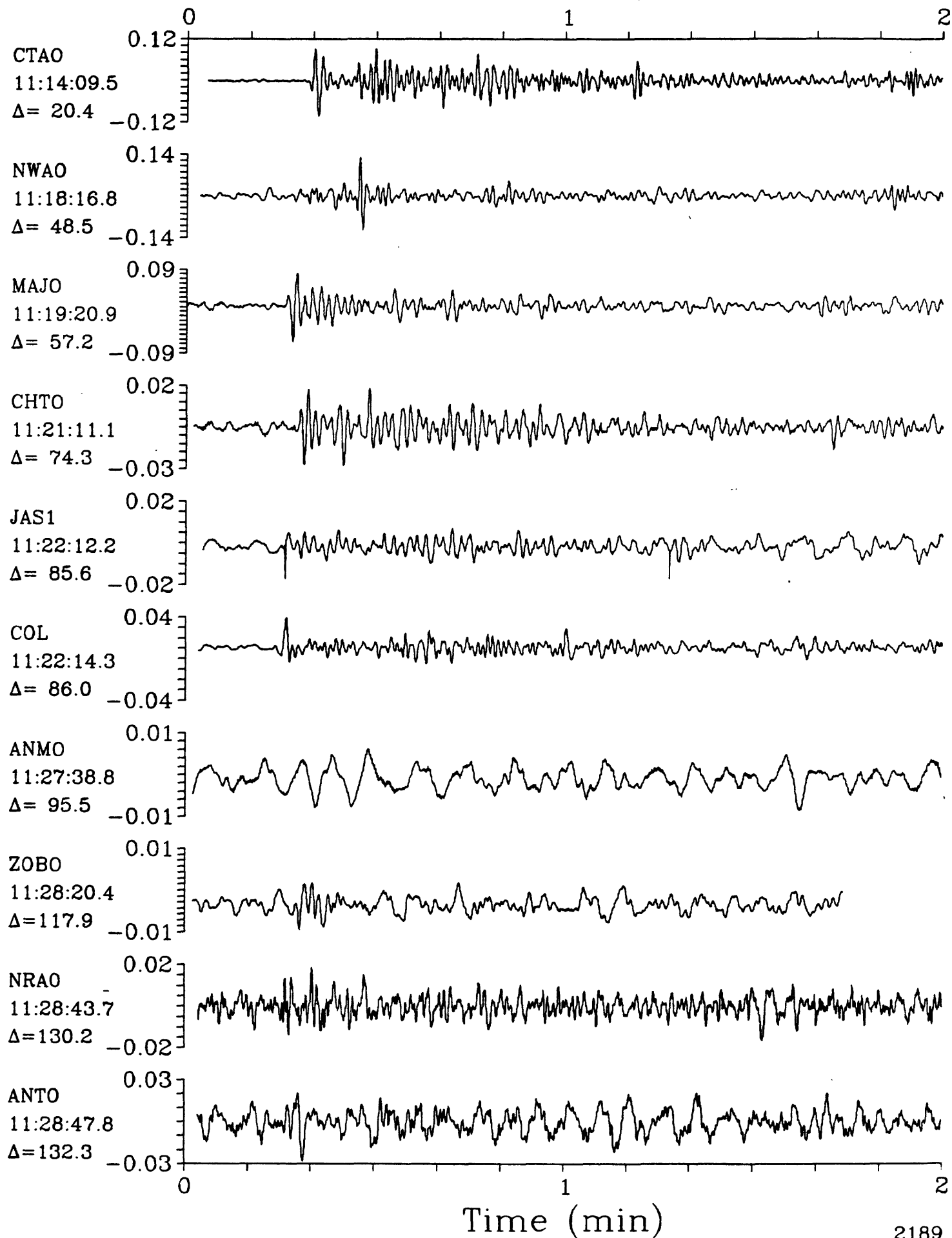
## Vanuatu Islands



SPZ

21 December 1985 11:09:51.43  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

SPZ

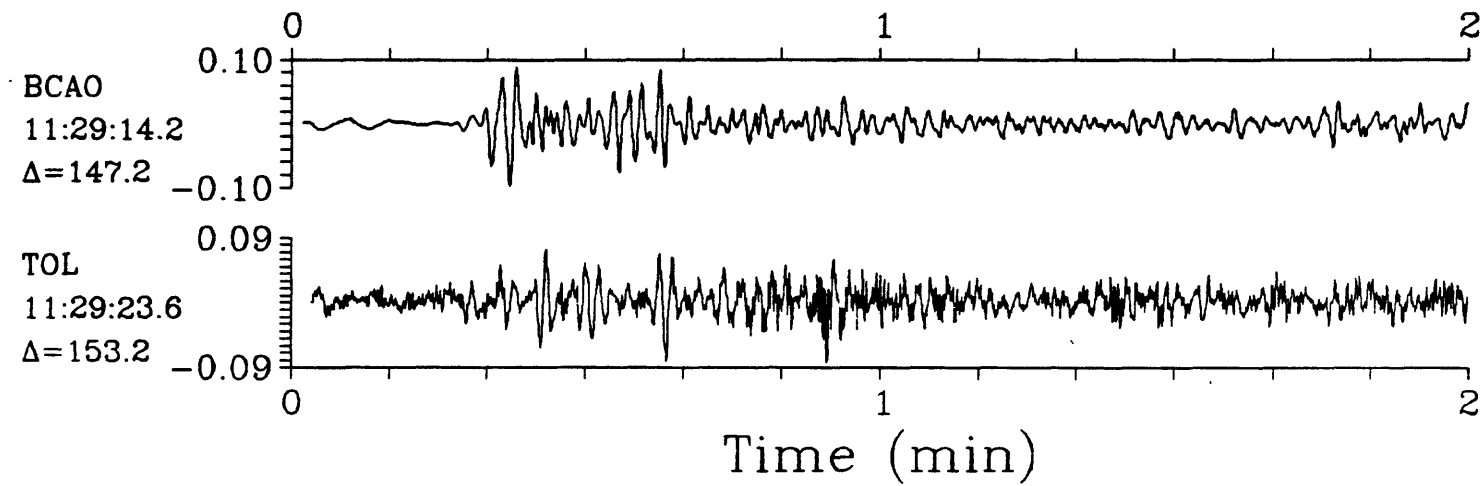




SPZ

21 December 1985 11:09:51.43  
Vanuatu Islands  $h=33.0$   $m_b=5.5$

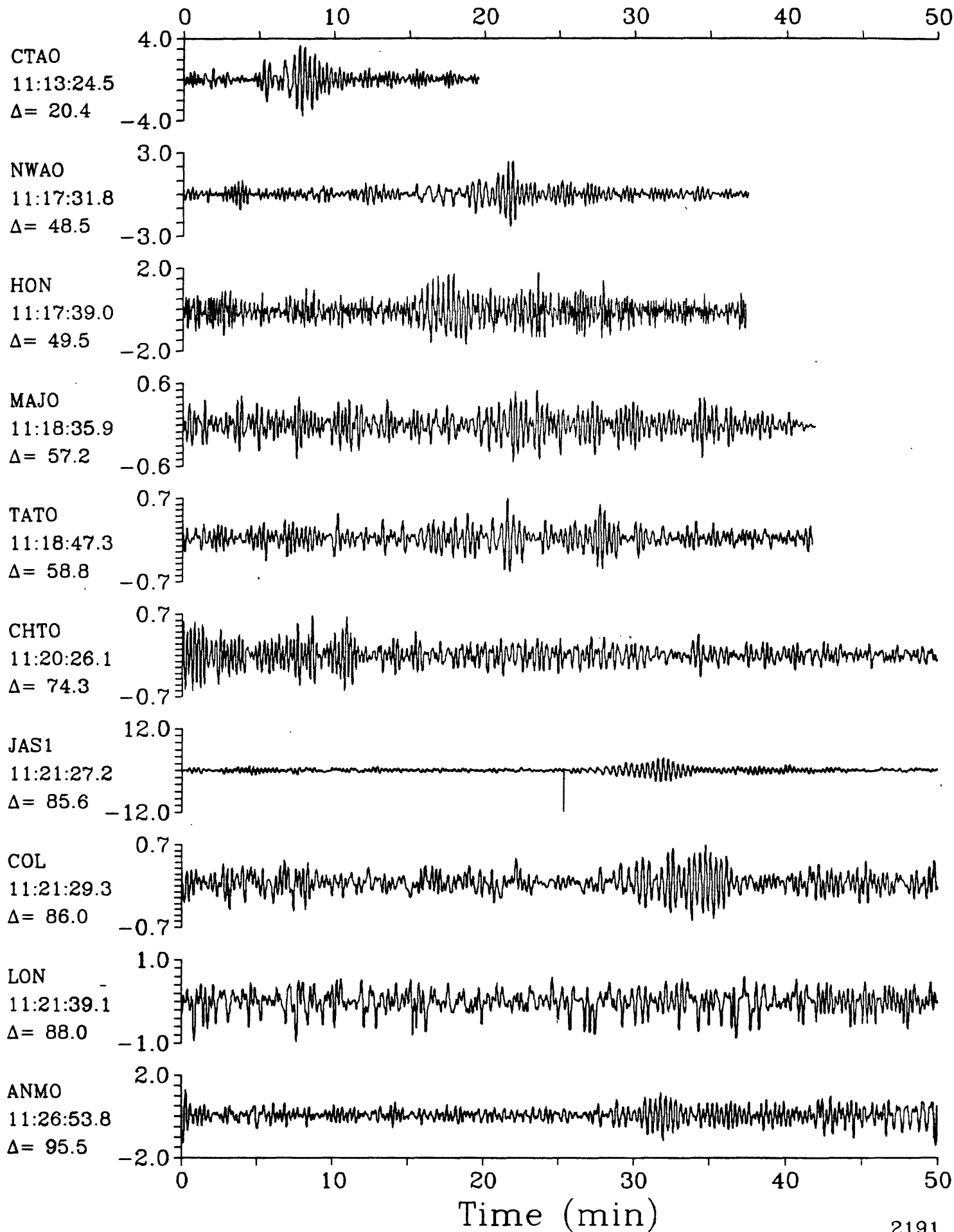
SPZ



LPZ

21 December 1985 11:09:51.43  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

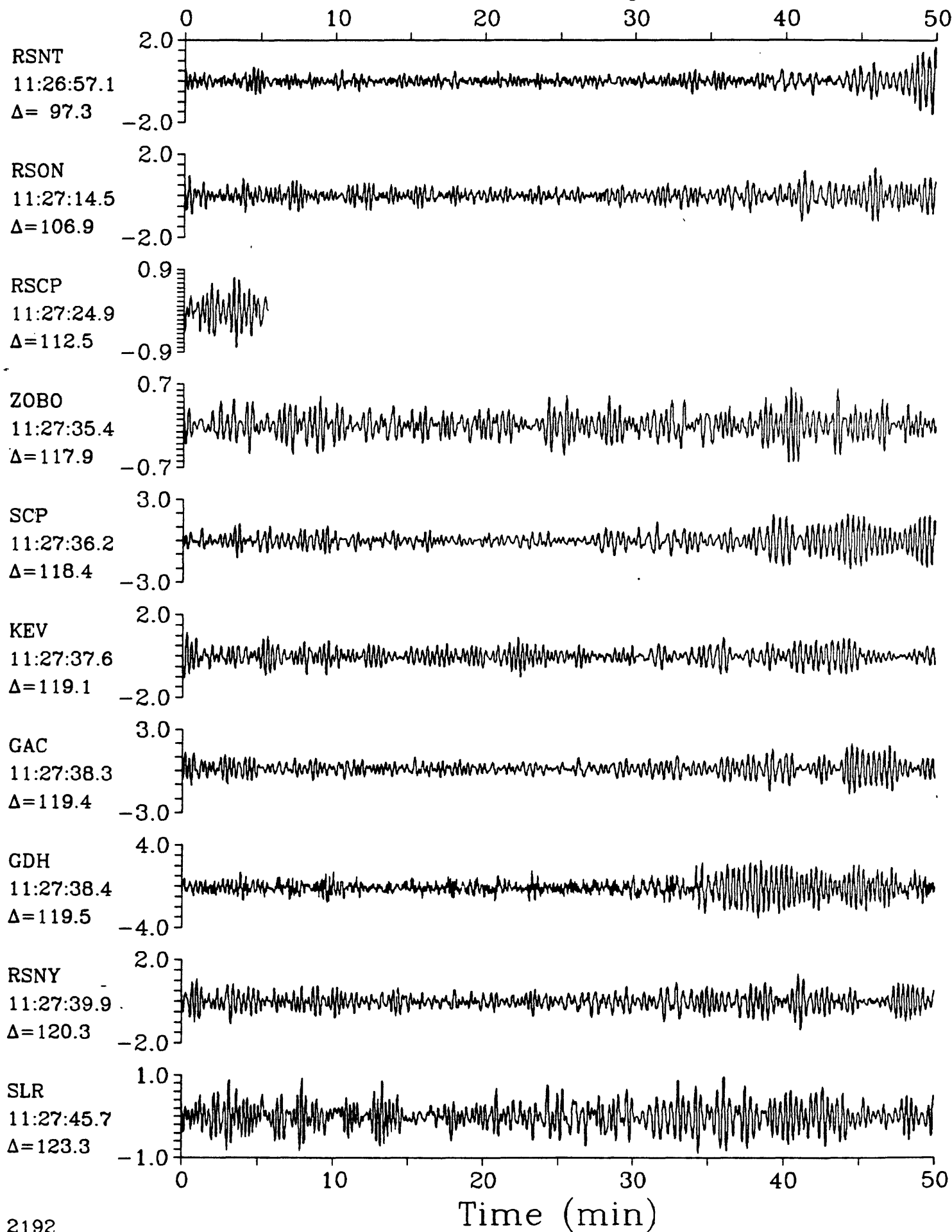
LPZ



LPZ

21 December 1985 11:09:51.43  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

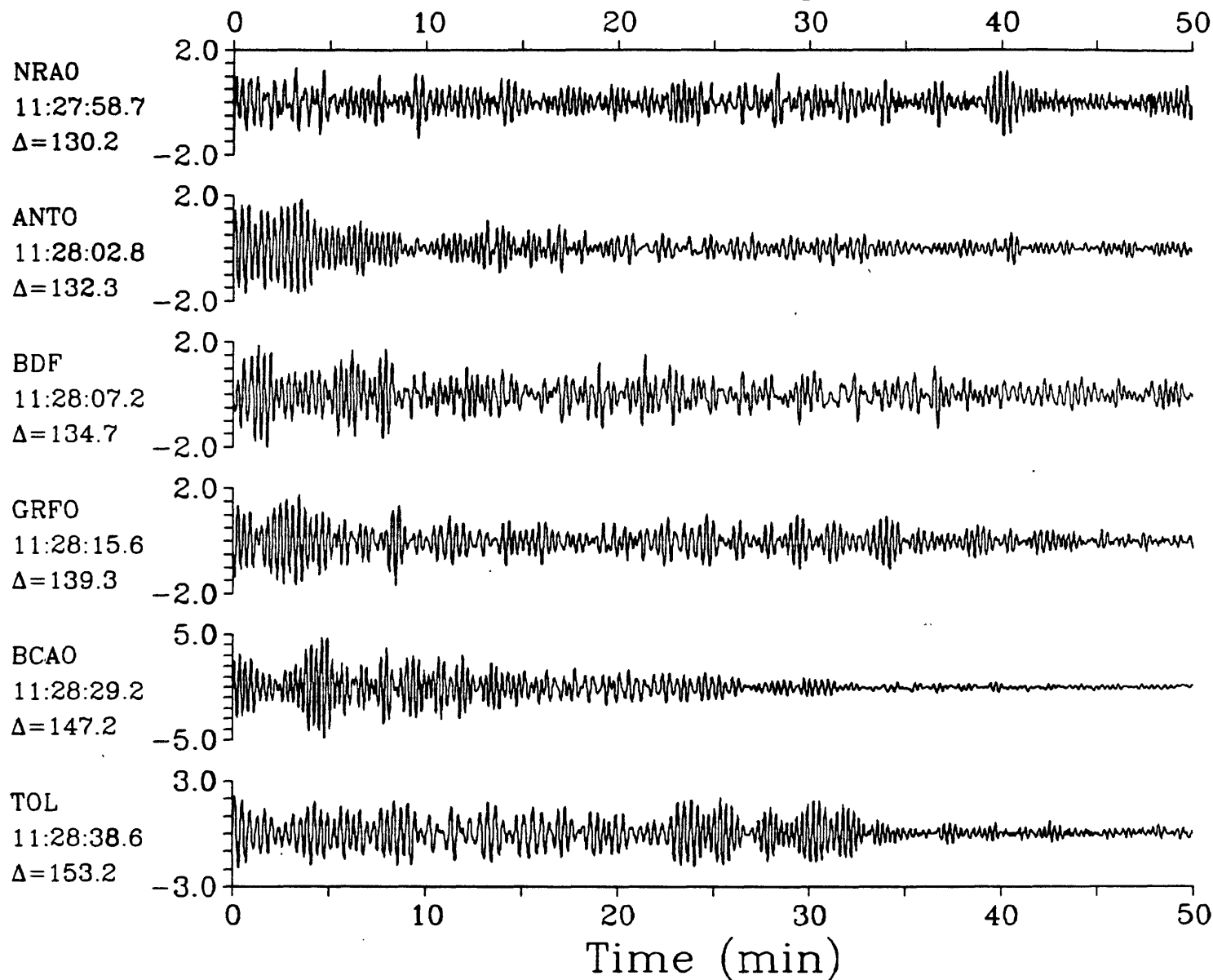
LPZ



LPZ

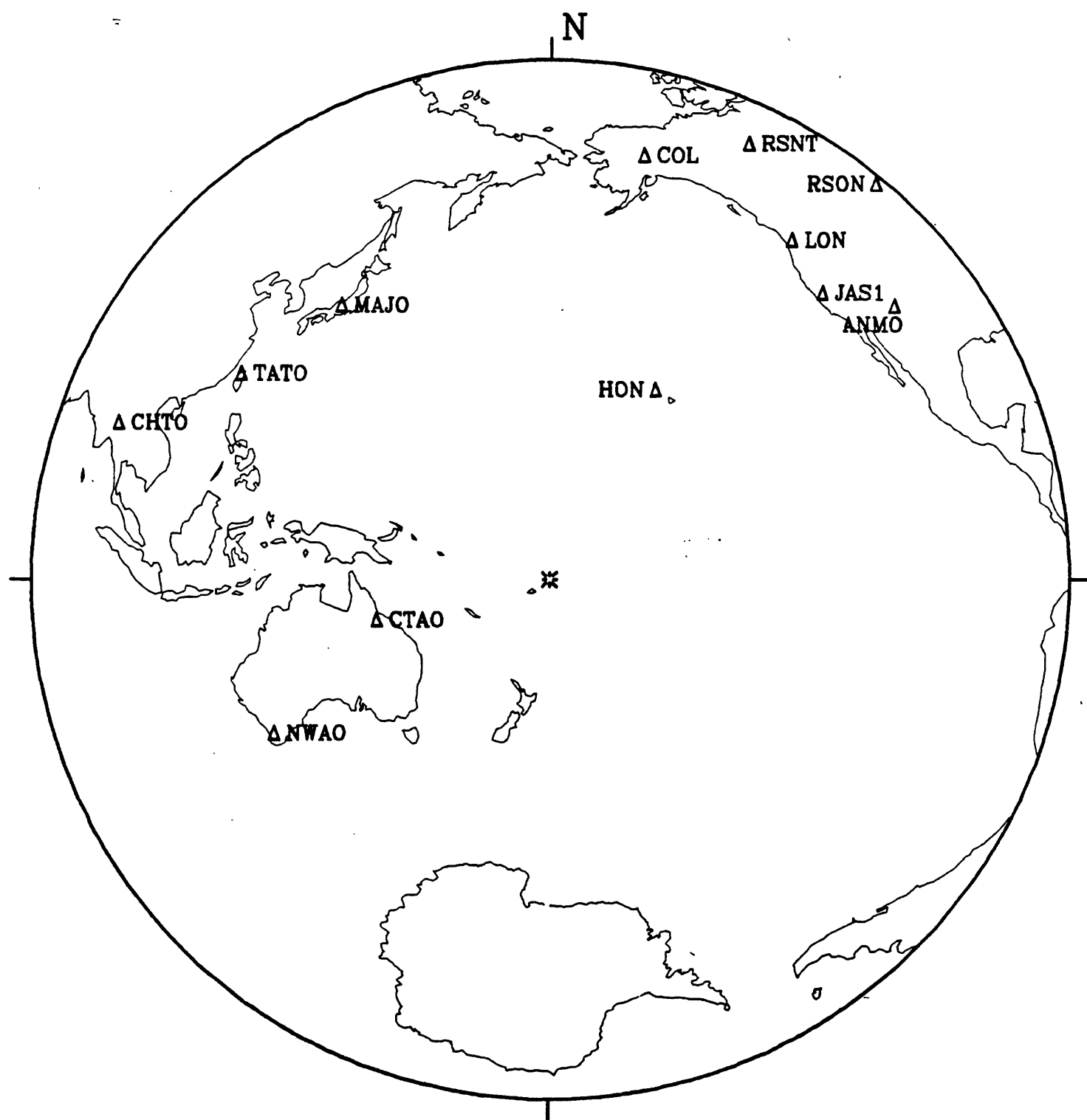
21 December 1985 11:09:51.43  
Vanuatu Islands  $h=33.0$   $m_b=5.5$ 

LPZ



22 December 1985 17:13:29.04

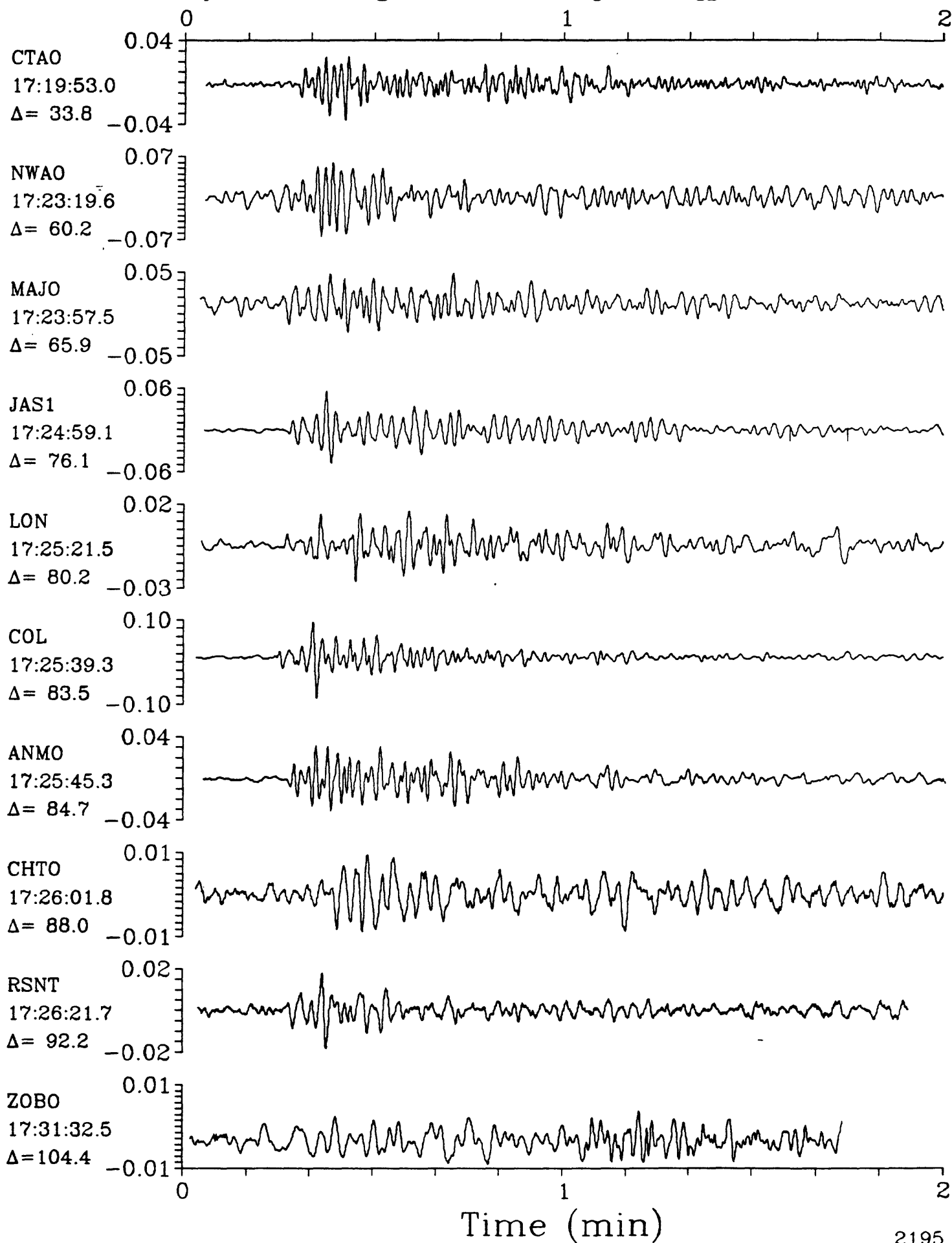
## Fiji Islands Region



SPZ

22 December 1985 17:13:29.04

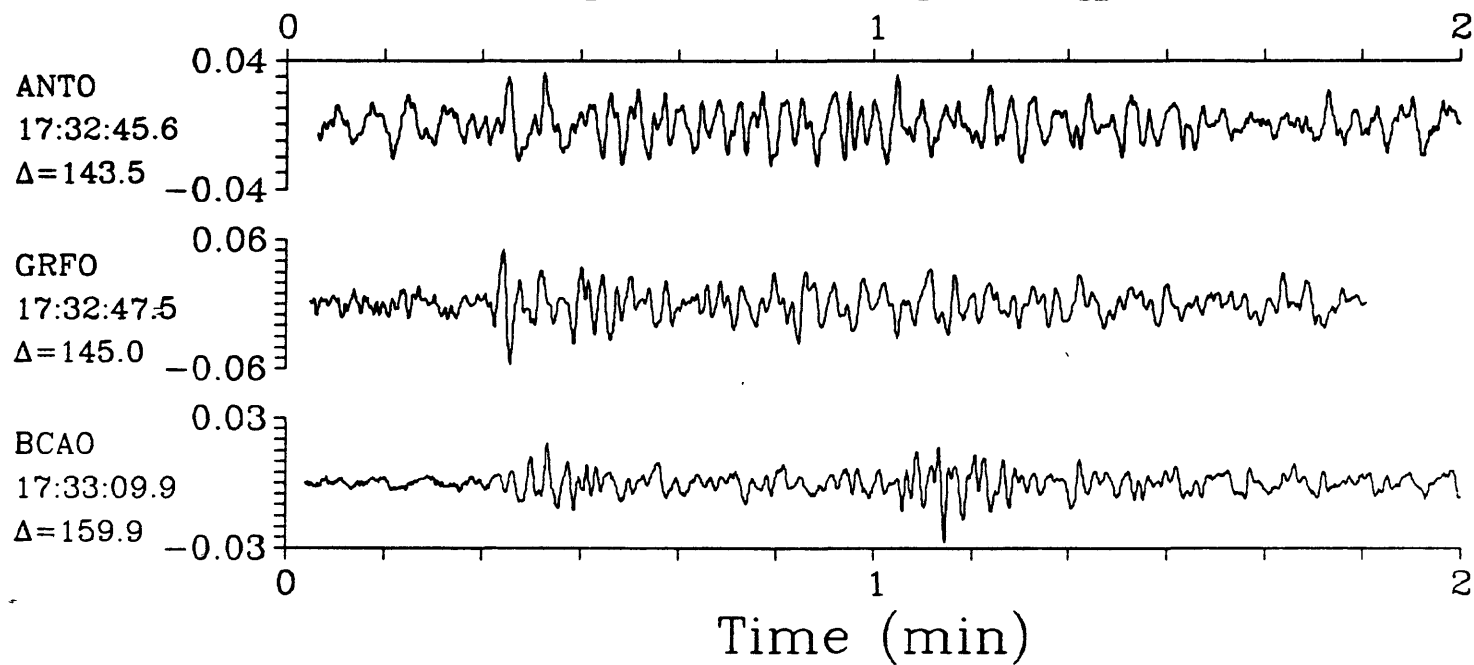
SPZ

Fiji Islands Region  $h=33.0$   $m_b=5.7$   $M_{sz}=5.7$ 

SPZ

22 December 1985 17:13:29.04

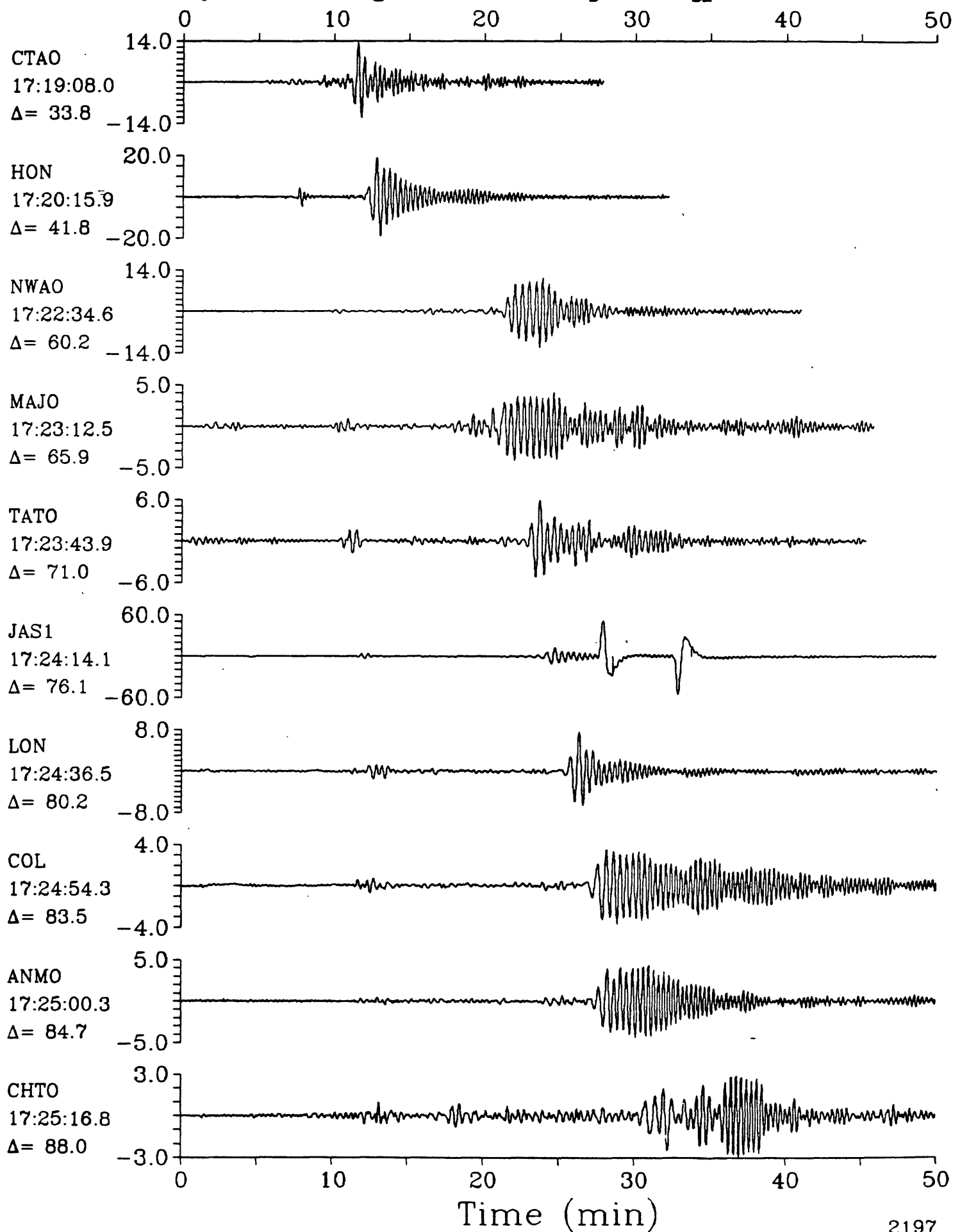
SPZ

Fiji Islands Region  $h=33.0$   $m_b=5.7$   $M_{SZ}=5.7$ 

LPZ

22 December 1985 17:13:29.04

LPZ

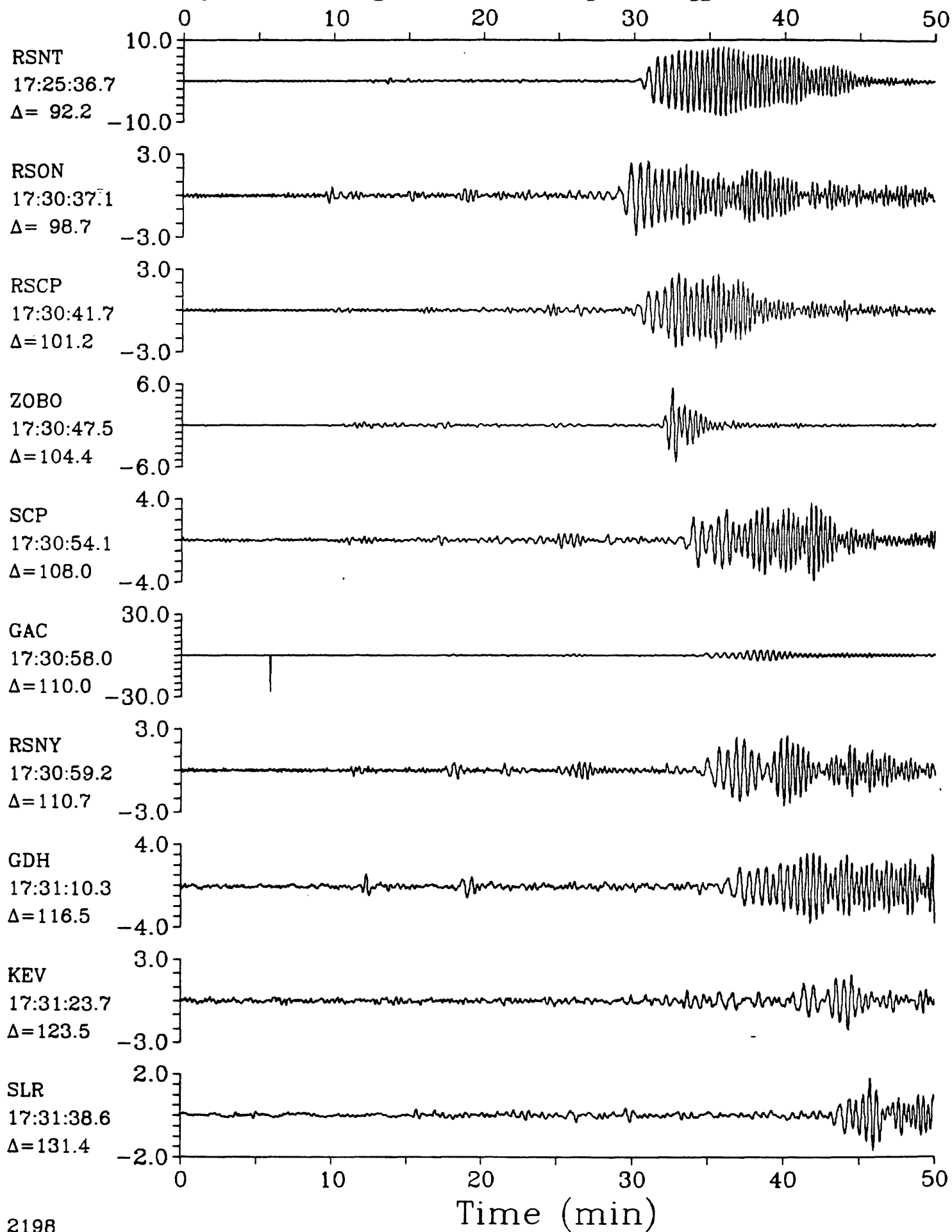
Fiji Islands Region  $h=33.0$   $m_b=5.7$   $M_{sz}=5.7$ 



LPZ

22 December 1985 17:13:29.04

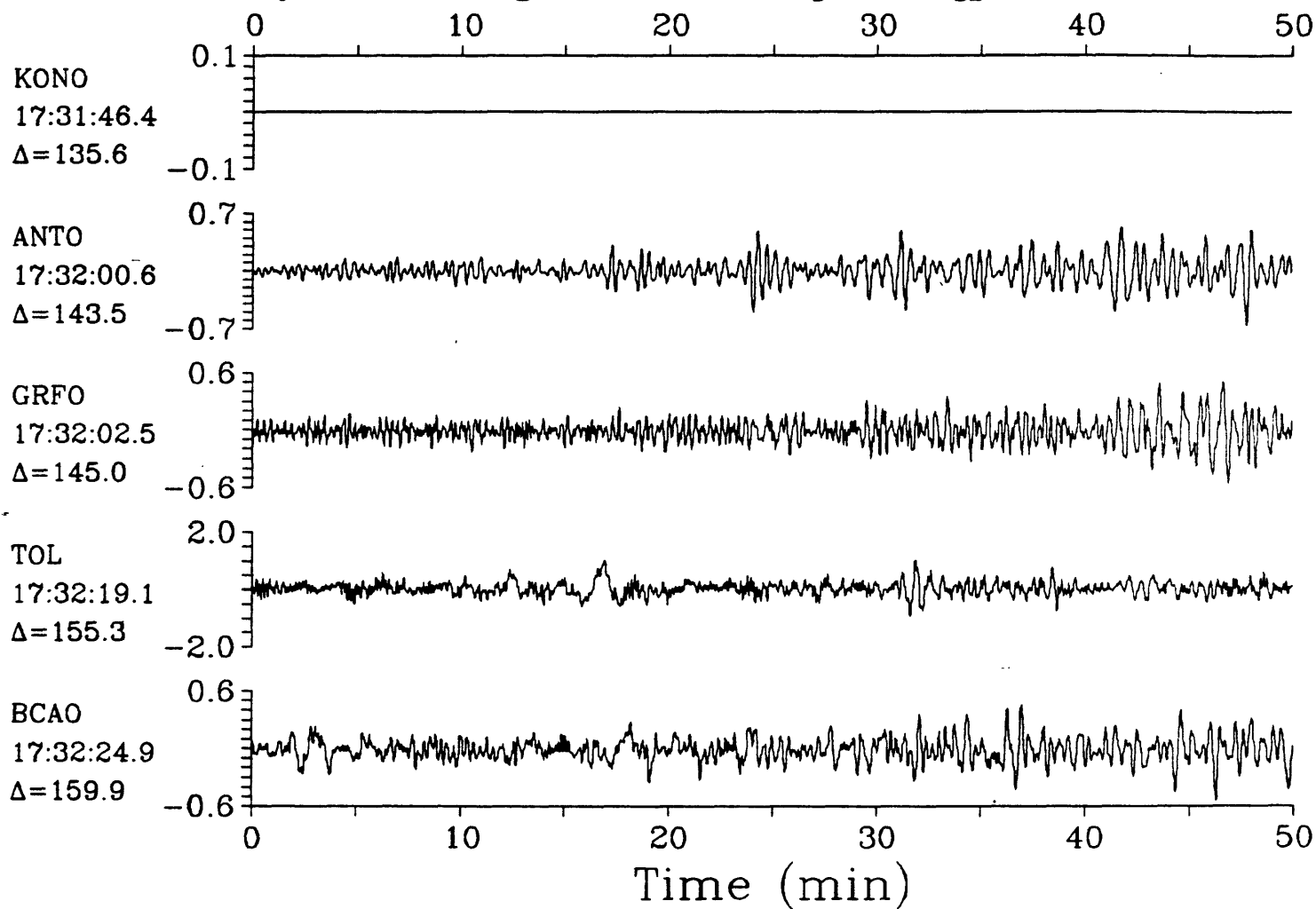
LPZ

Fiji Islands Region  $h=33.0$   $m_b=5.7$   $M_{sz}=5.7$ 

LPZ

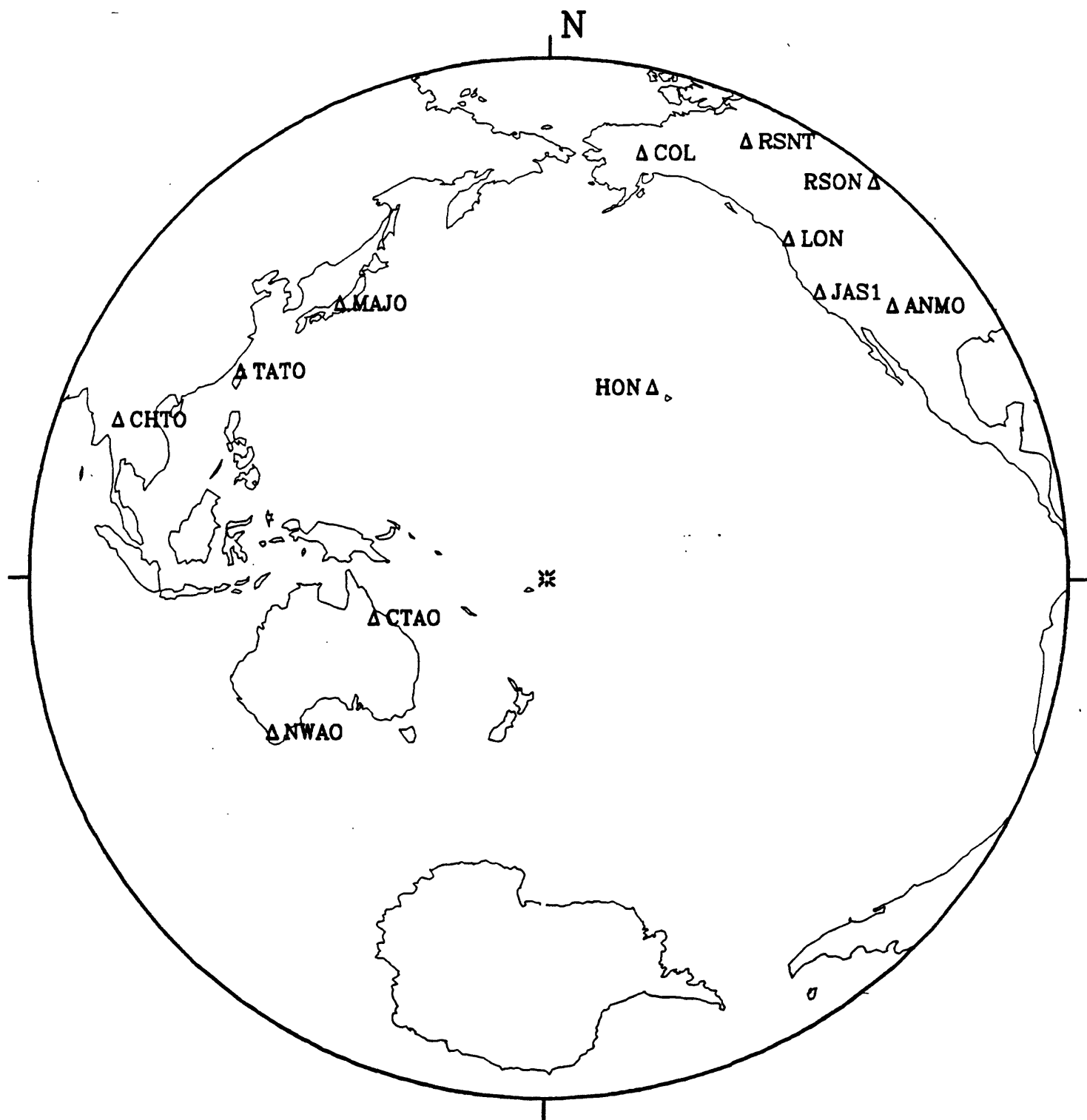
22 December 1985 17:13:29.04

LPZ

Fiji Islands Region  $h=33.0$   $m_b=5.7$   $M_{sz}=5.7$ 

22 December 1985 18:27:02.53

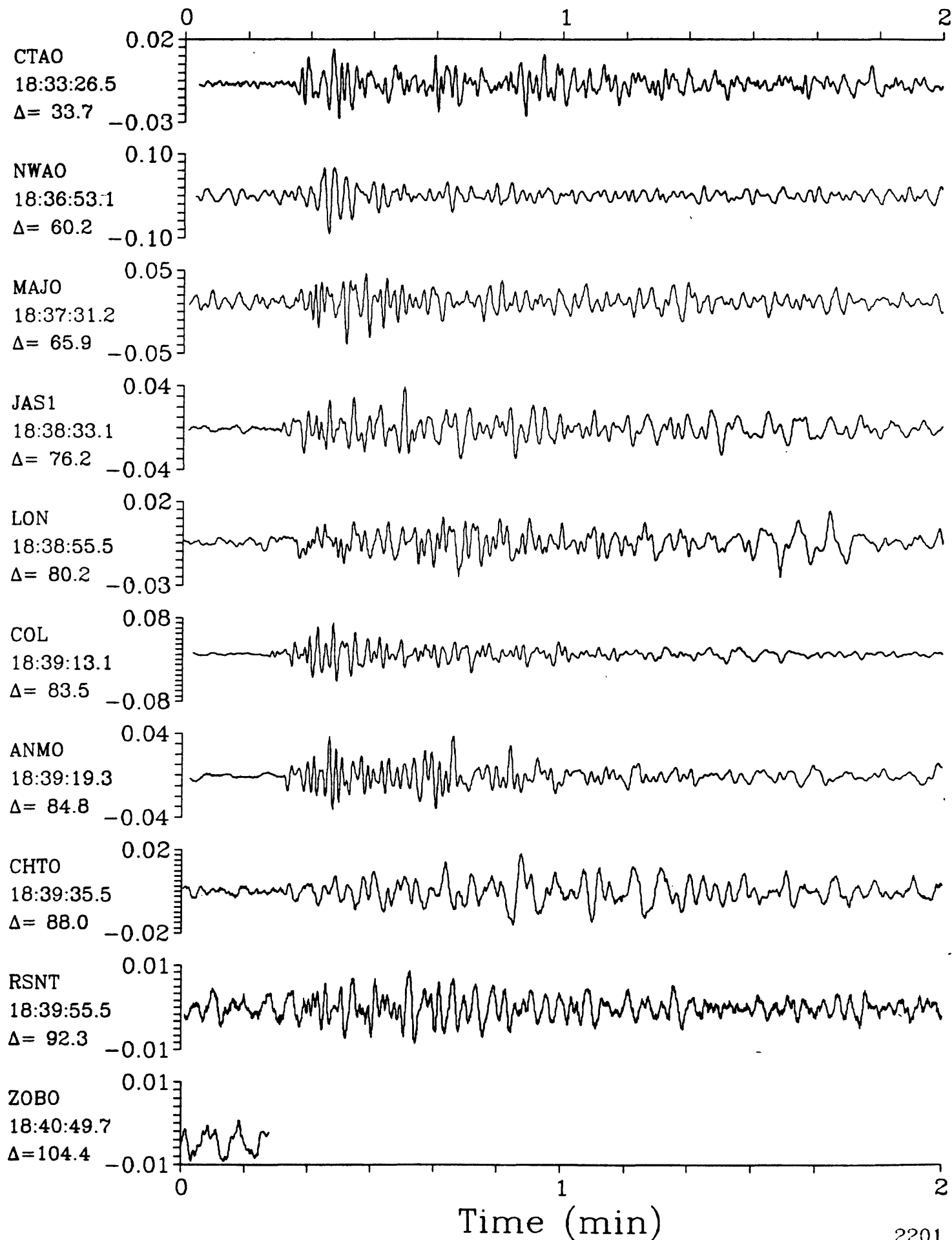
## Fiji Islands Region



SPZ

22 December 1985 18:27:02.53

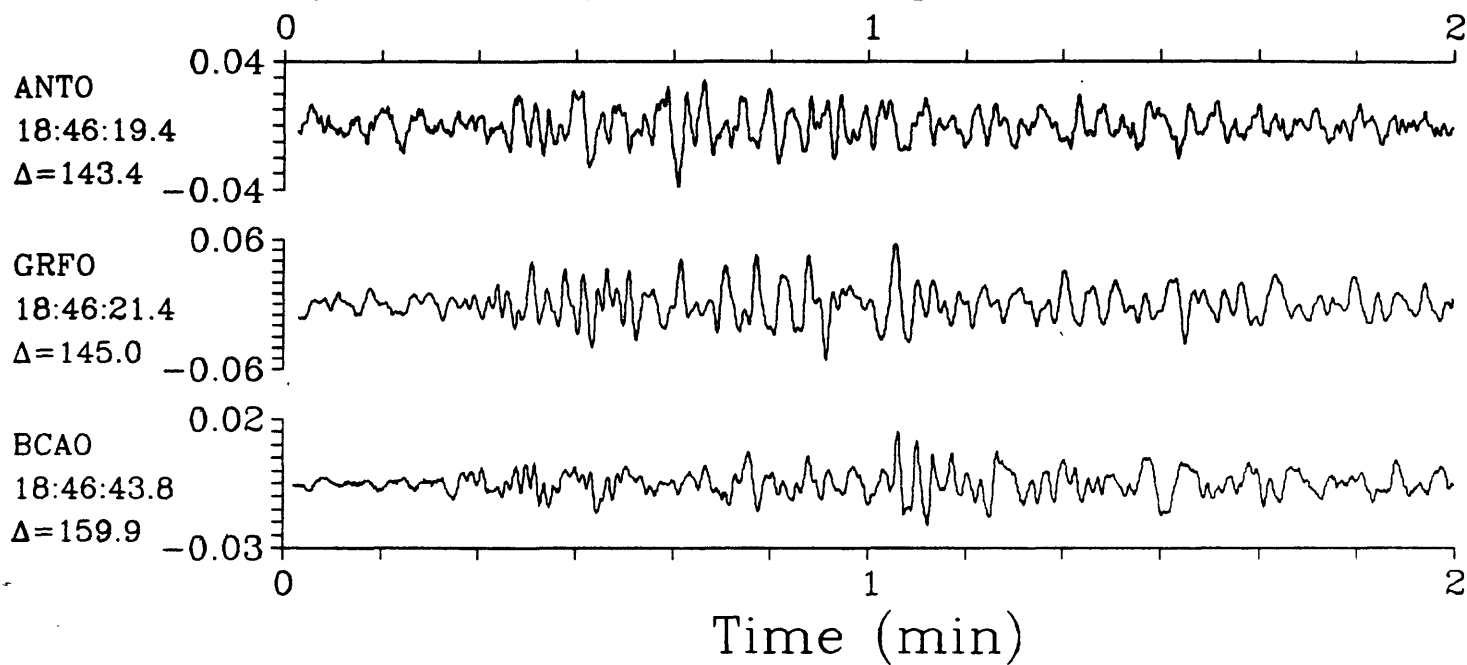
SPZ

Fiji Islands Region  $h=30.5$   $m_b=5.5$   $M_{sz}=5.8$ 

SPZ

22 December 1985 18:27:02.53

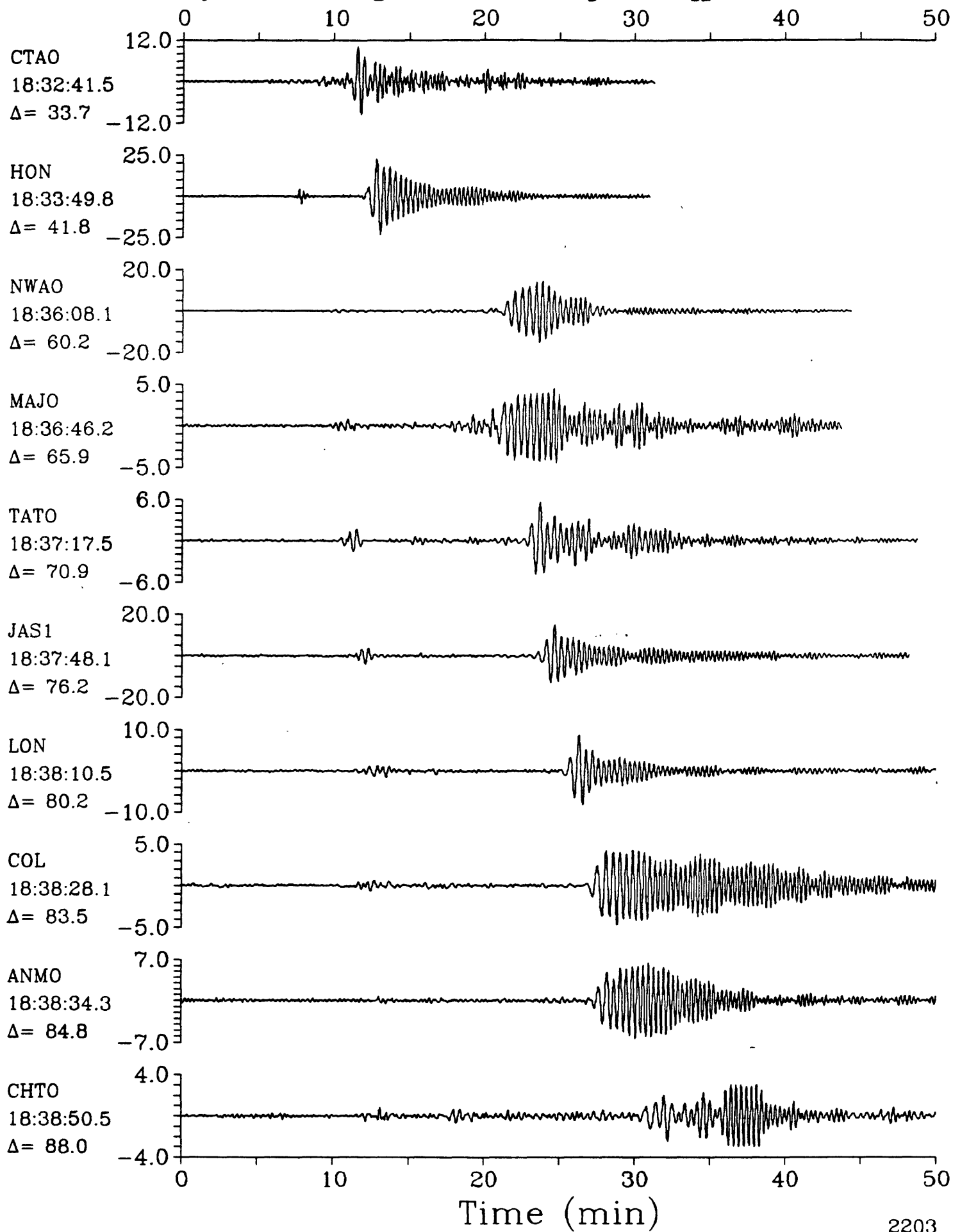
SPZ

Fiji Islands Region  $h=30.5$   $m_b=5.5$   $M_{sz}=5.8$ 

LPZ

22 December 1985 18:27:02.53

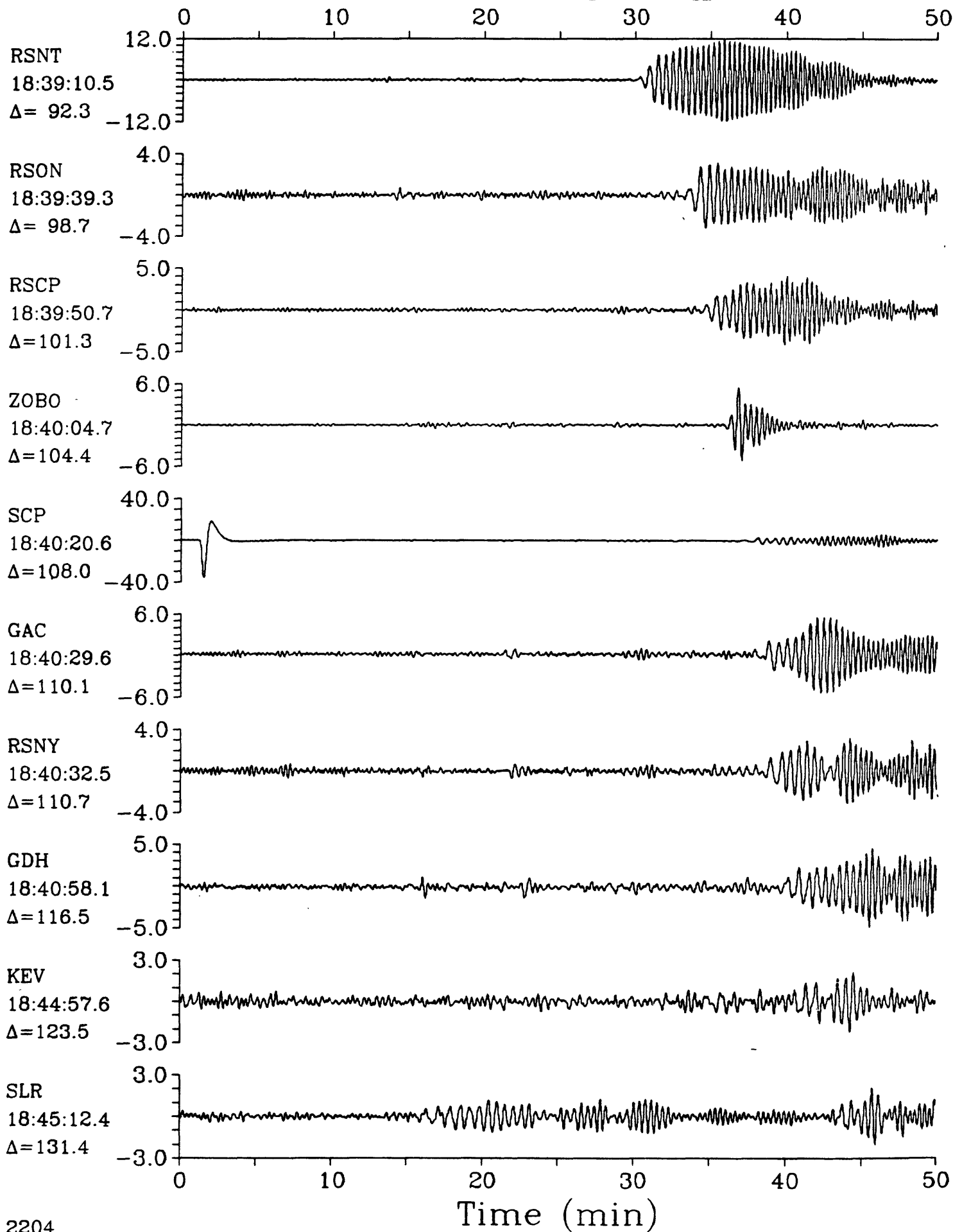
LPZ

Fiji Islands Region  $h=30.5$   $m_b=5.5$   $M_{sz}=5.8$ 

LPZ

22 December 1985 18:27:02.53

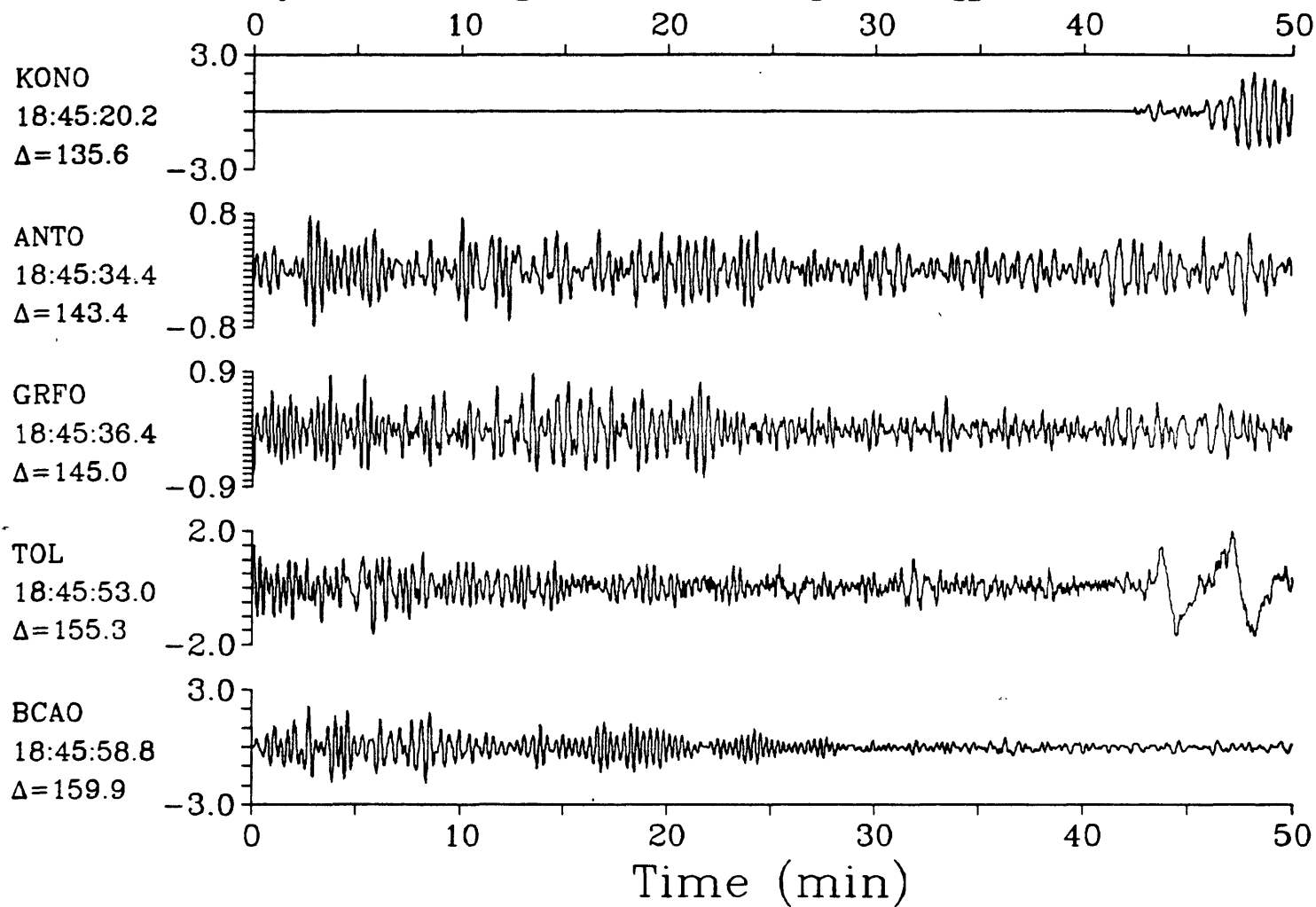
LPZ

Fiji Islands Region  $h=30.5$   $m_b=5.5$   $M_{sz}=5.8$ 

LPZ

22 December 1985 18:27:02.53

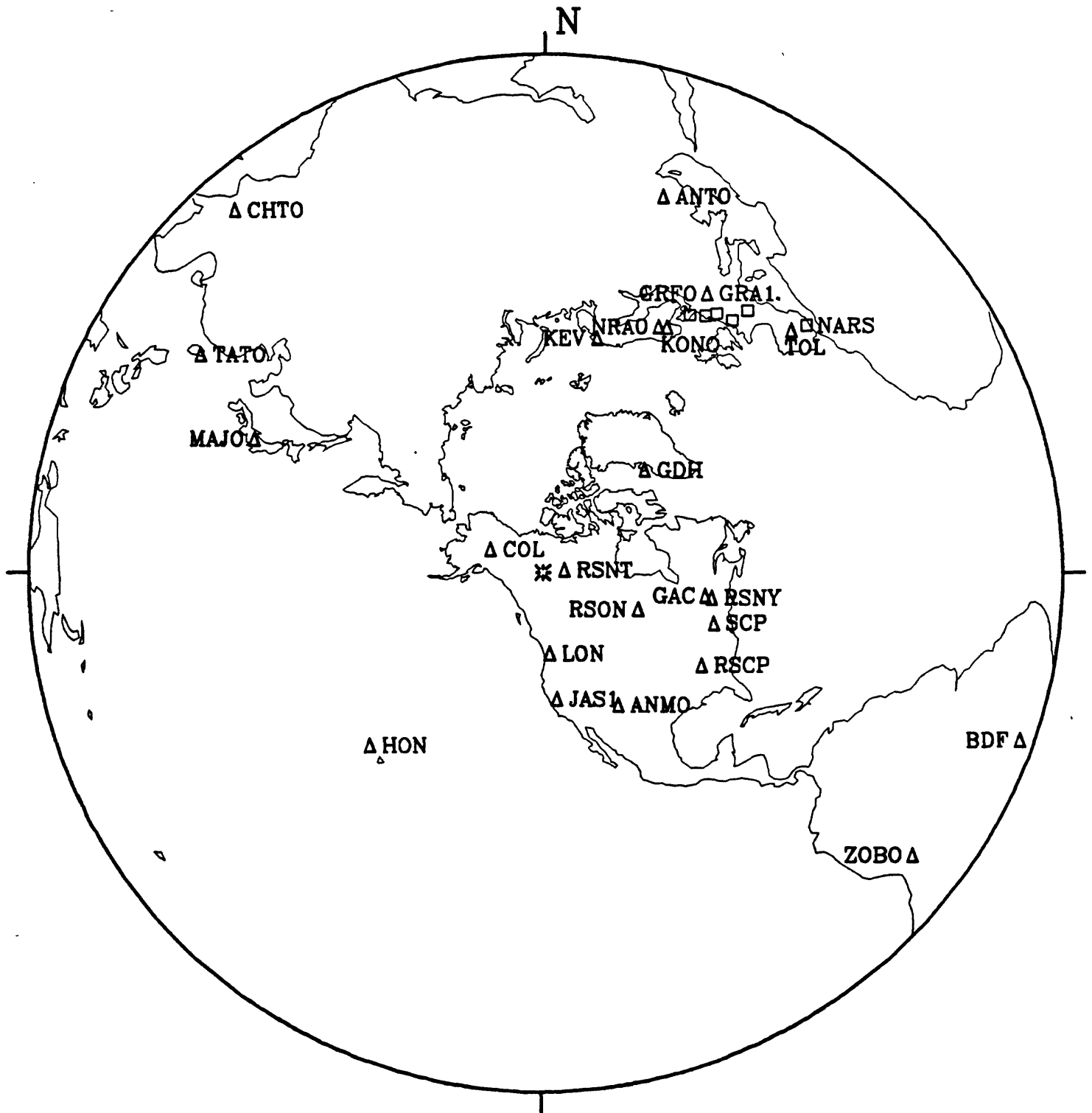
LPZ

Fiji Islands Region  $h=30.5$   $m_b=5.5$   $M_{sz}=5.8$ 



23 December 1985 05:16:03.91

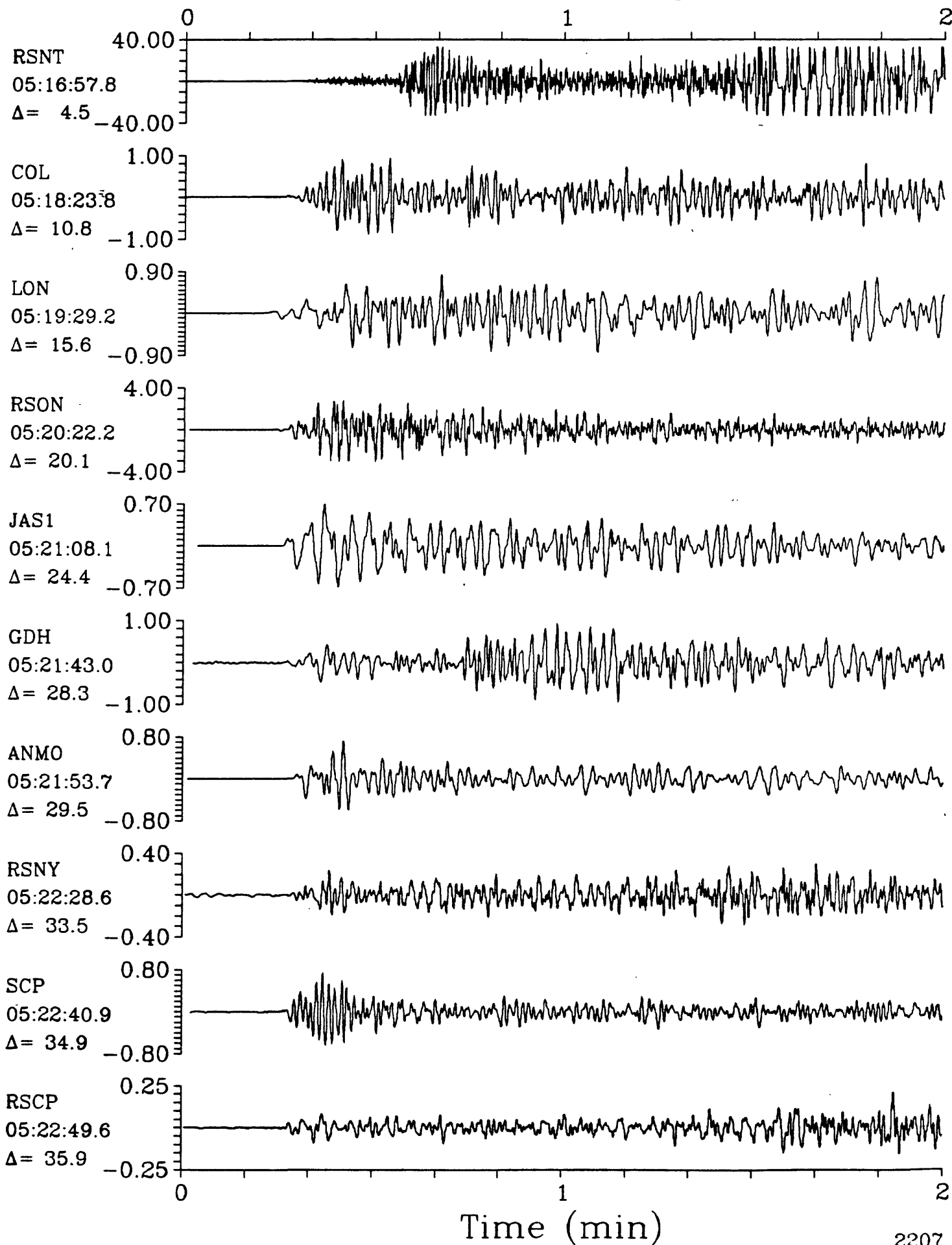
# Northwest Territories, Canada



SPZ

23 December 1985 05:16:03.91

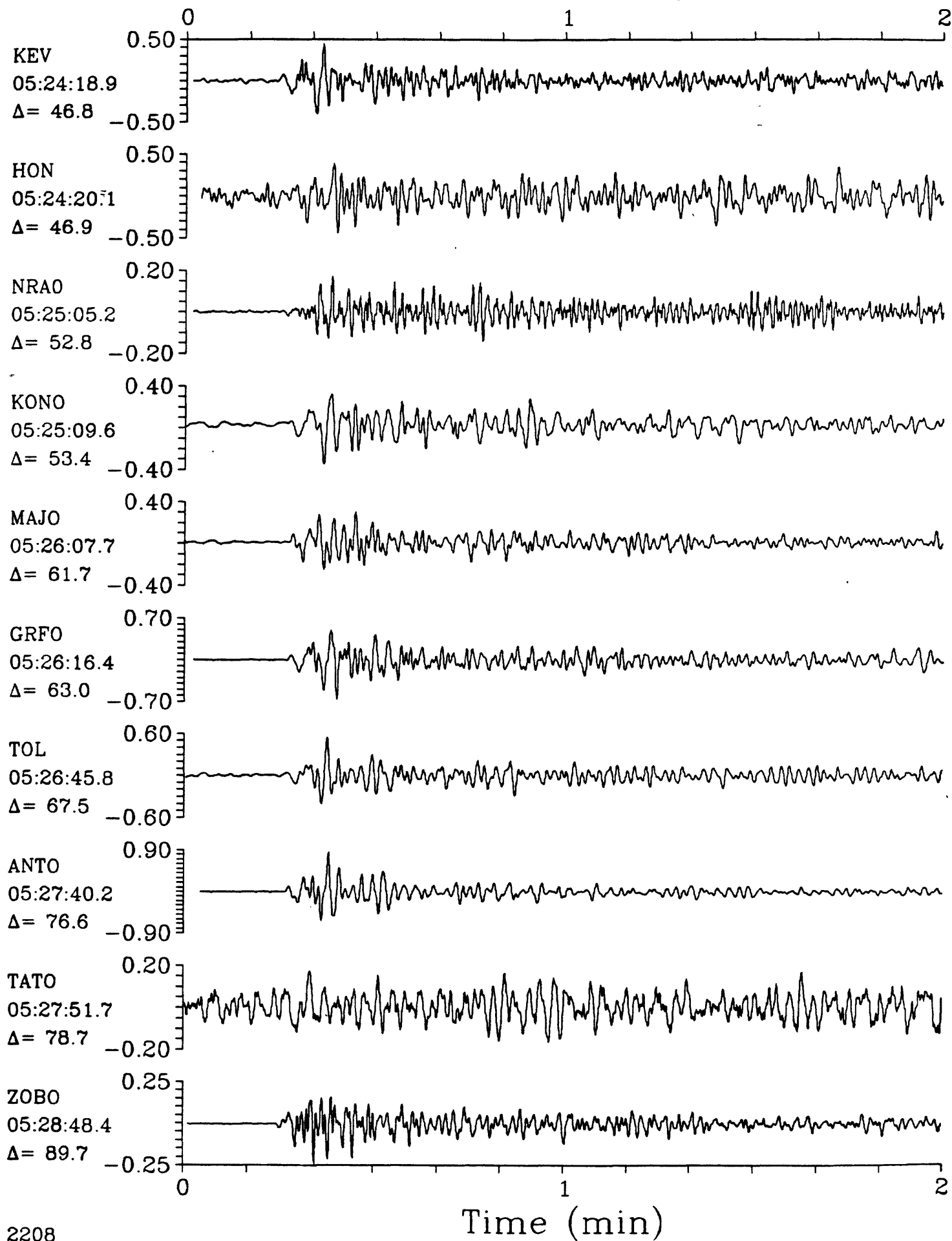
SPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

SPZ

23 December 1985 05:16:03.91

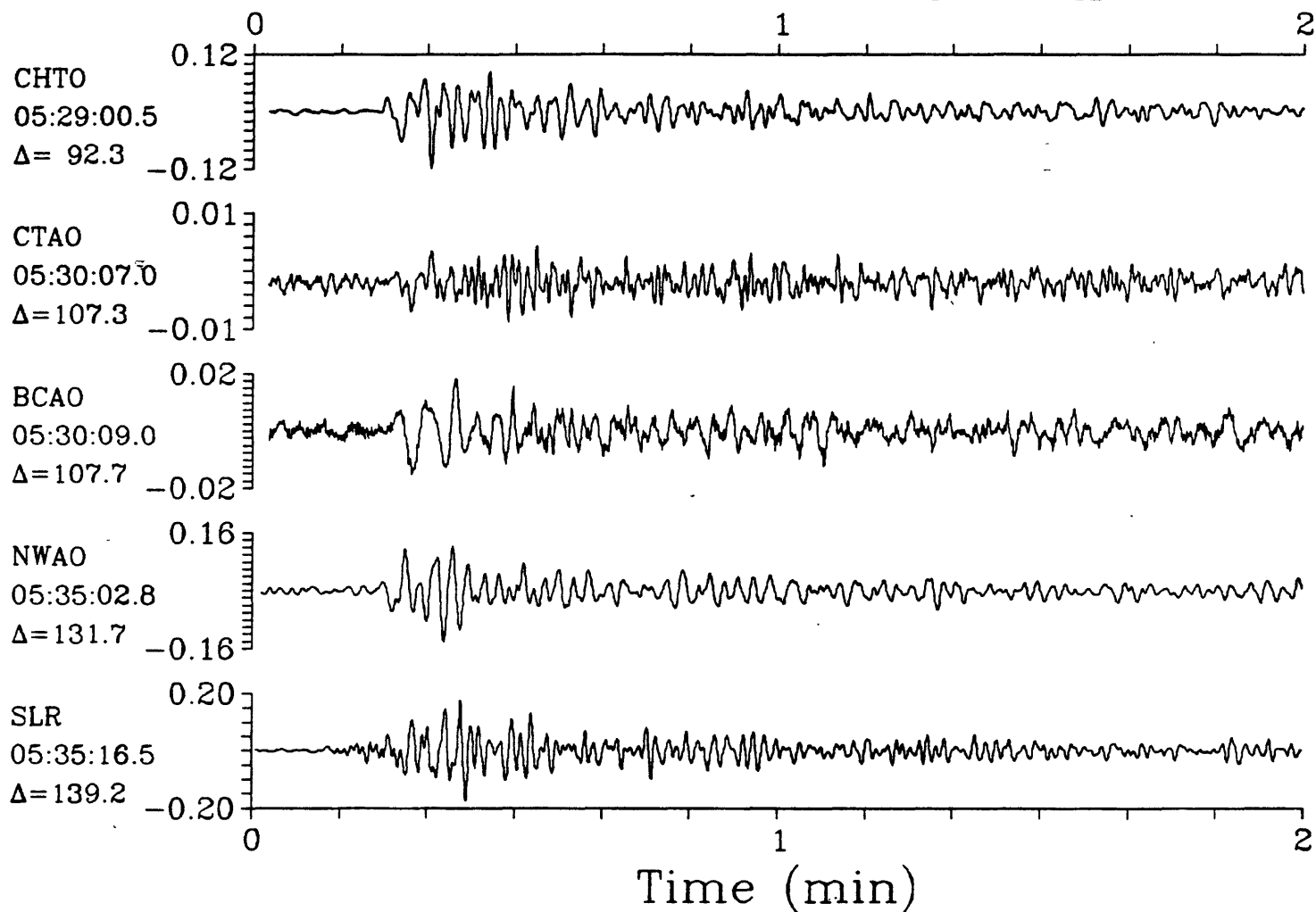
SPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

SPZ

23 December 1985 05:16:03.91

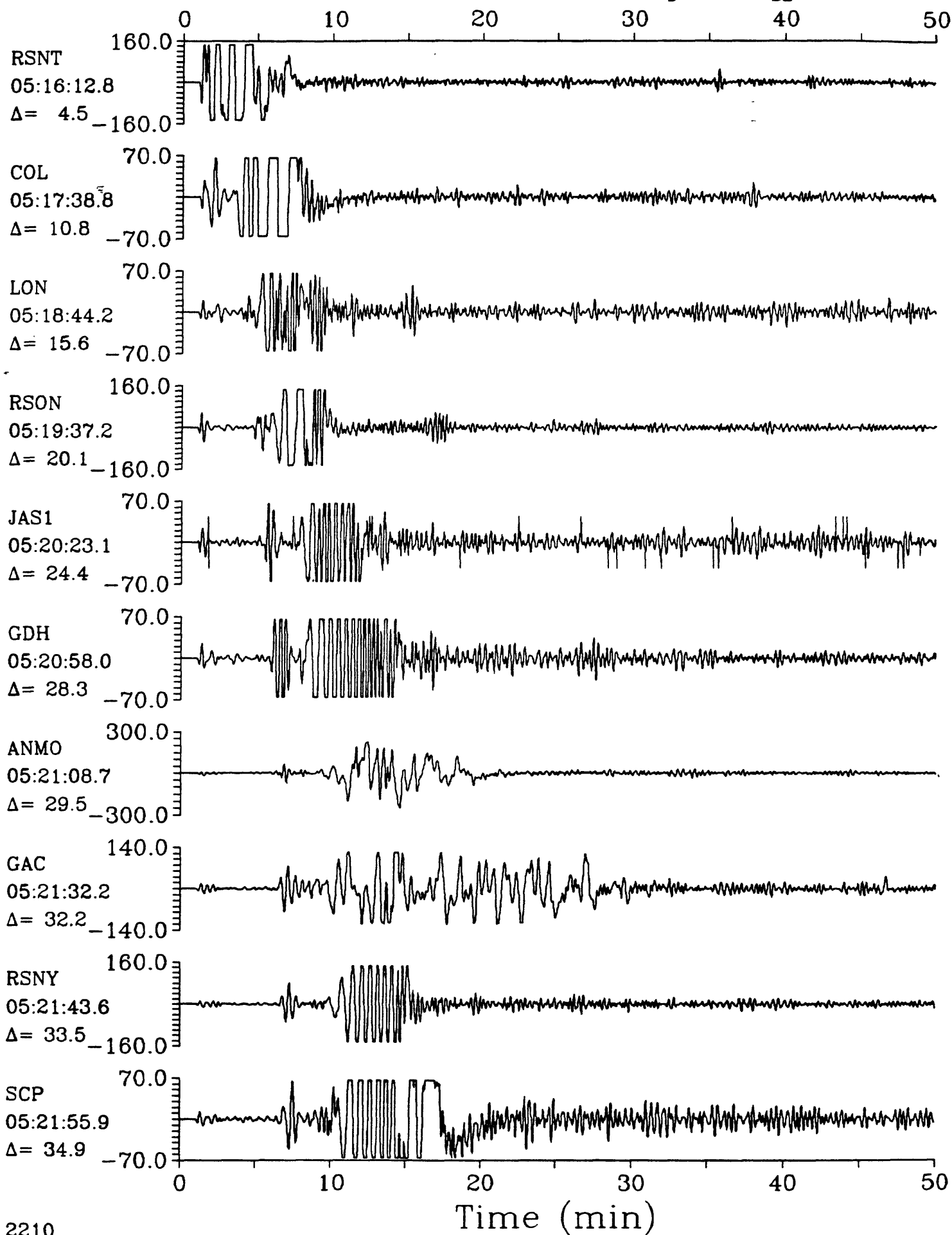
SPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

LPZ

23 December 1985 05:16:03.91

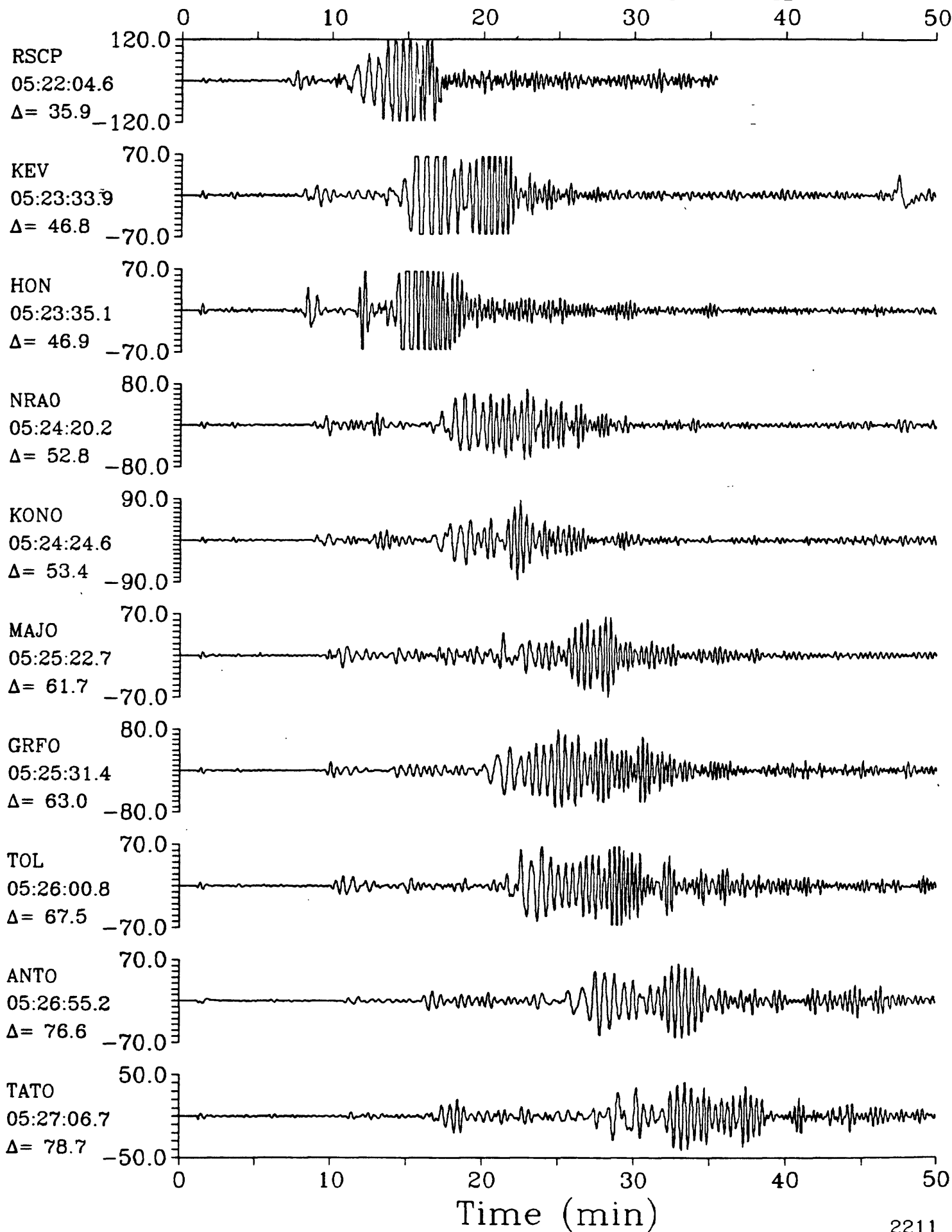
LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

LPZ

23 December 1985 05:16:03.91

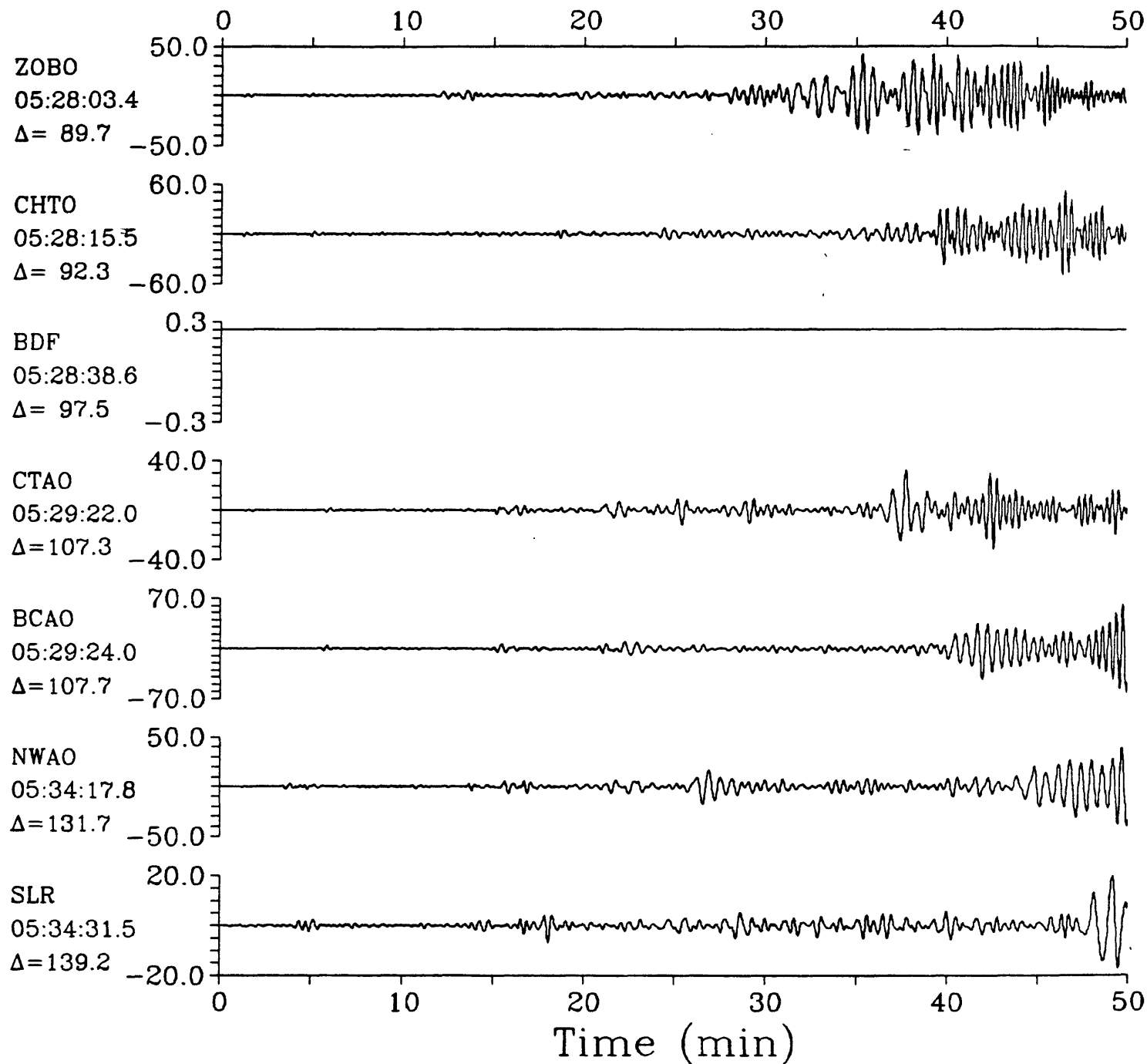
LPZ

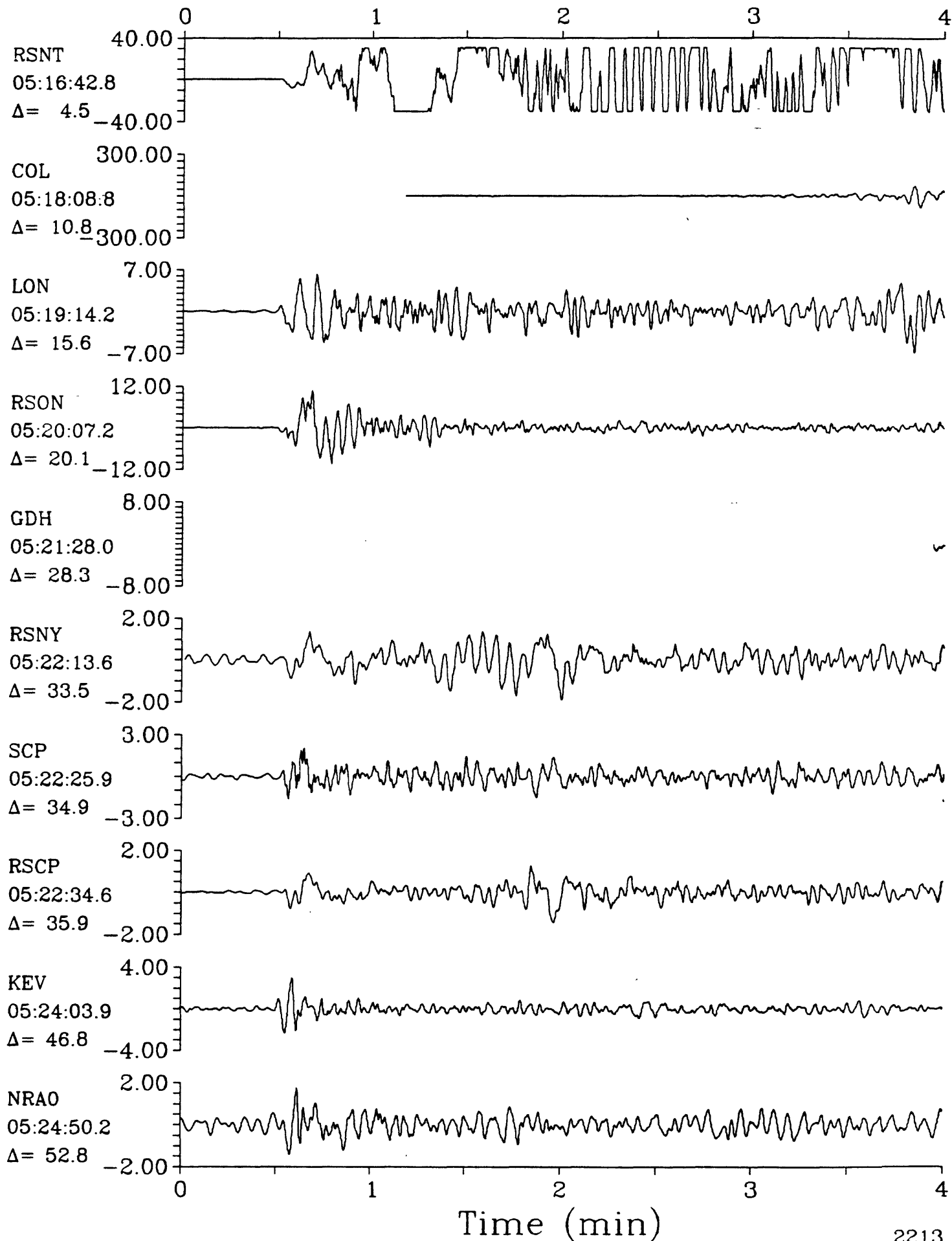
Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

LPZ

23 December 1985 05:16:03.91

LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

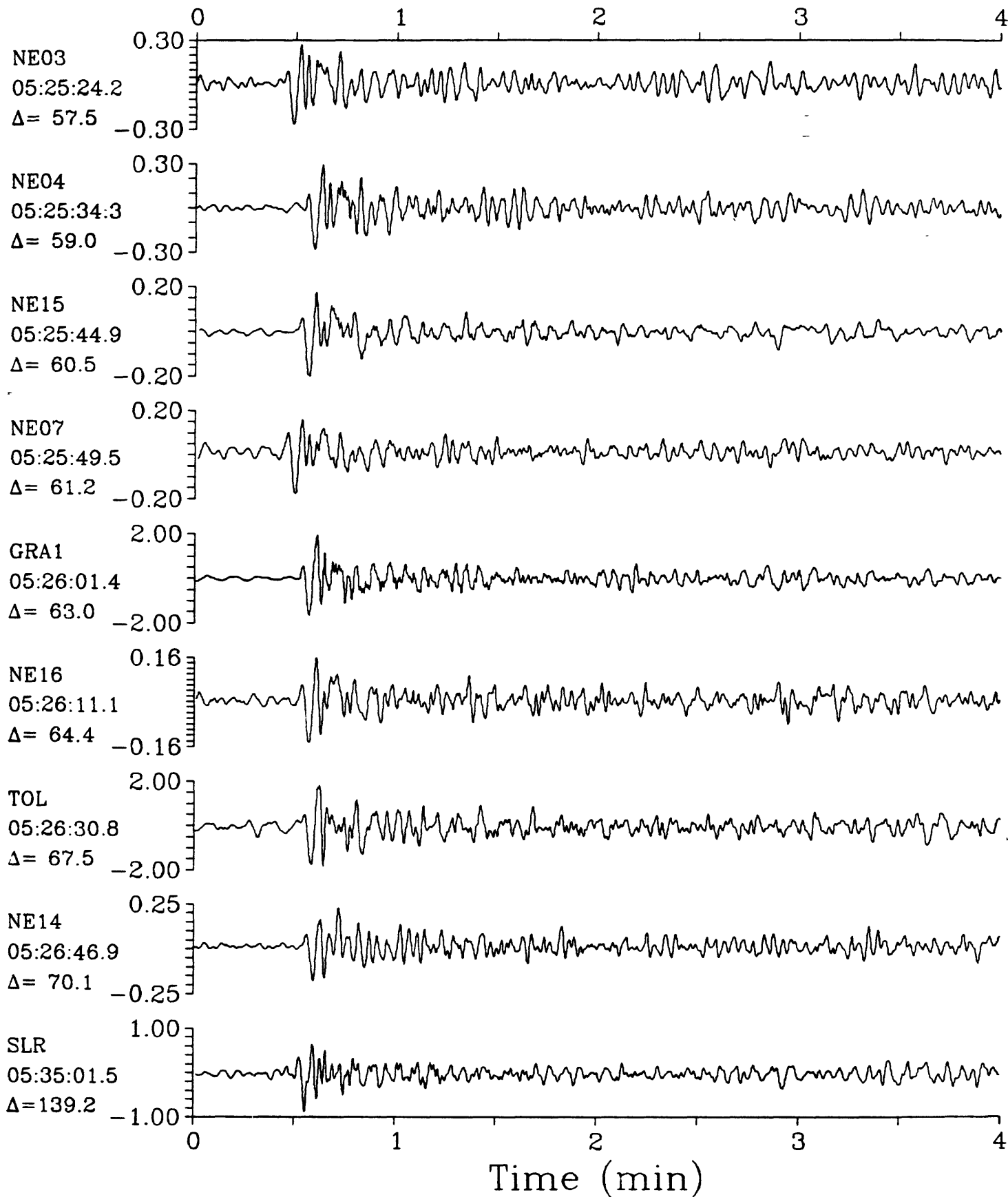




IPZ

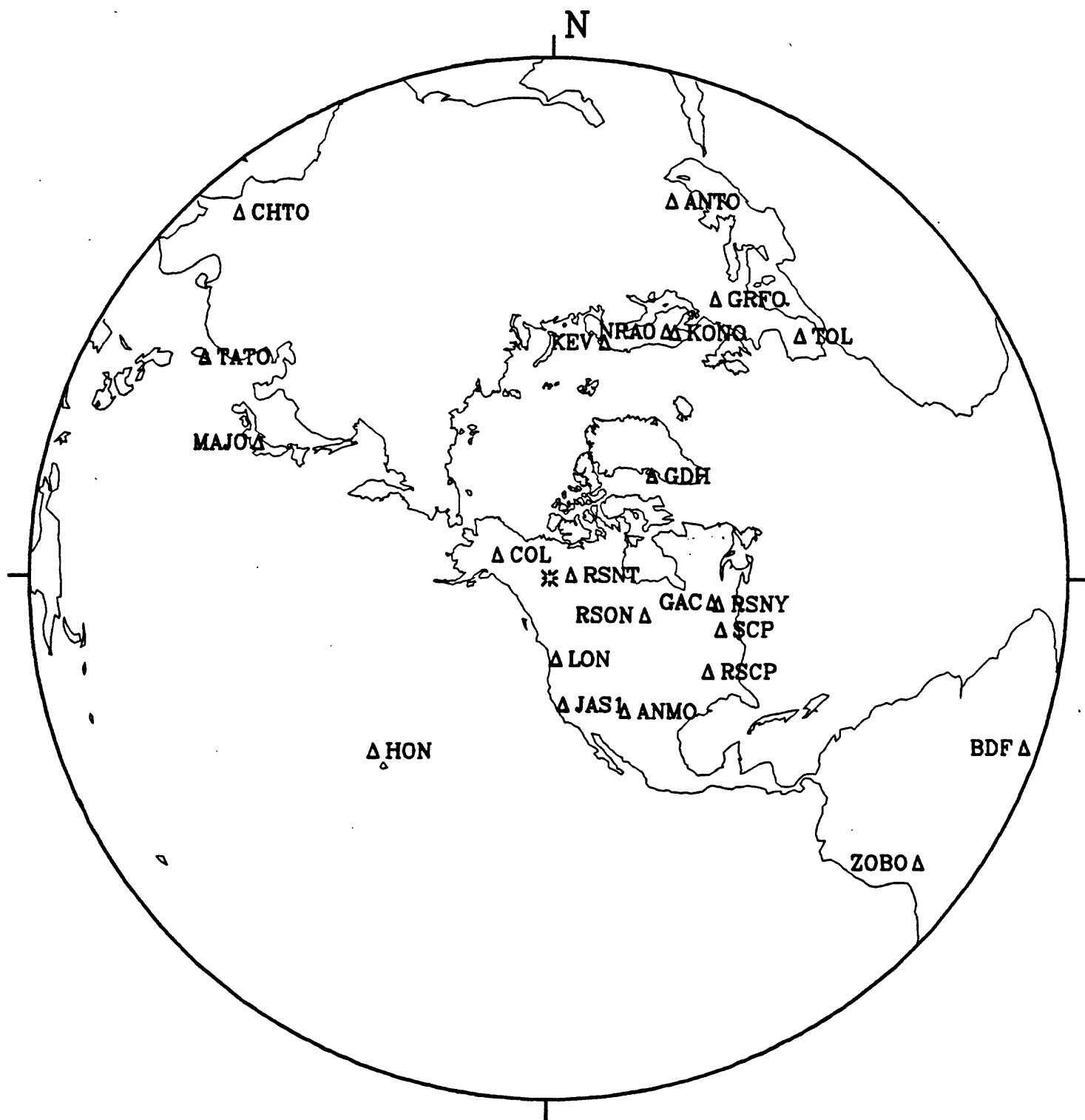
23 December 1985 05:16:03.91

IPZ

Northwest Territories, Canada  $h=10.0$   $m_b=6.4$   $M_{sz}=6.9$ 

23 December 1985 05:48:47.44

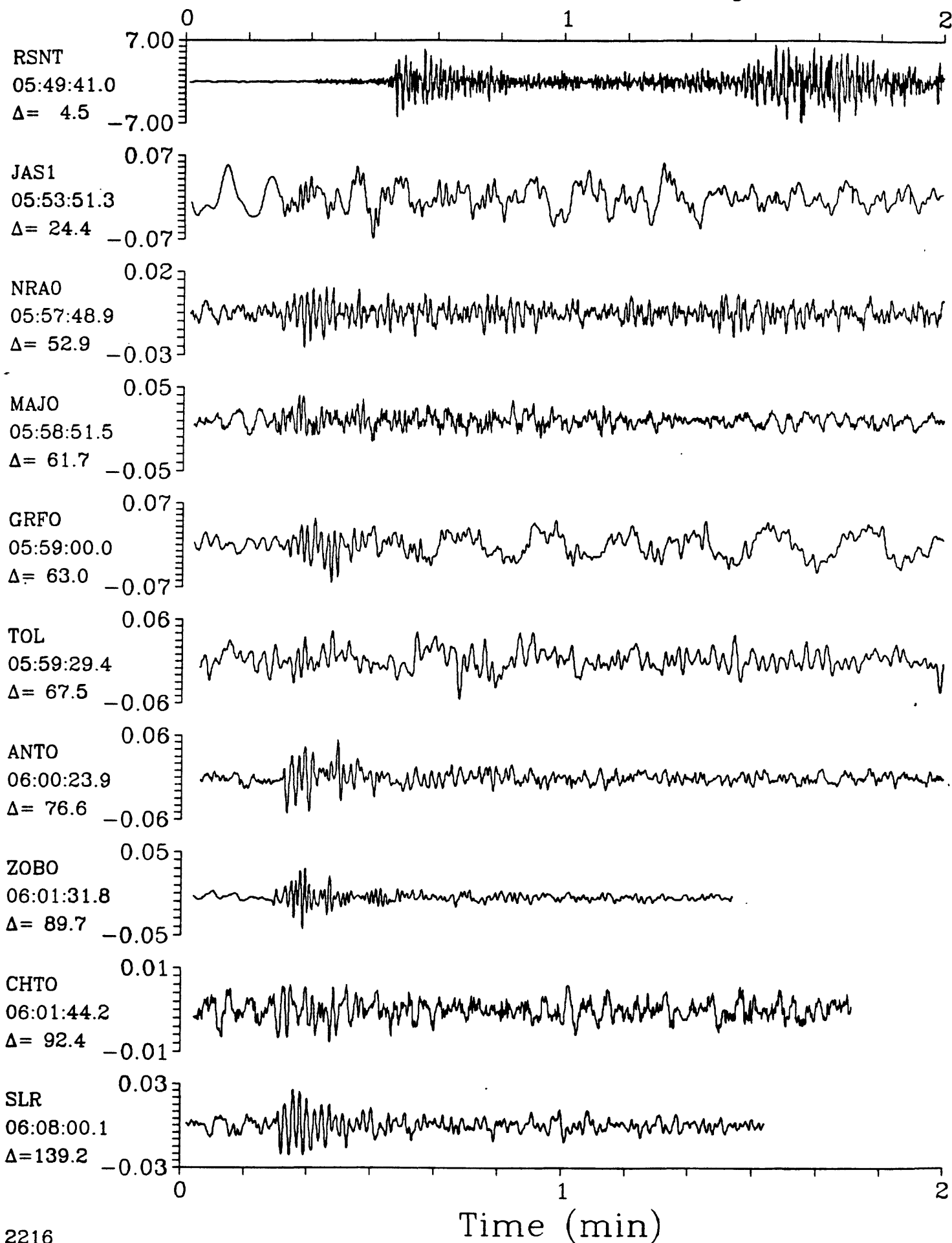
# Northwest Territories, Canada



SPZ

23 December 1985 05:48:47.44

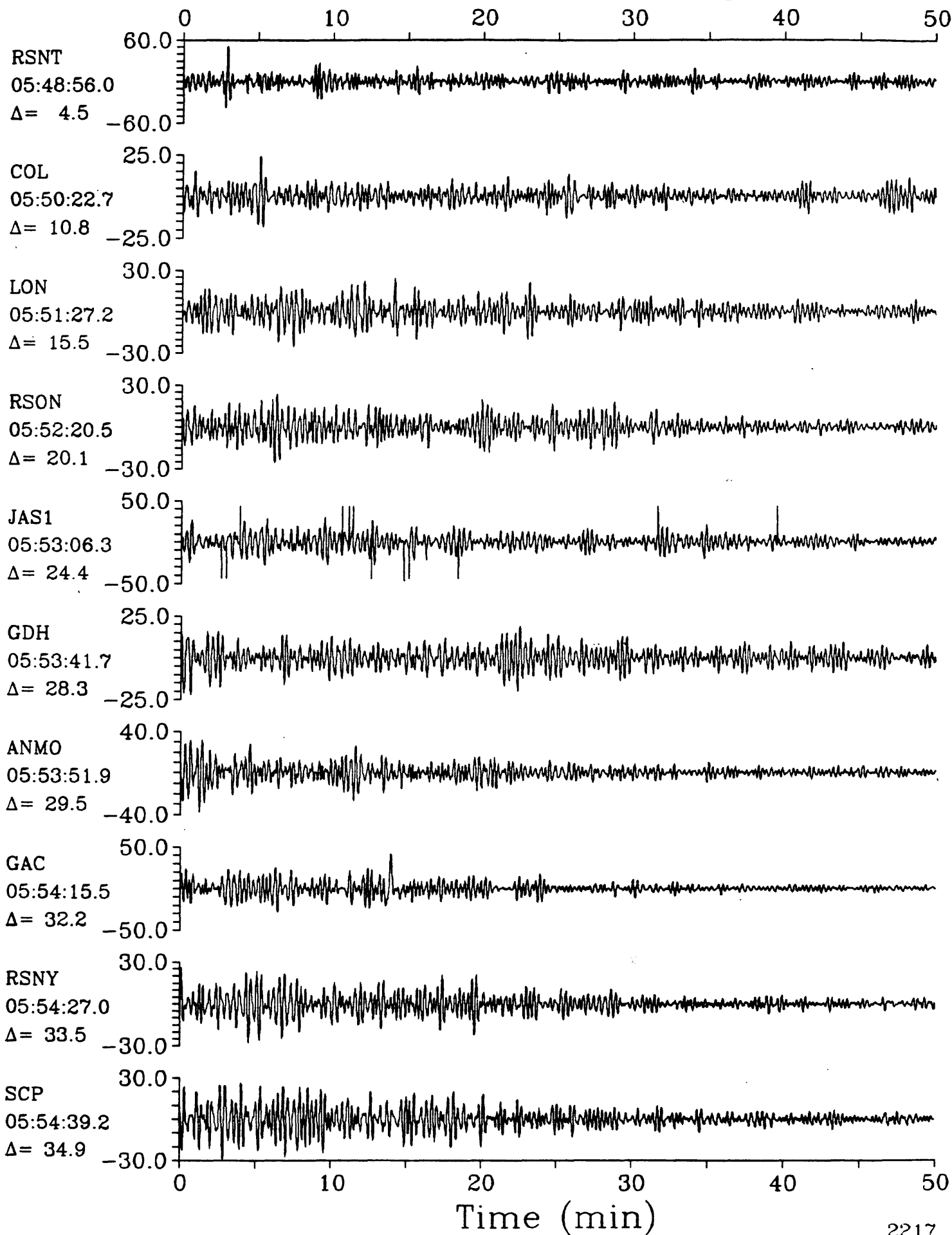
SPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.5$ 

LPZ

23 December 1985 05:48:47.44

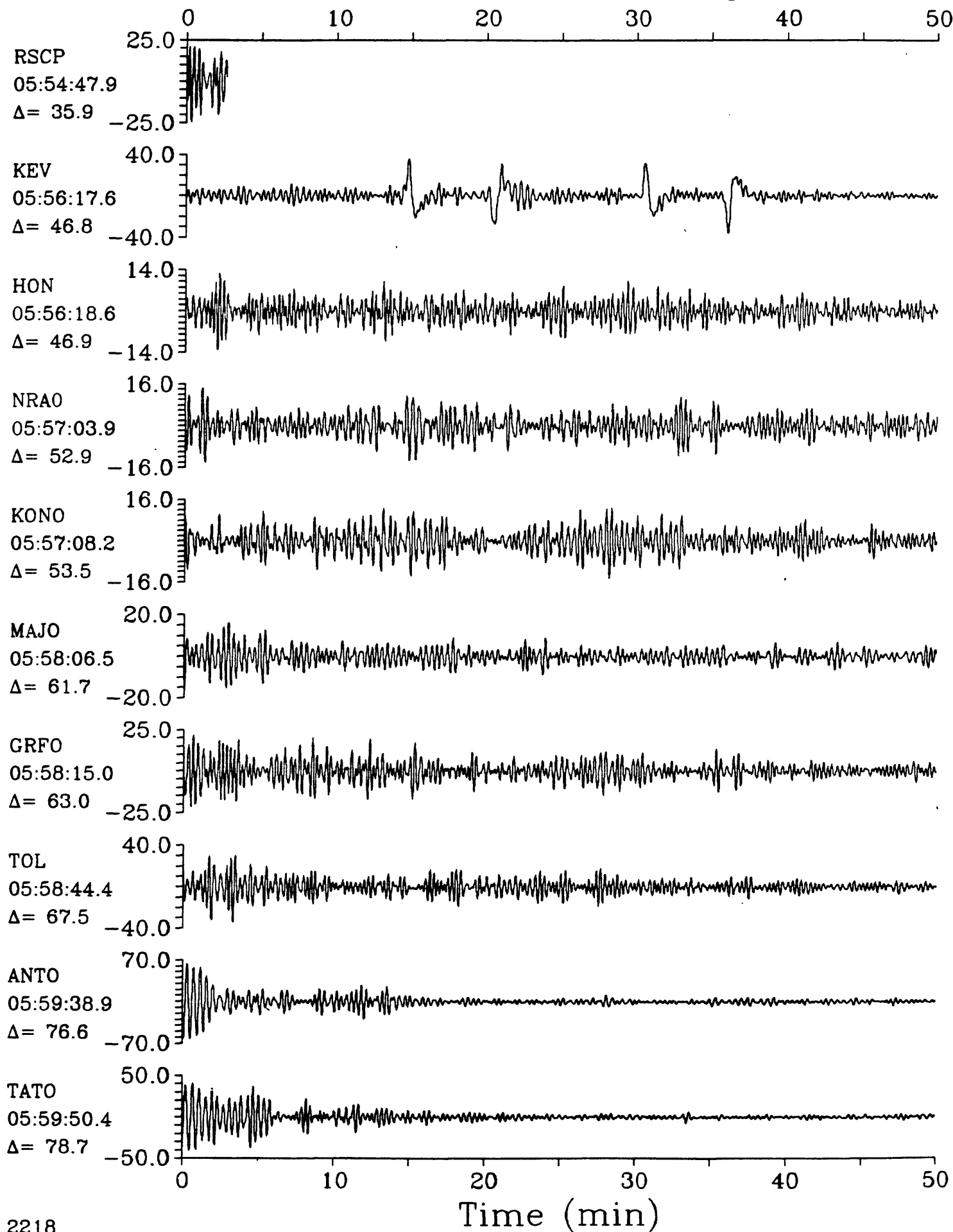
LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.5$ 

LPZ

23 December 1985 05:48:47.44

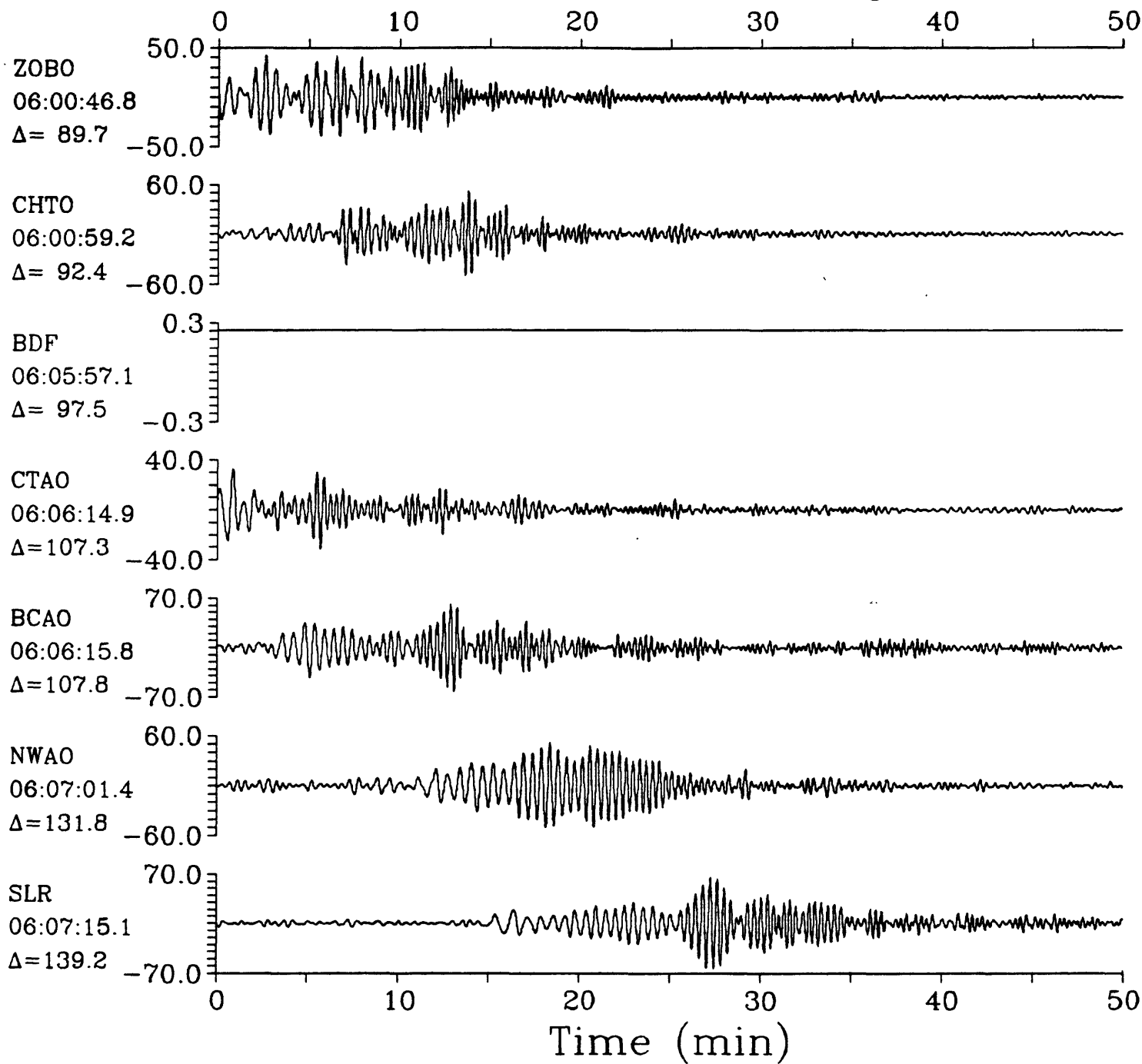
LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.5$ 

LPZ

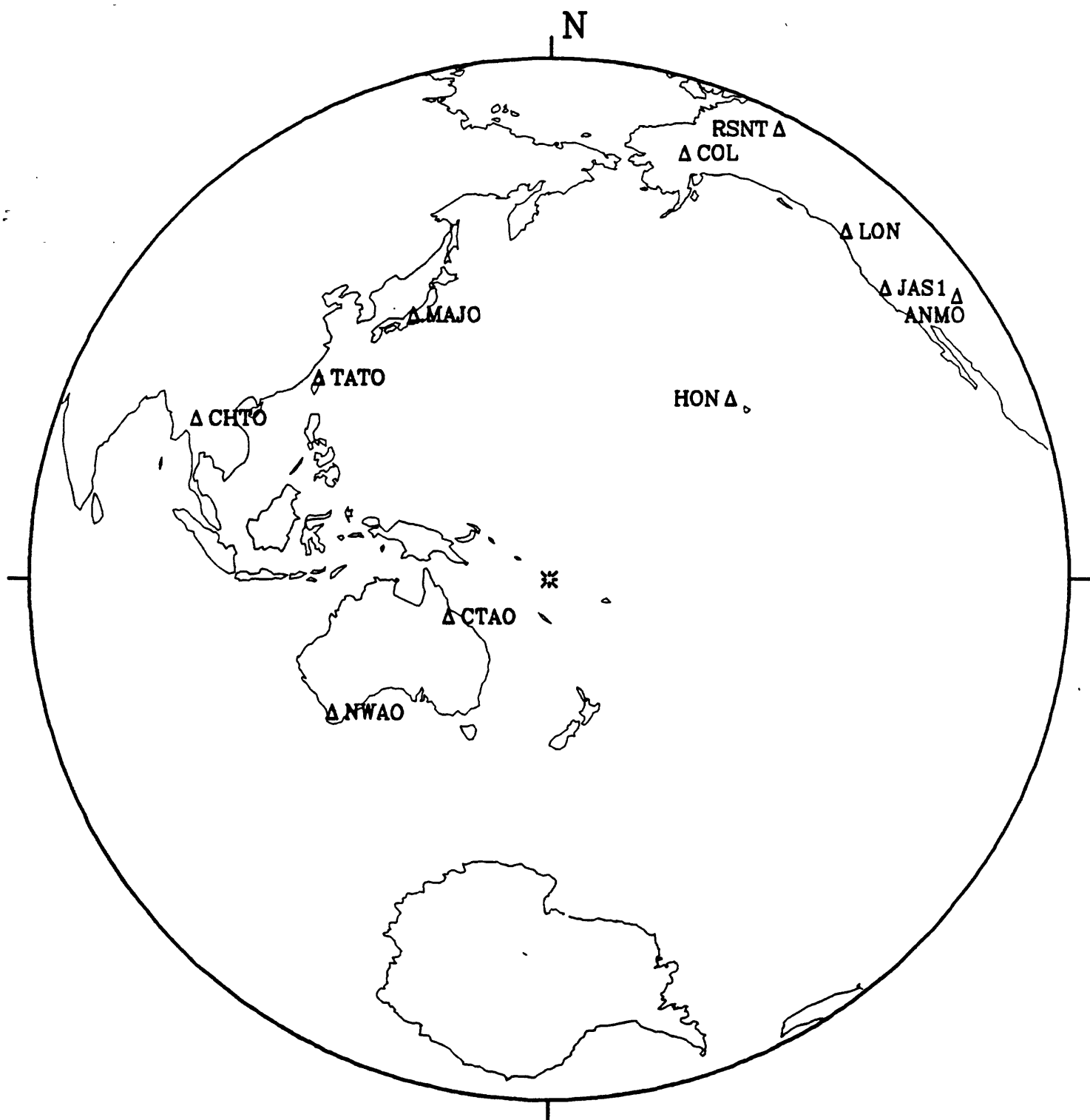
23 December 1985 05:48:47.44

LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.5$ 

23 December 1985 18:15:07.45

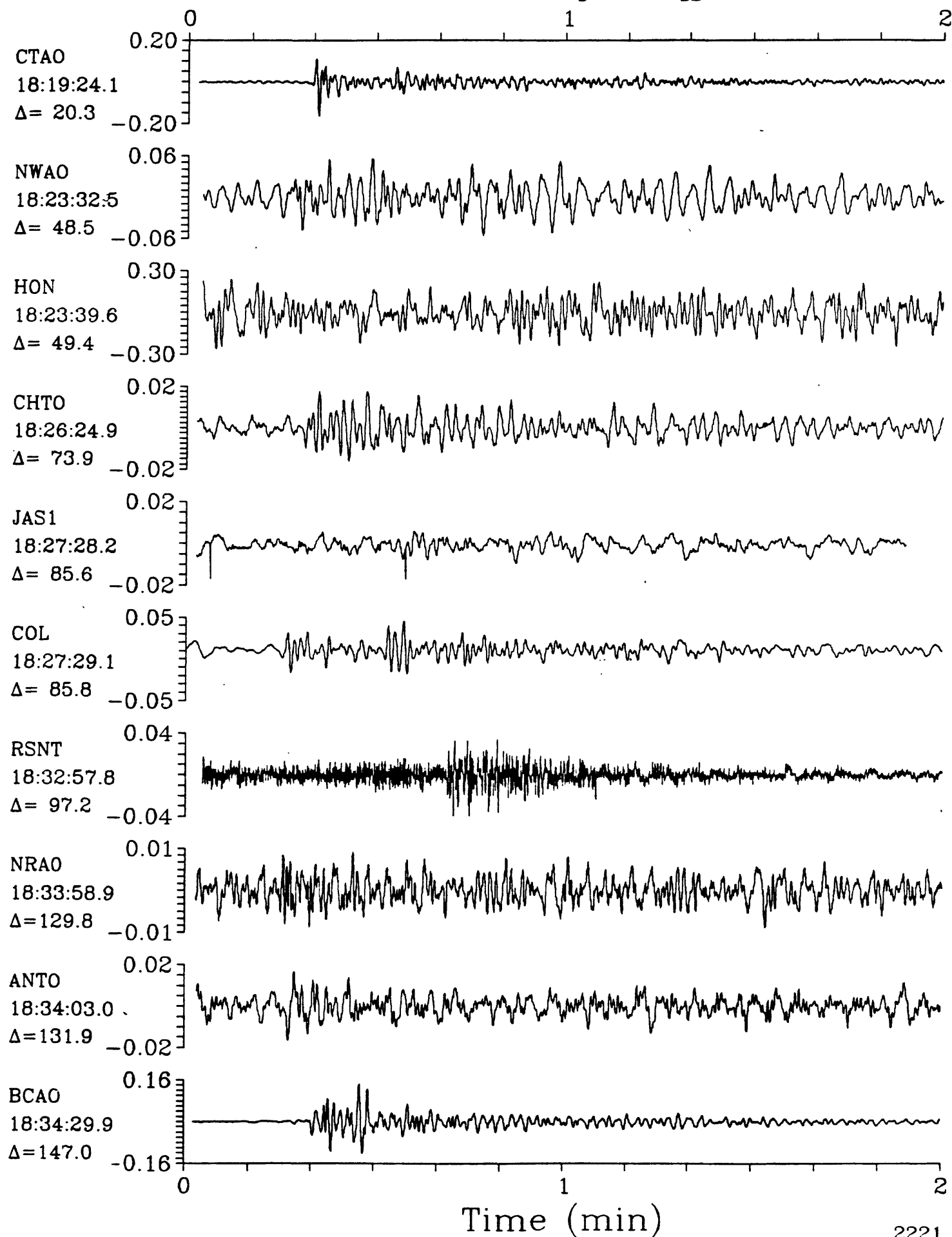
## Vanuatu Islands



SPZ

23 December 1985 18:15:07.45

SPZ

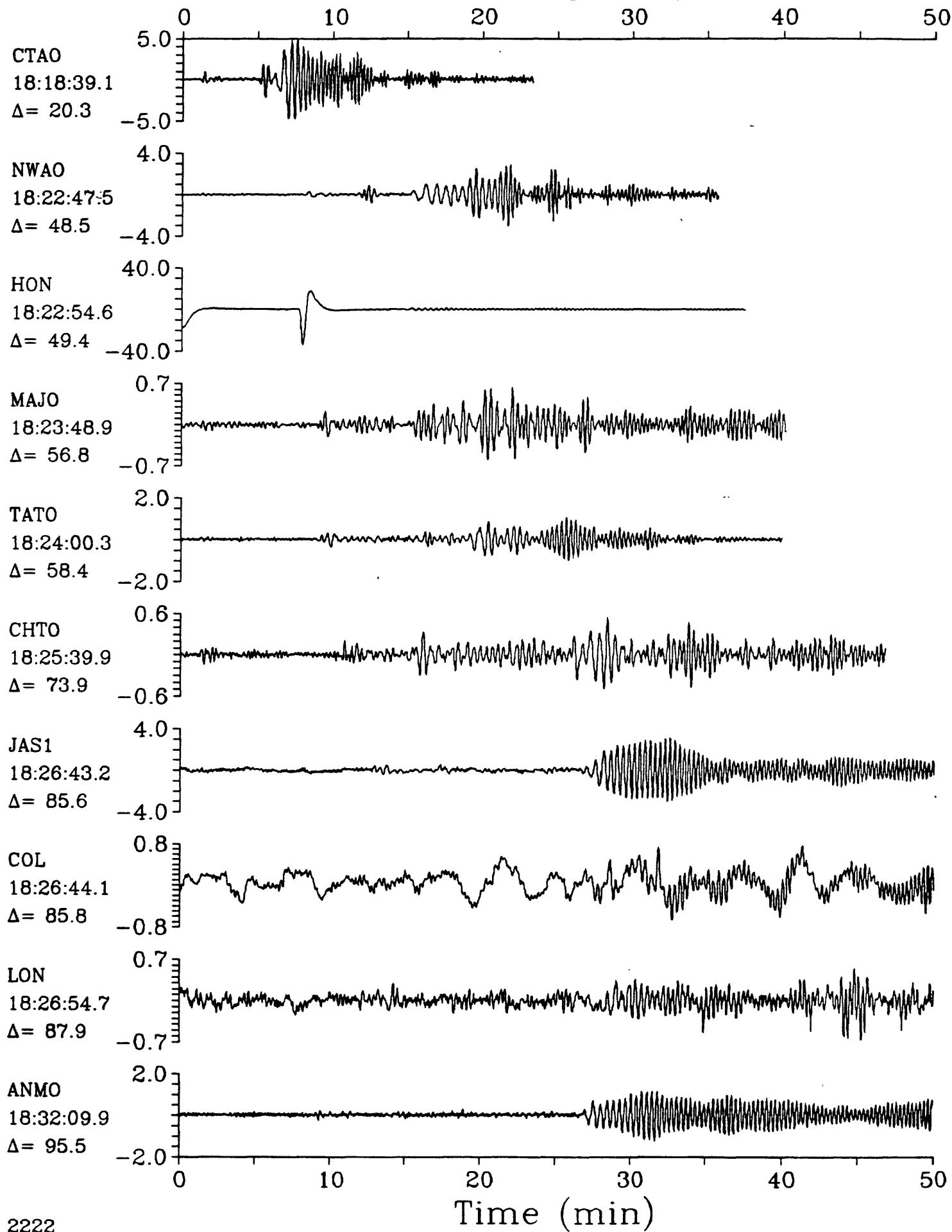
Vanuatu Islands  $h=33.0$   $m_b=5.5$   $M_{sz}=5.2$ 



LPZ

23 December 1985 18:15:07.45  
Vanuatu Islands  $h=33.0$   $m_b=5.5$   $M_{sz}=5.2$ 

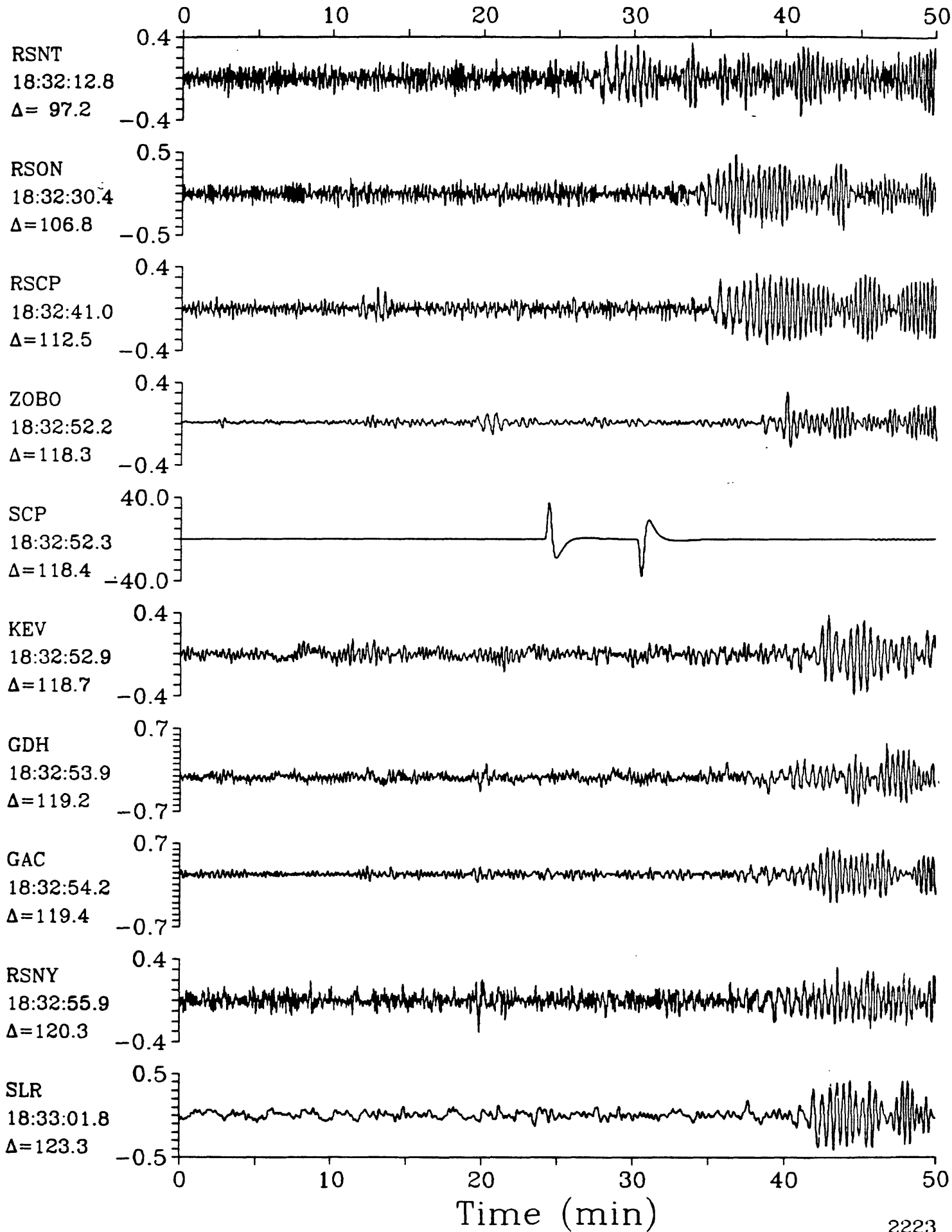
LPZ



LPZ

23 December 1985 18:15:07.45

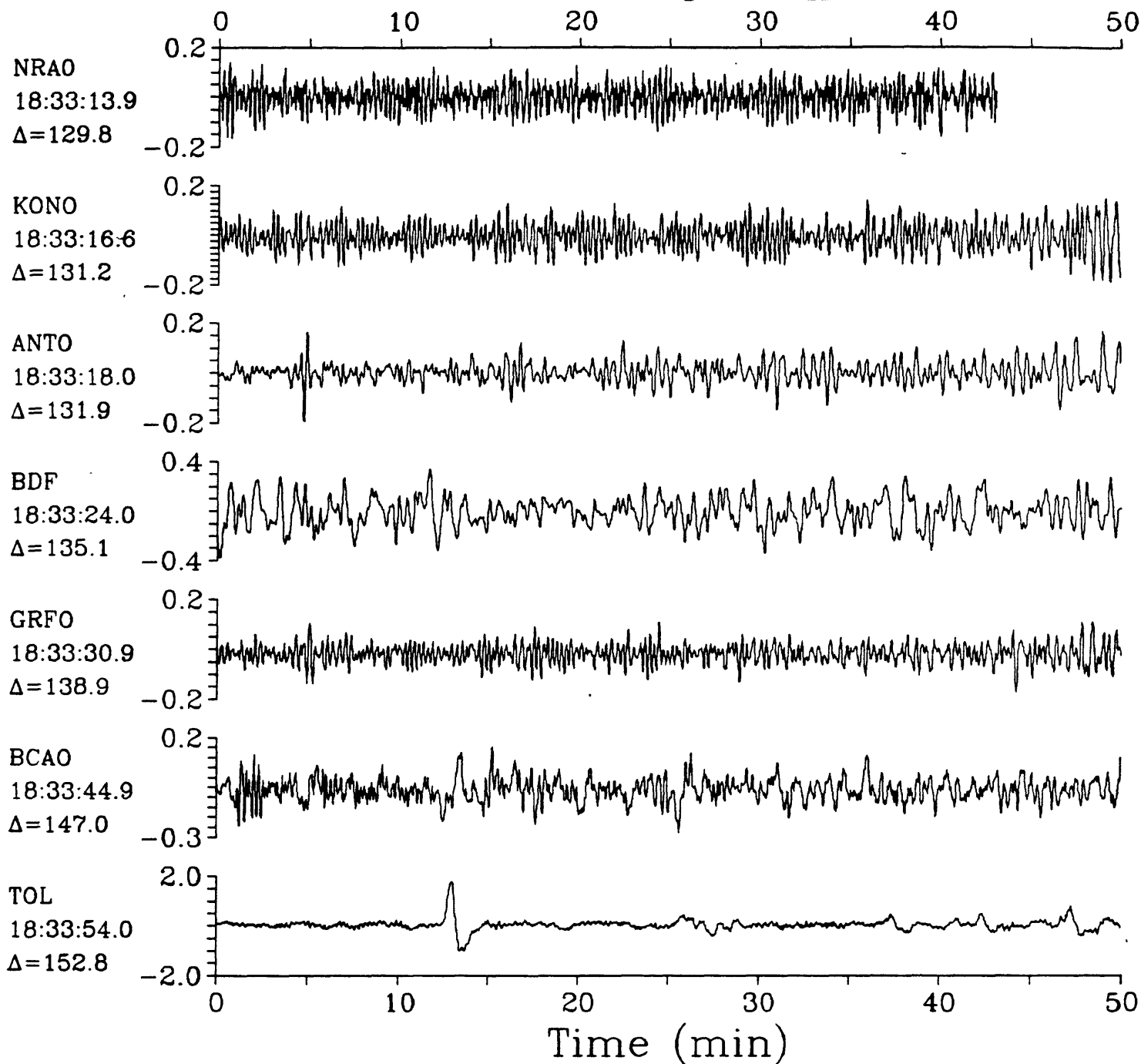
LPZ

Vanuatu Islands  $h=33.0$   $m_b=5.5$   $M_{sz}=5.2$ 

LPZ

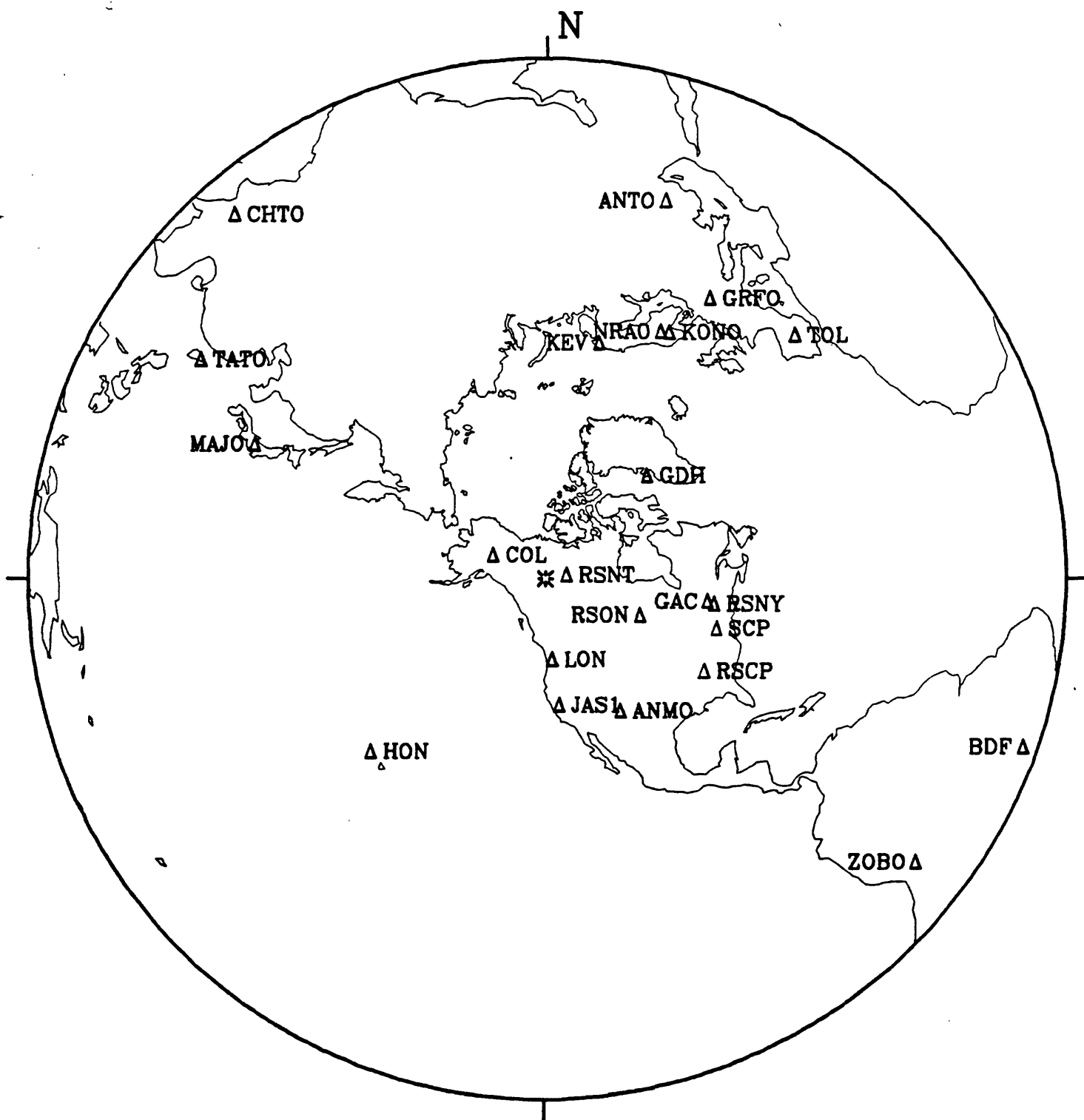
23 December 1985 18:15:07.45

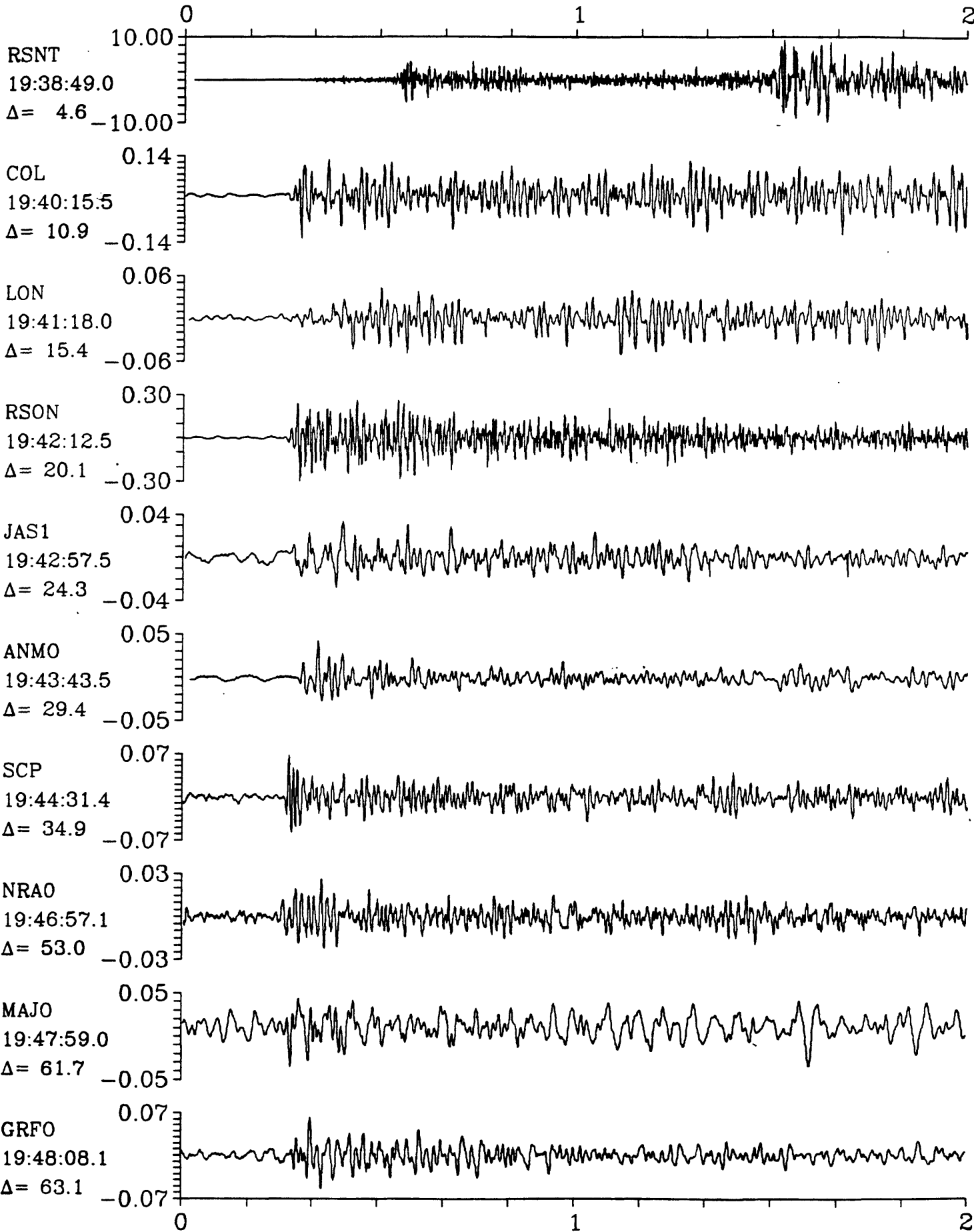
LPZ

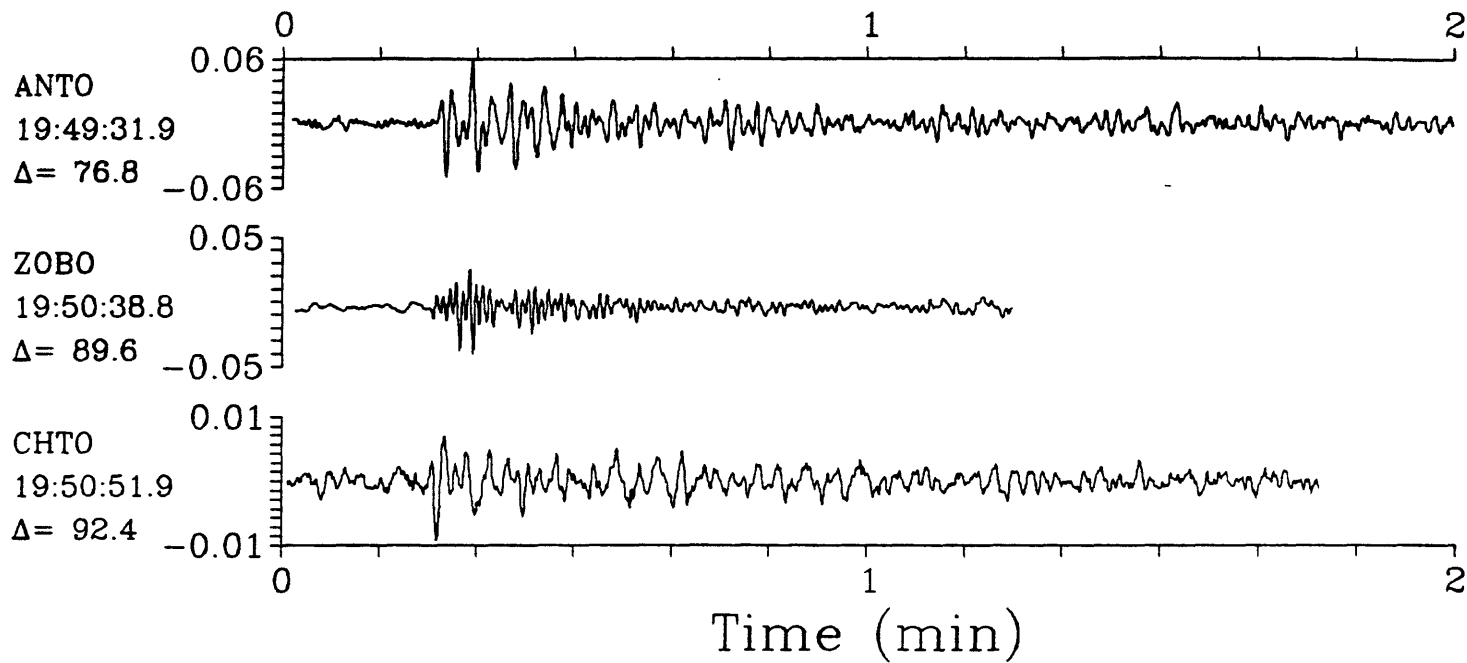
Vanuatu Islands  $h=33.0$   $m_b=5.5$   $M_{SZ}=5.2$ 

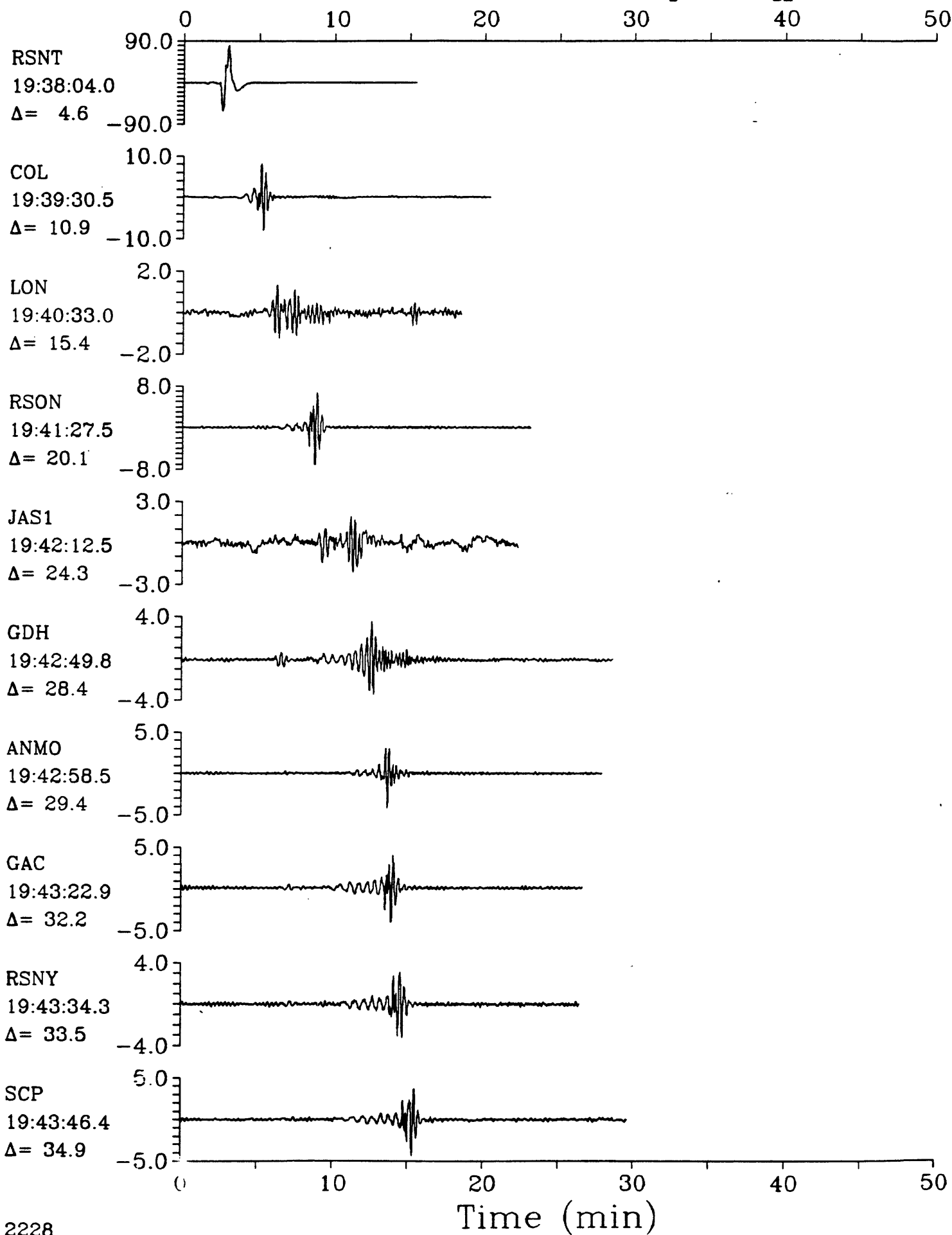
23 December 1985 19:37:54.80

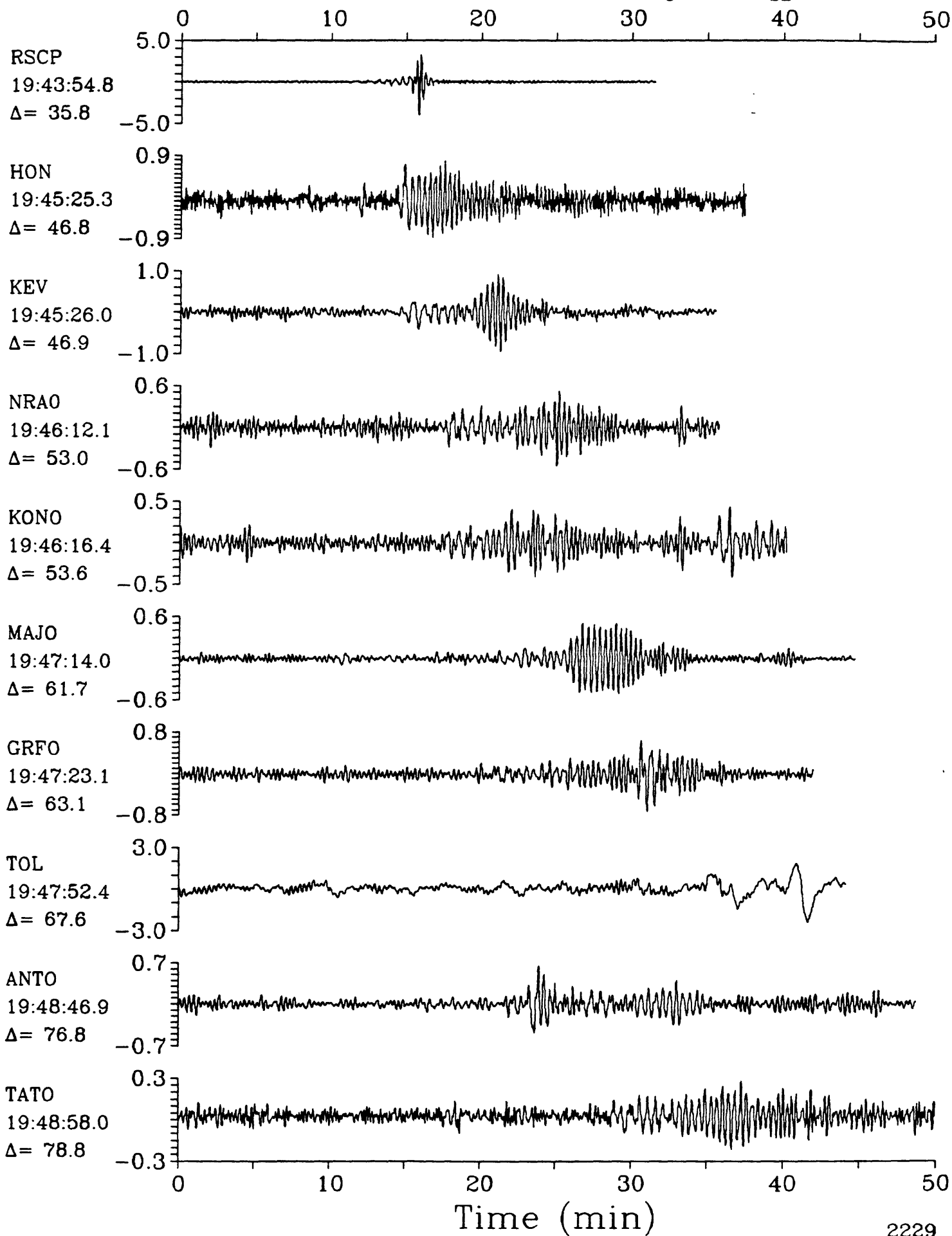
## Northwest Territories, Canada









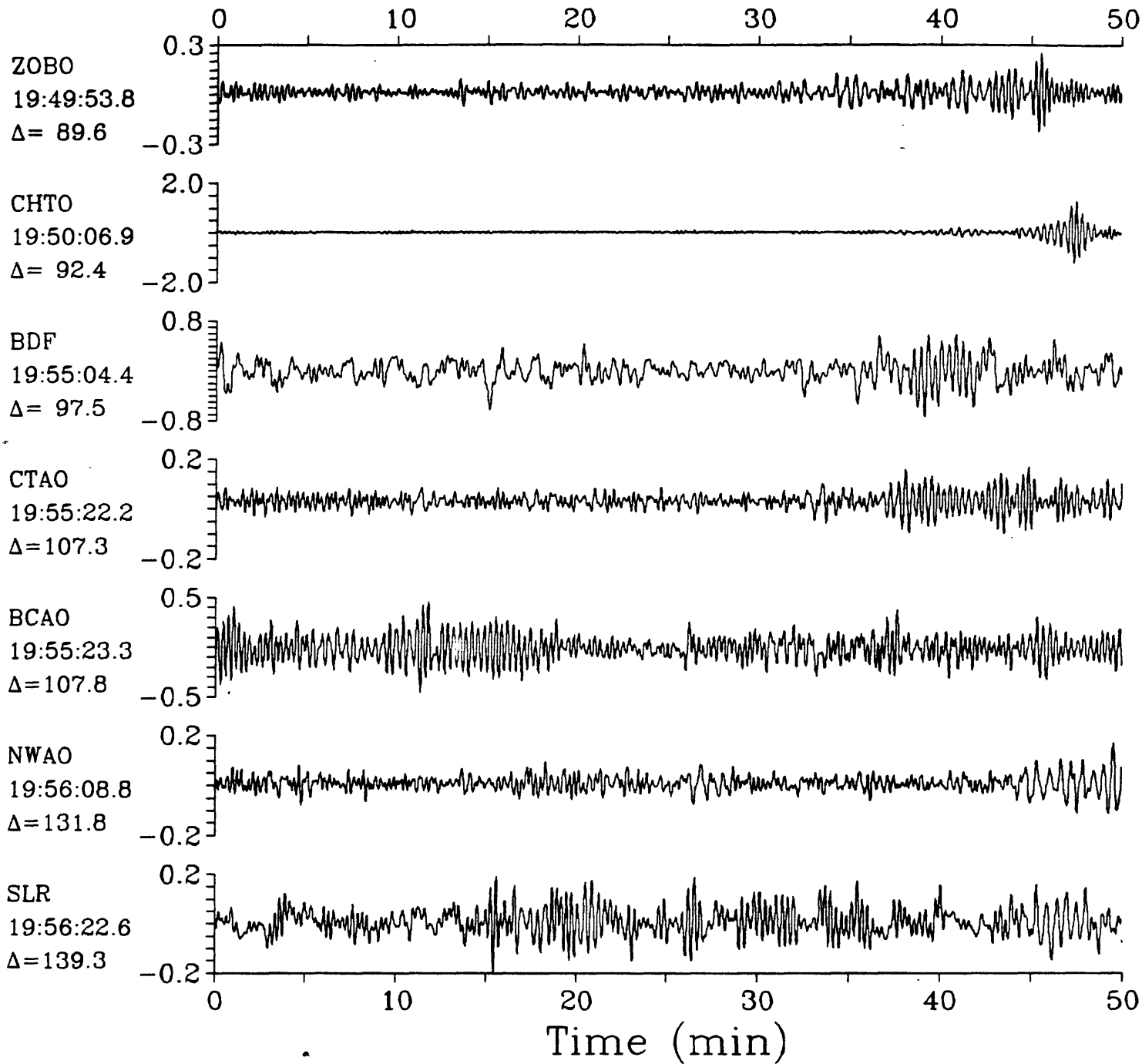




LPZ

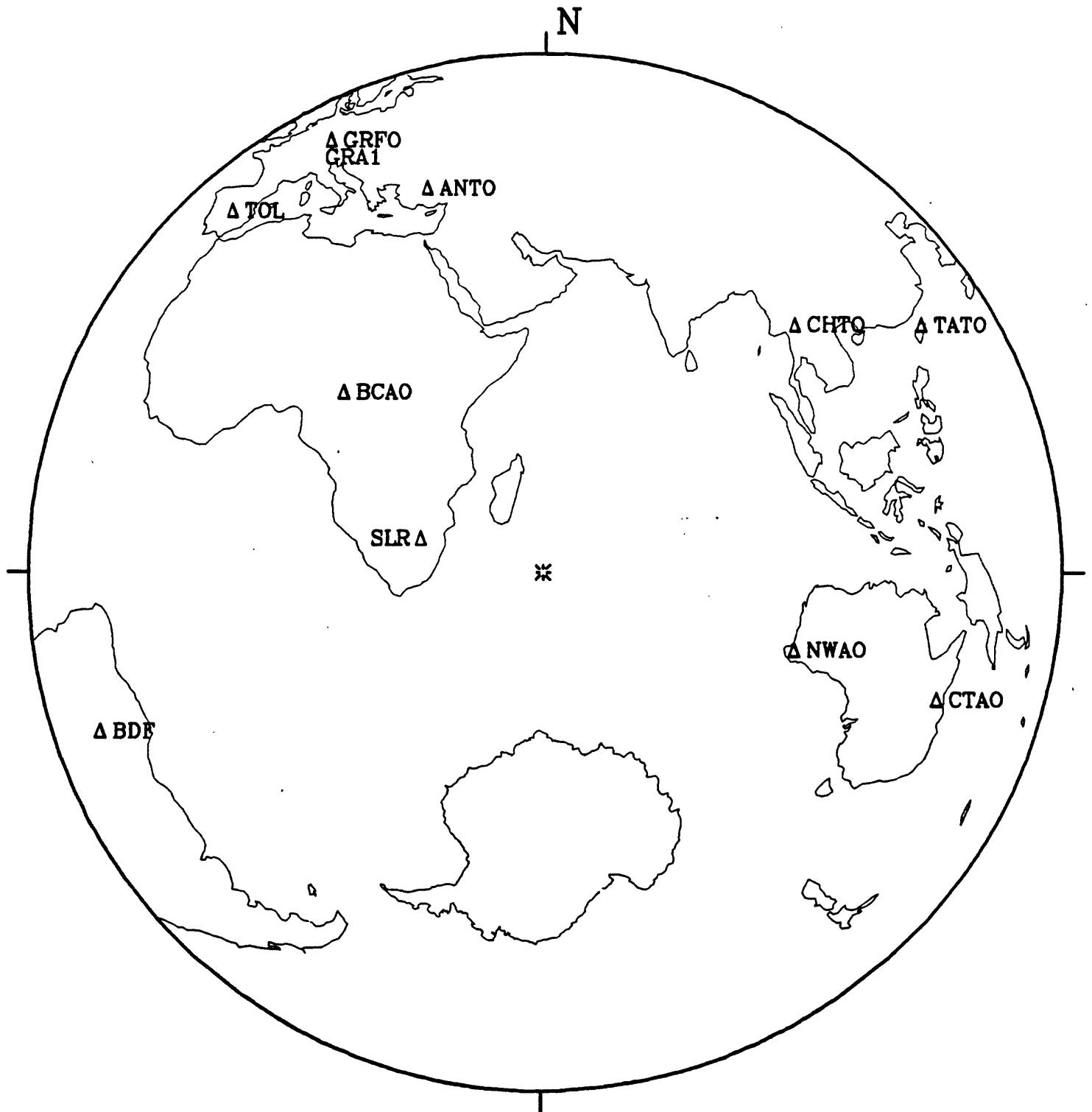
23 December 1985 19:37:54.80

LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.5$   $M_{sz}=5.0$ 

24 December 1985 04:09:41.33

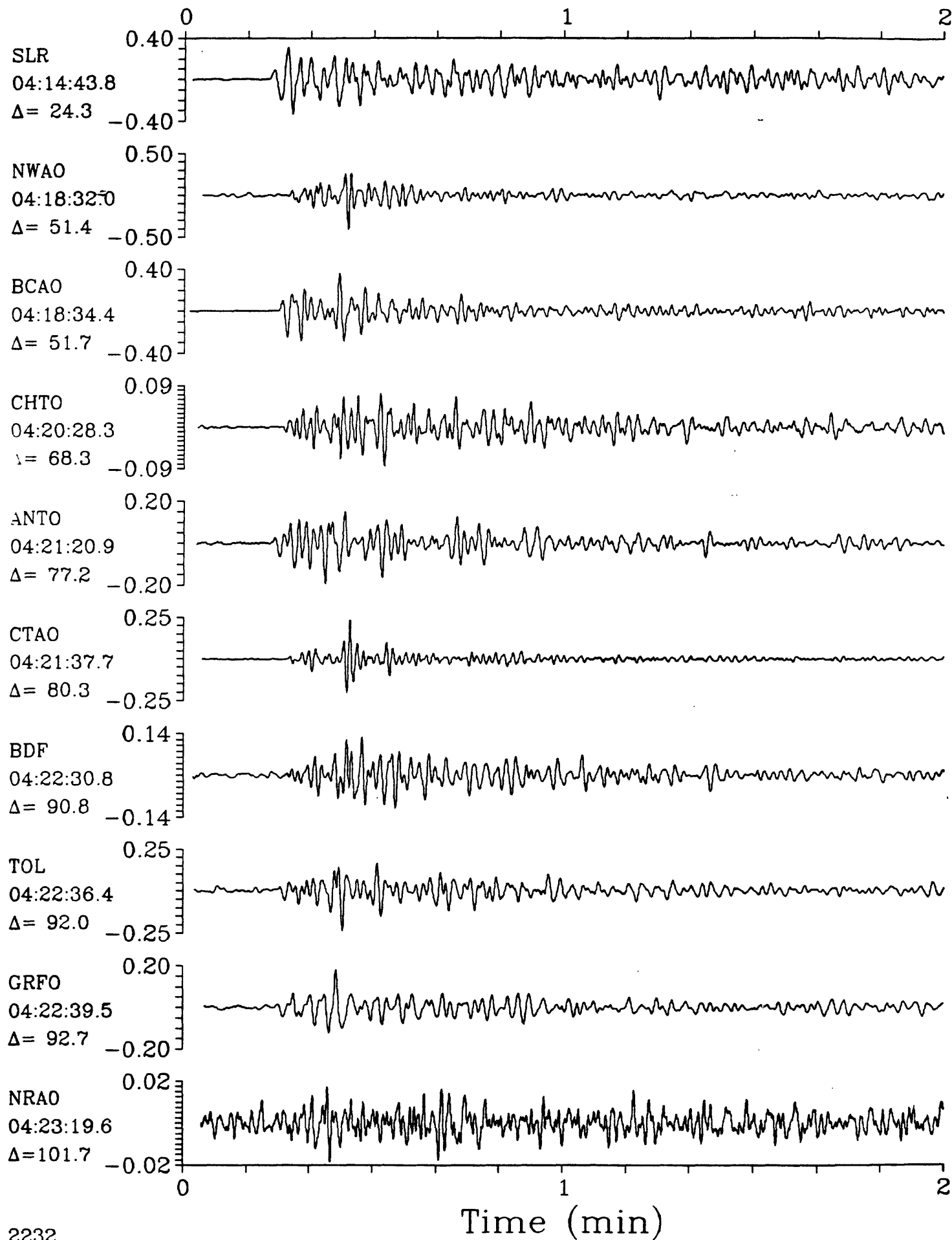
## South Indian Ocean



SPZ

24 December 1985 04:09:41.33

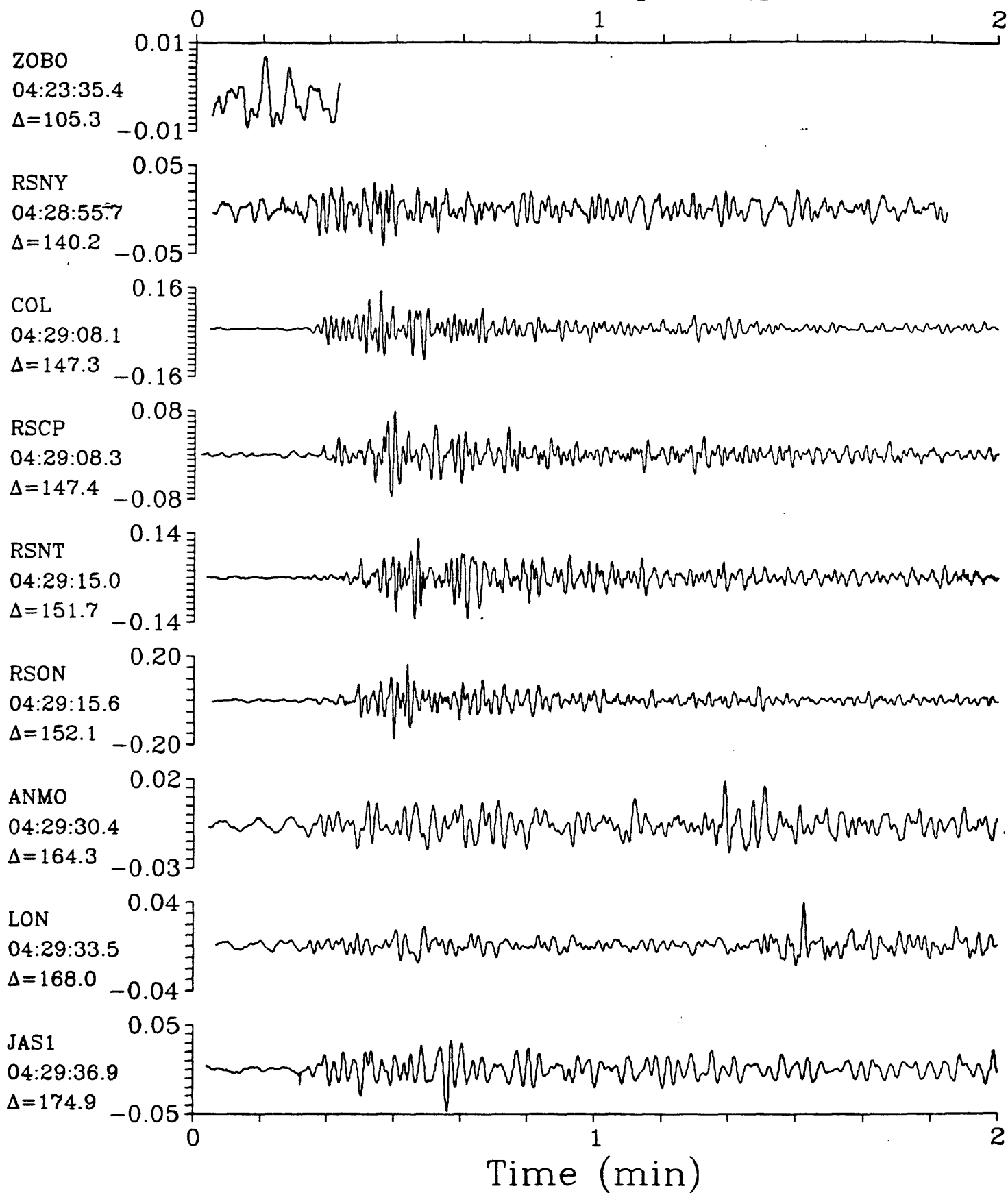
SPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 

SPZ

24 December 1985 04:09:41.33

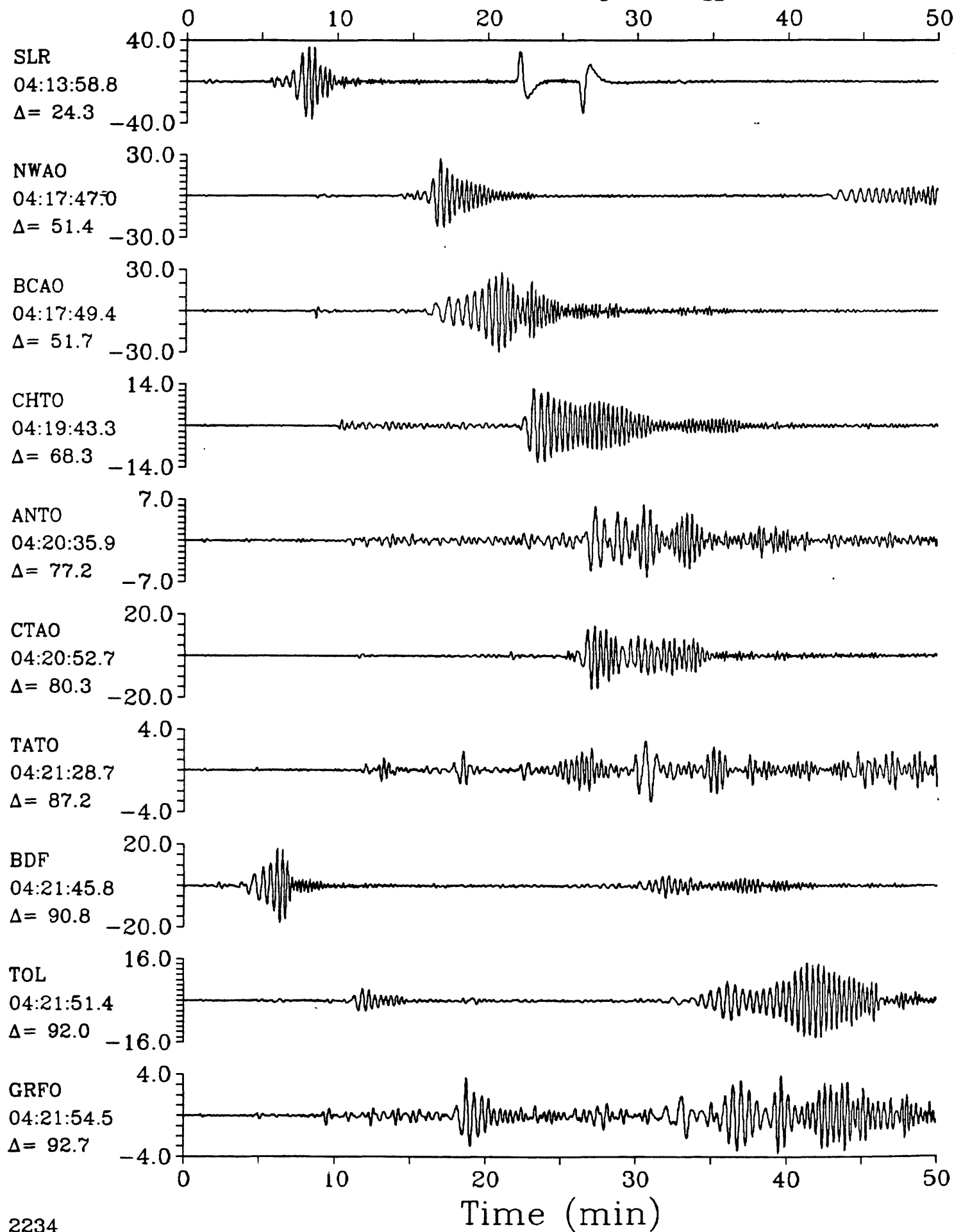
SPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 

LPZ

24 December 1985 04:09:41.33

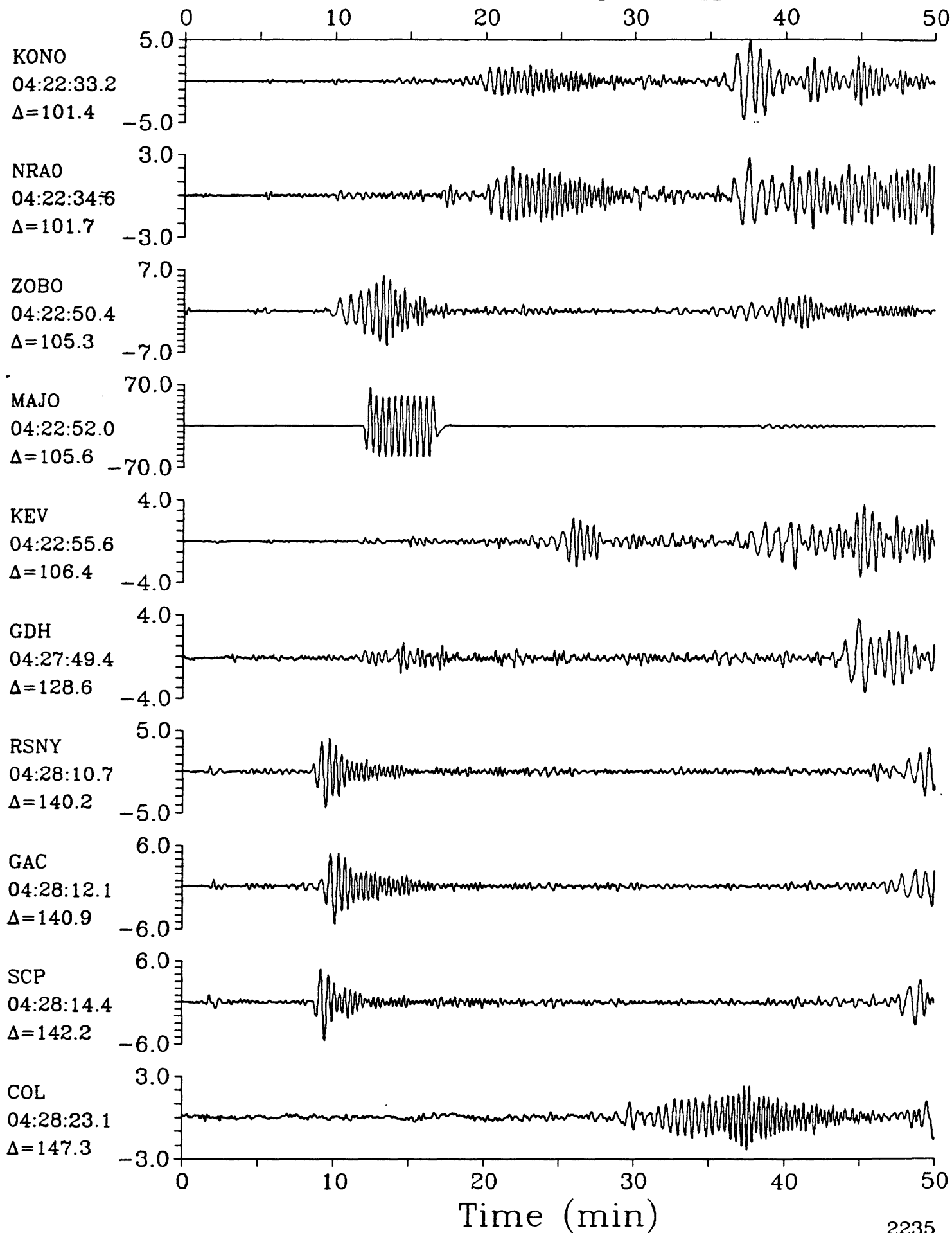
LPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 

LPZ

24 December 1985 04:09:41.33

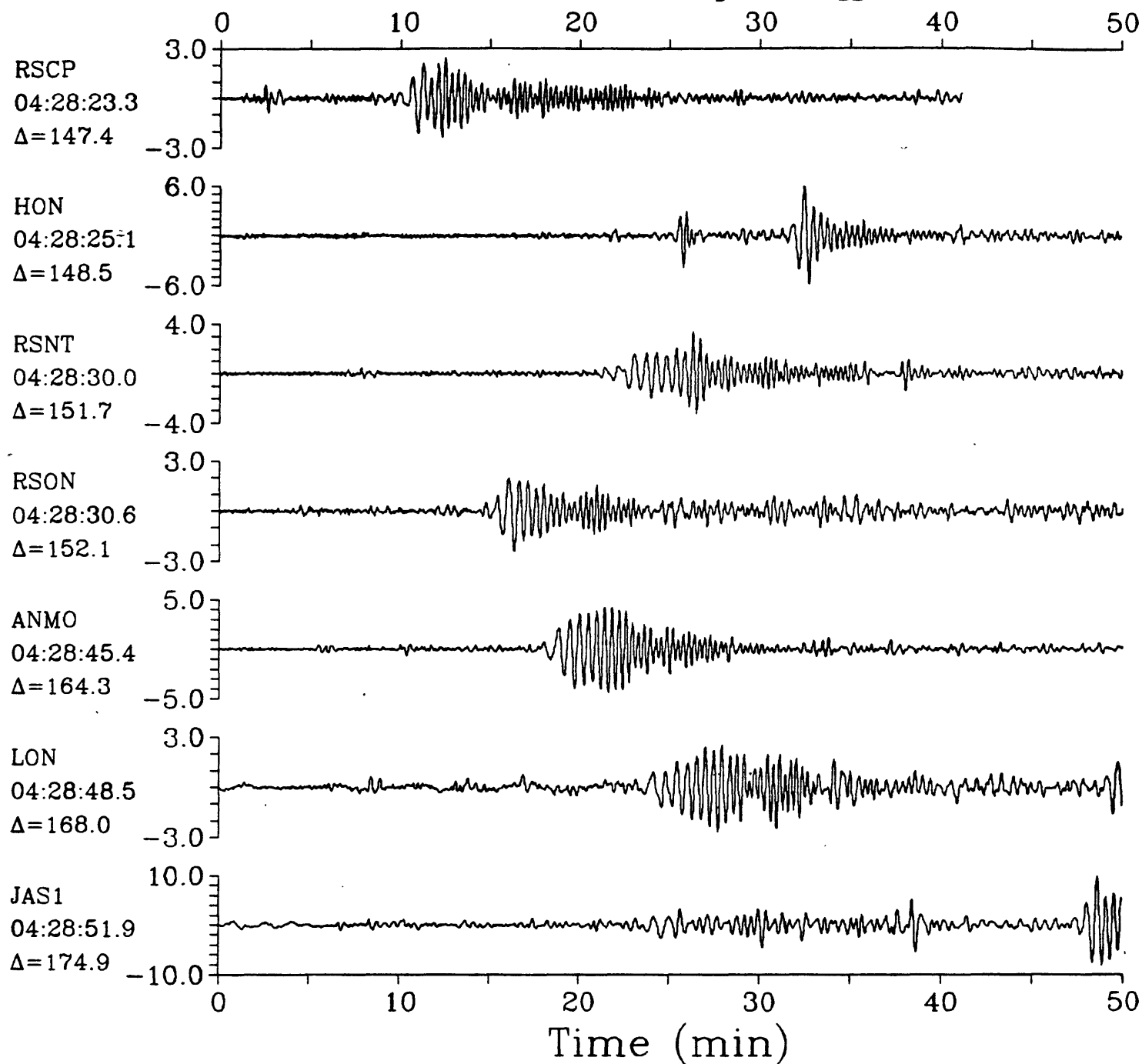
LPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 

LPZ

24 December 1985 04:09:41.33

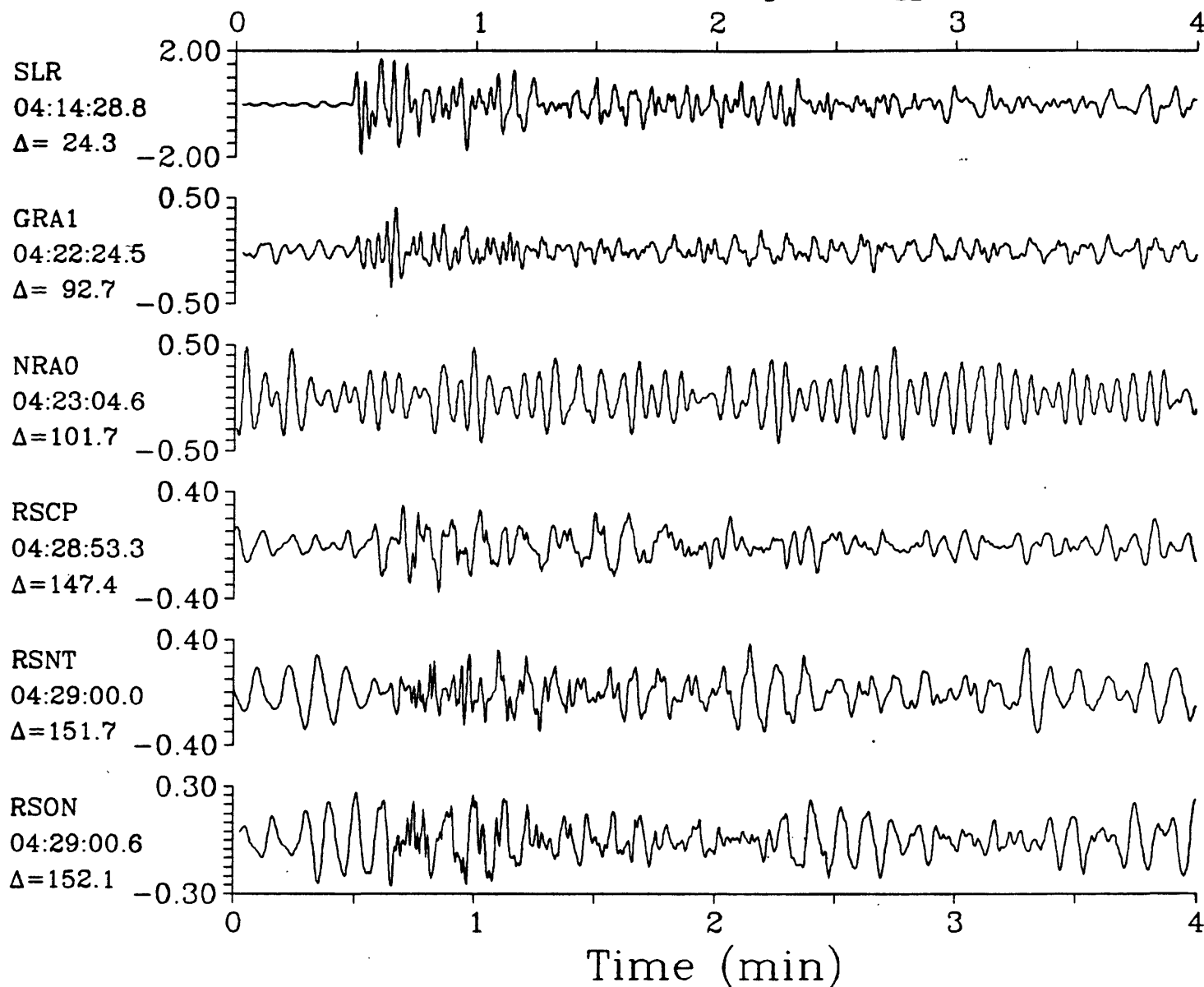
LPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 

IPZ

24 December 1985 04:09:41.33

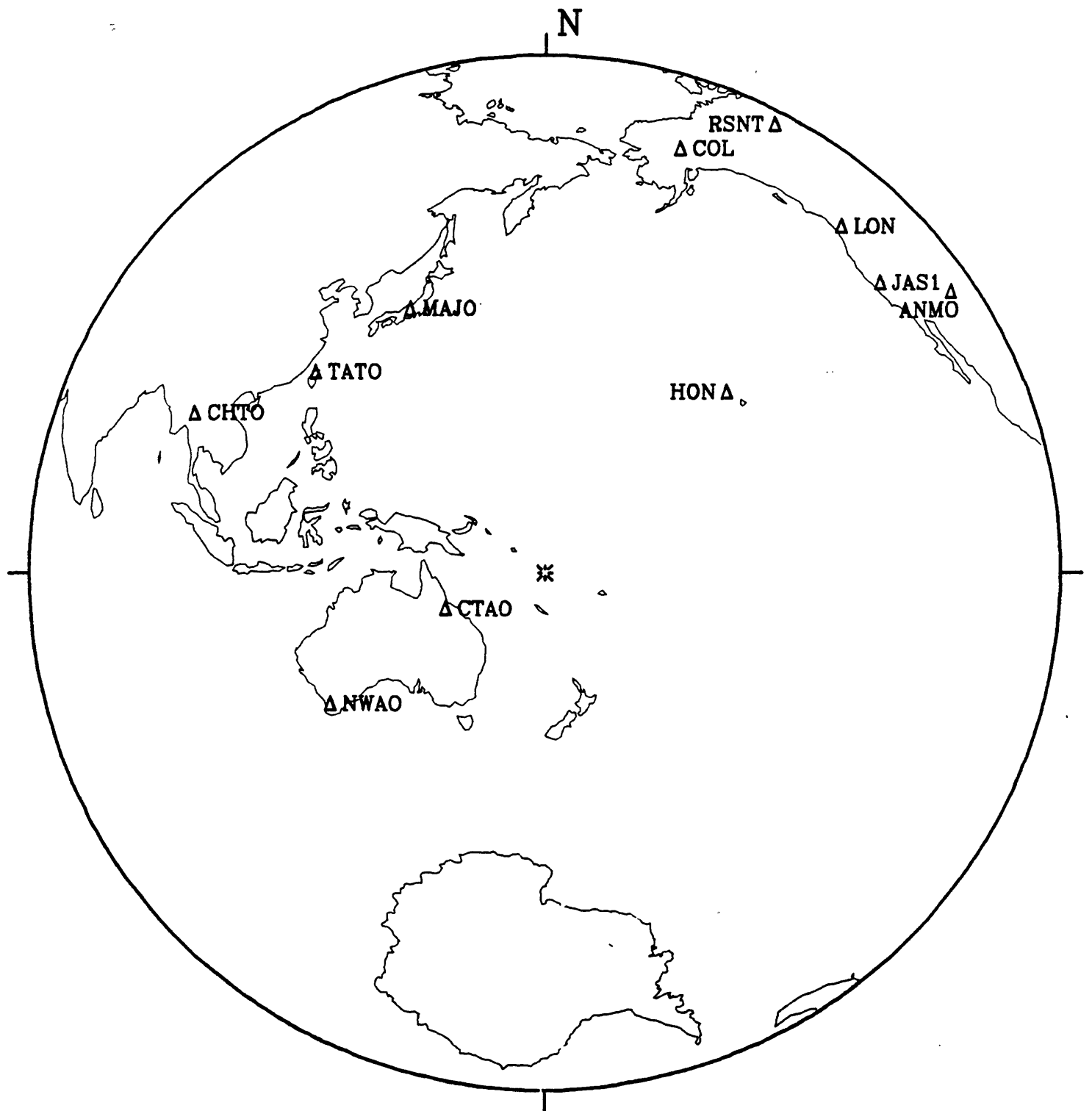
IPZ

South Indian Ocean  $h=10.0$   $m_b=6.1$   $M_{sz}=6.0$ 



24 December 1985 04:37:29.99

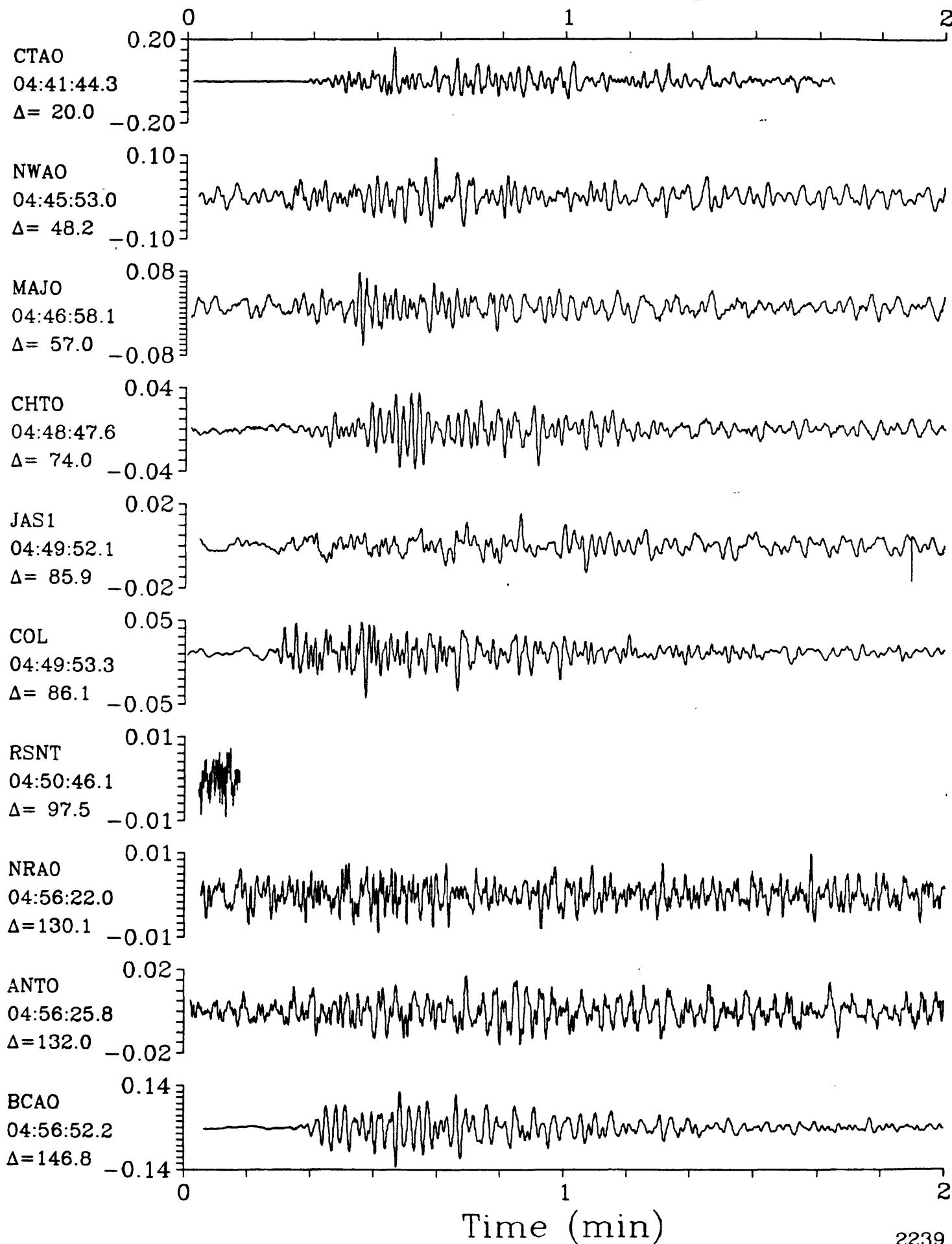
## Vanuatu Islands



SPZ

24 December 1985 04:37:29.99  
Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$ 

SPZ

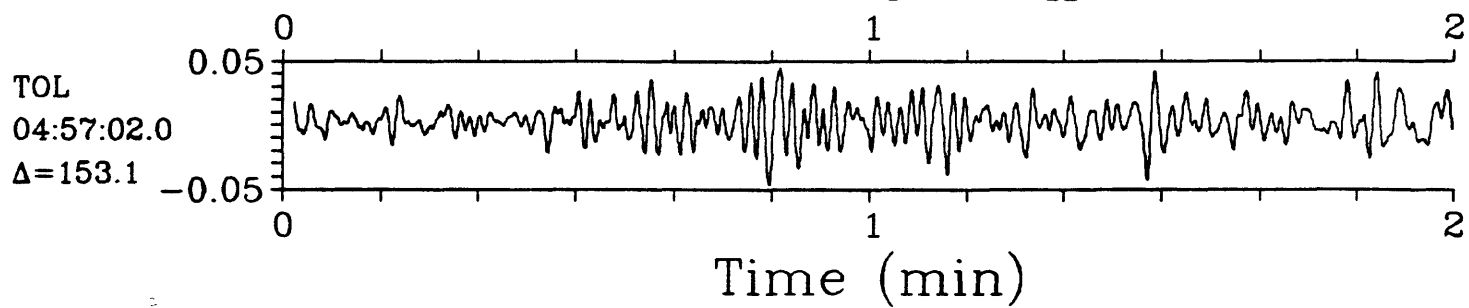


SPZ

24 December 1985 04:37:29.99

SPZ

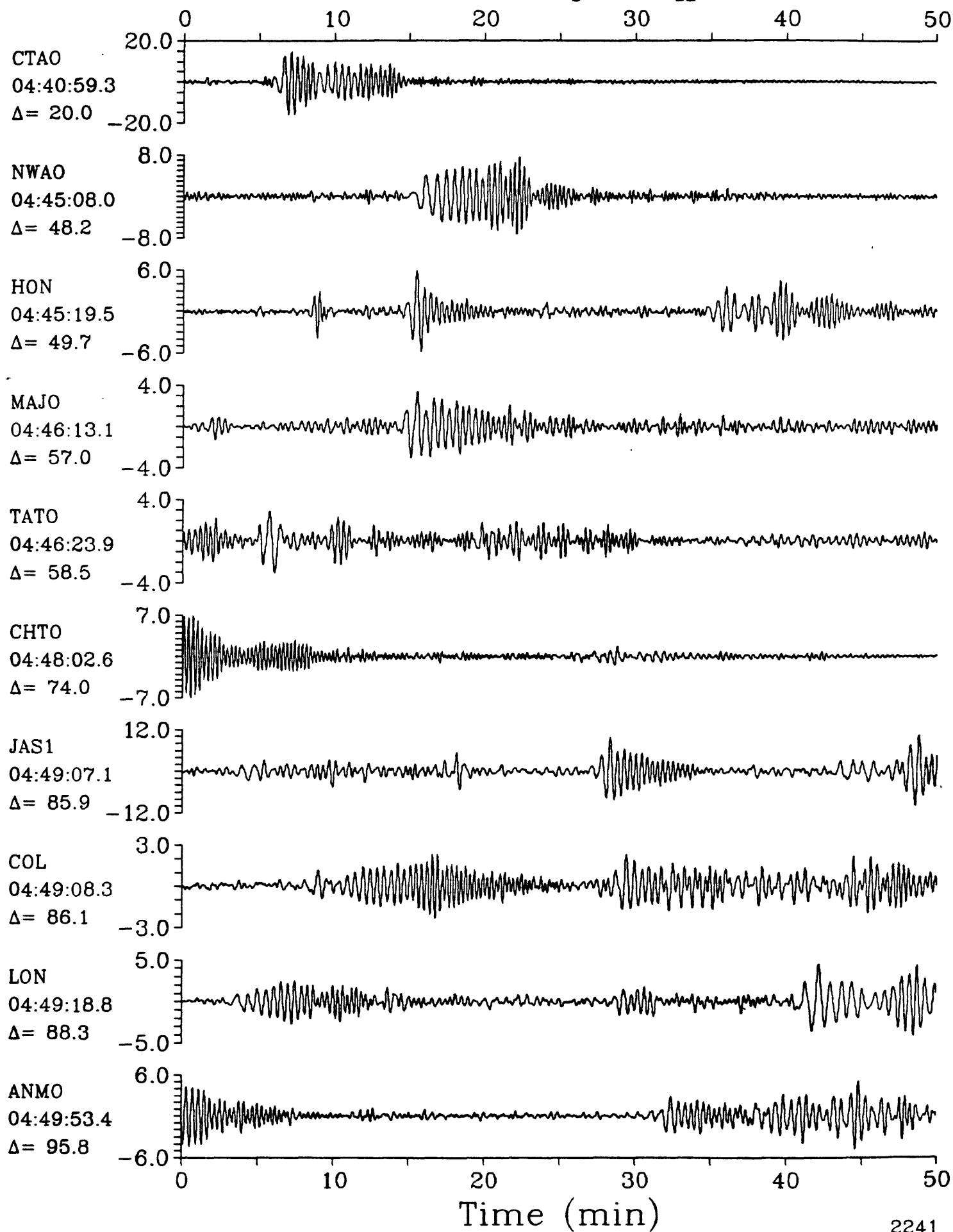
Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$



LPZ

24 December 1985 04:37:29.99  
Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$ 

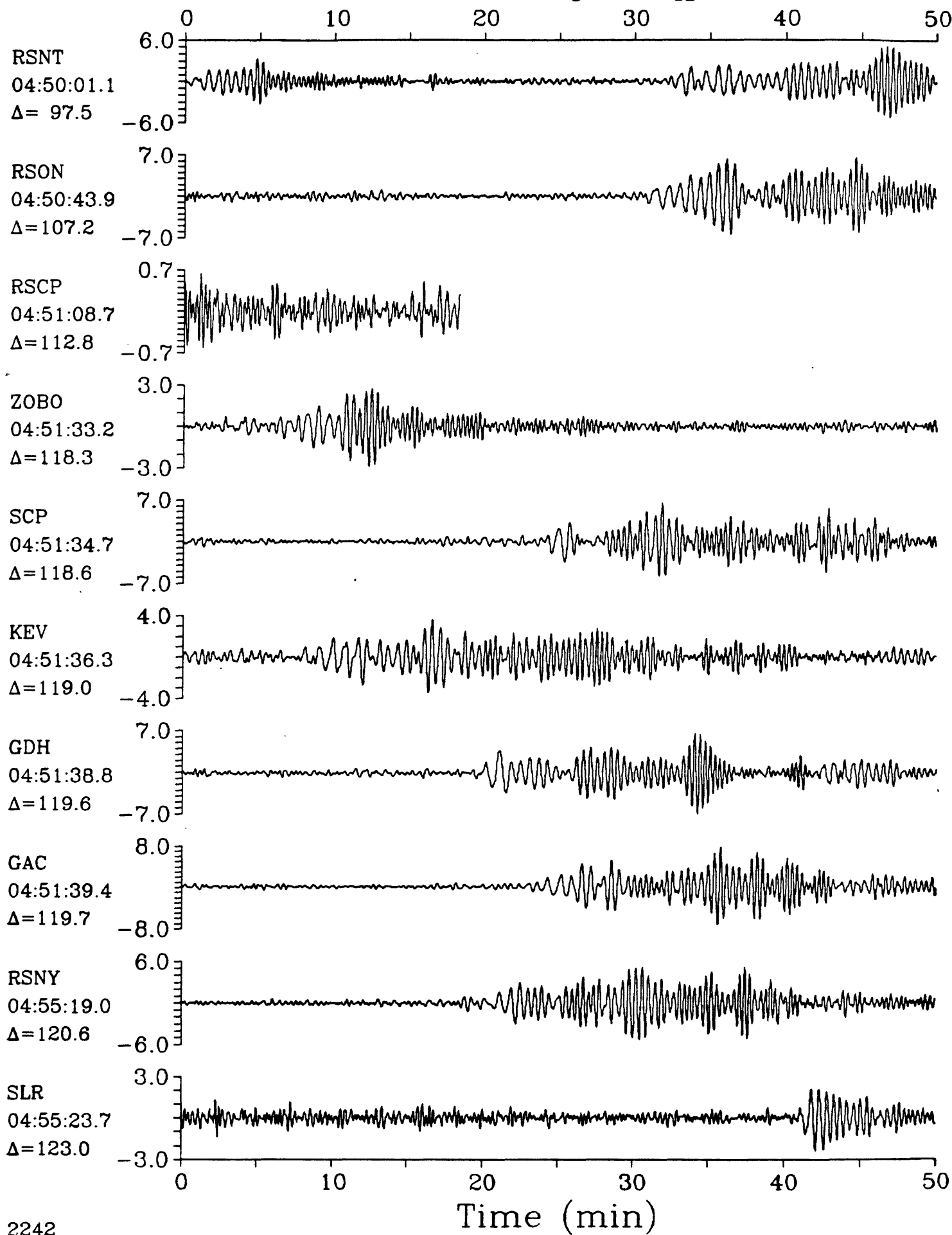
LPZ



LPZ

24 December 1985 04:37:29.99  
Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$ 

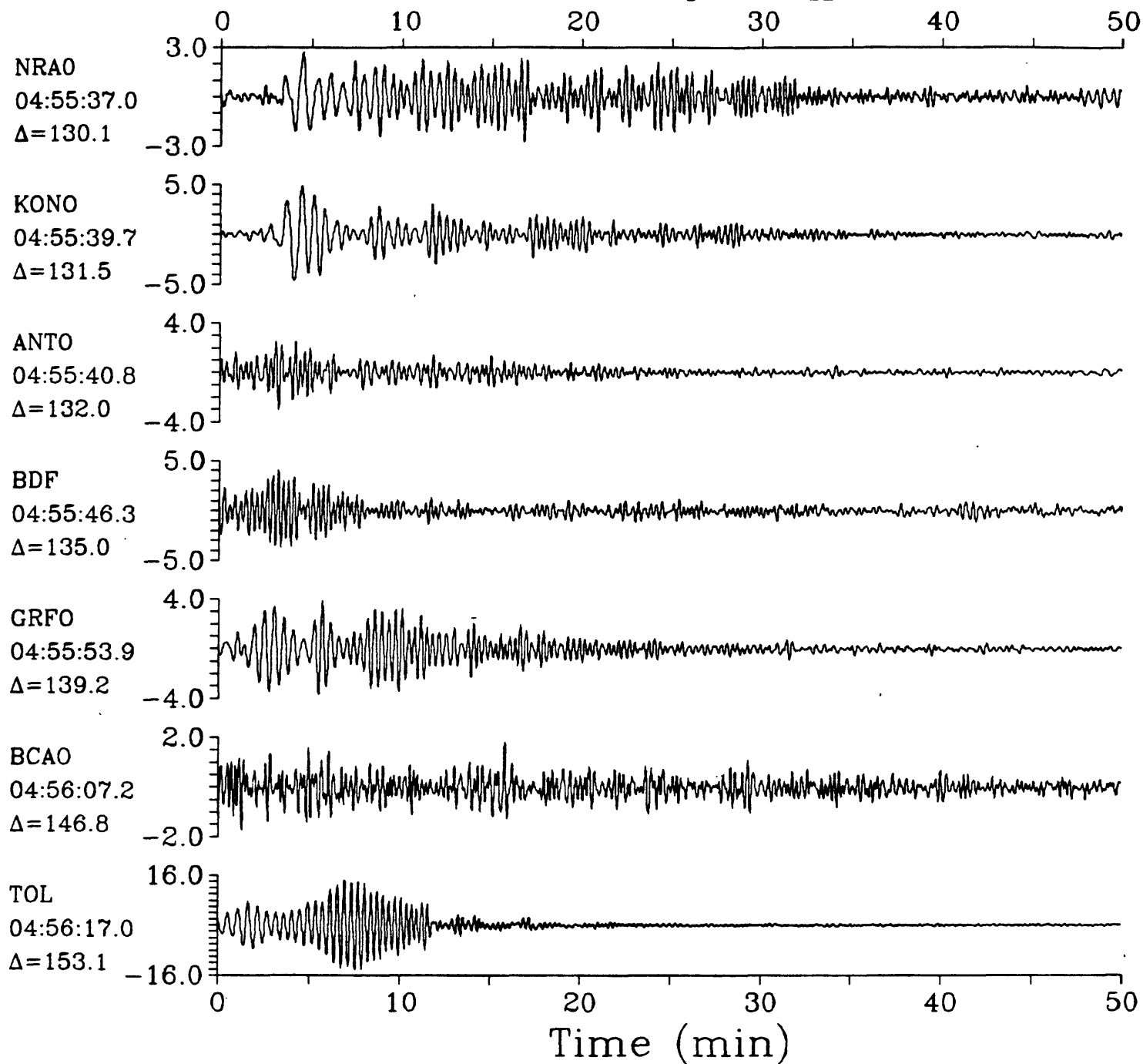
LPZ



LPZ

24 December 1985 04:37:29.99

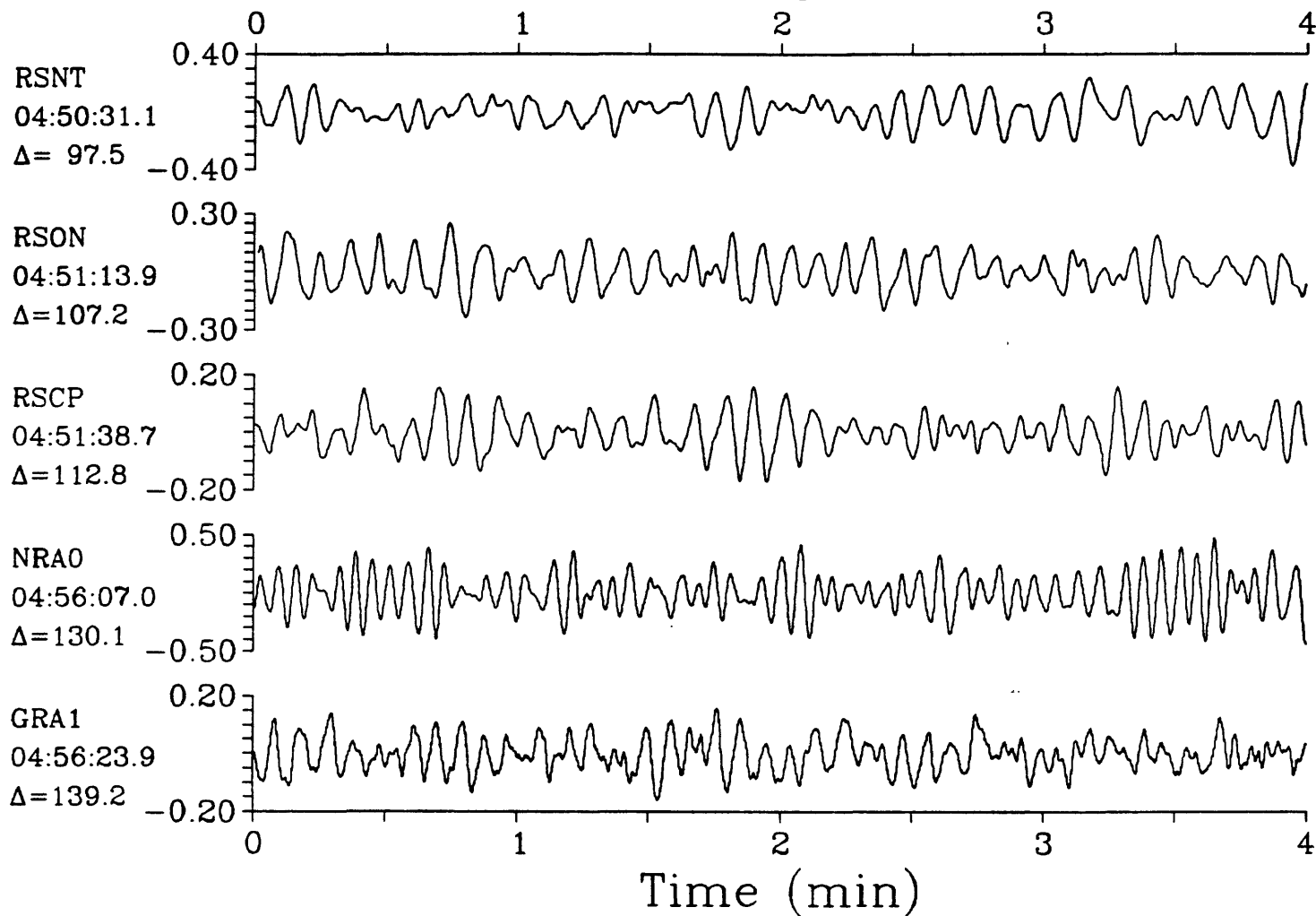
LPZ

Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$ 

IPZ

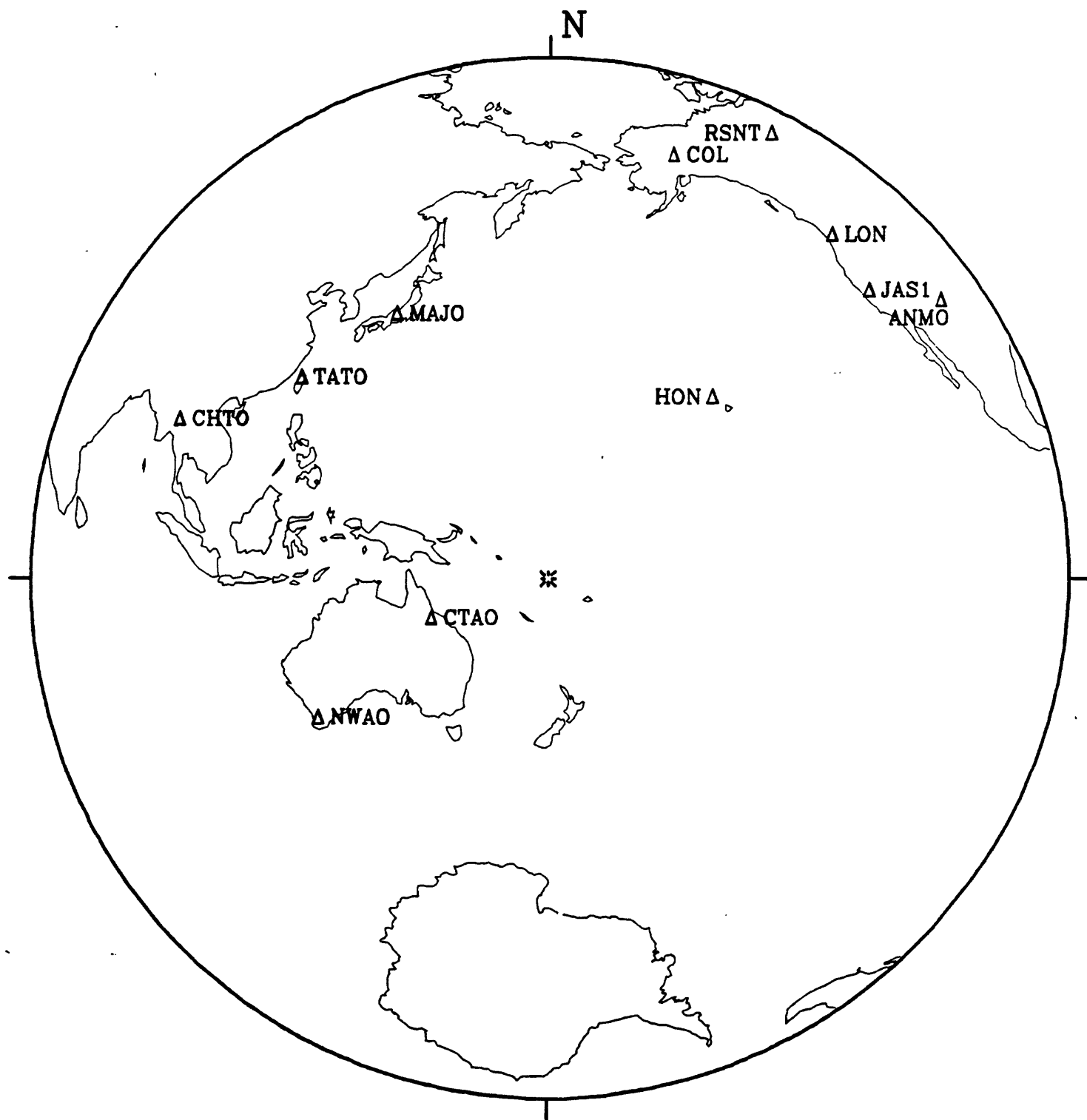
24 December 1985 04:37:29.99

IPZ

Vanuatu Islands  $h=33.0$   $m_b=5.4$   $M_{sz}=5.9$ 

25 December 1985 02:35:51.44

## Vanuatu Islands Region

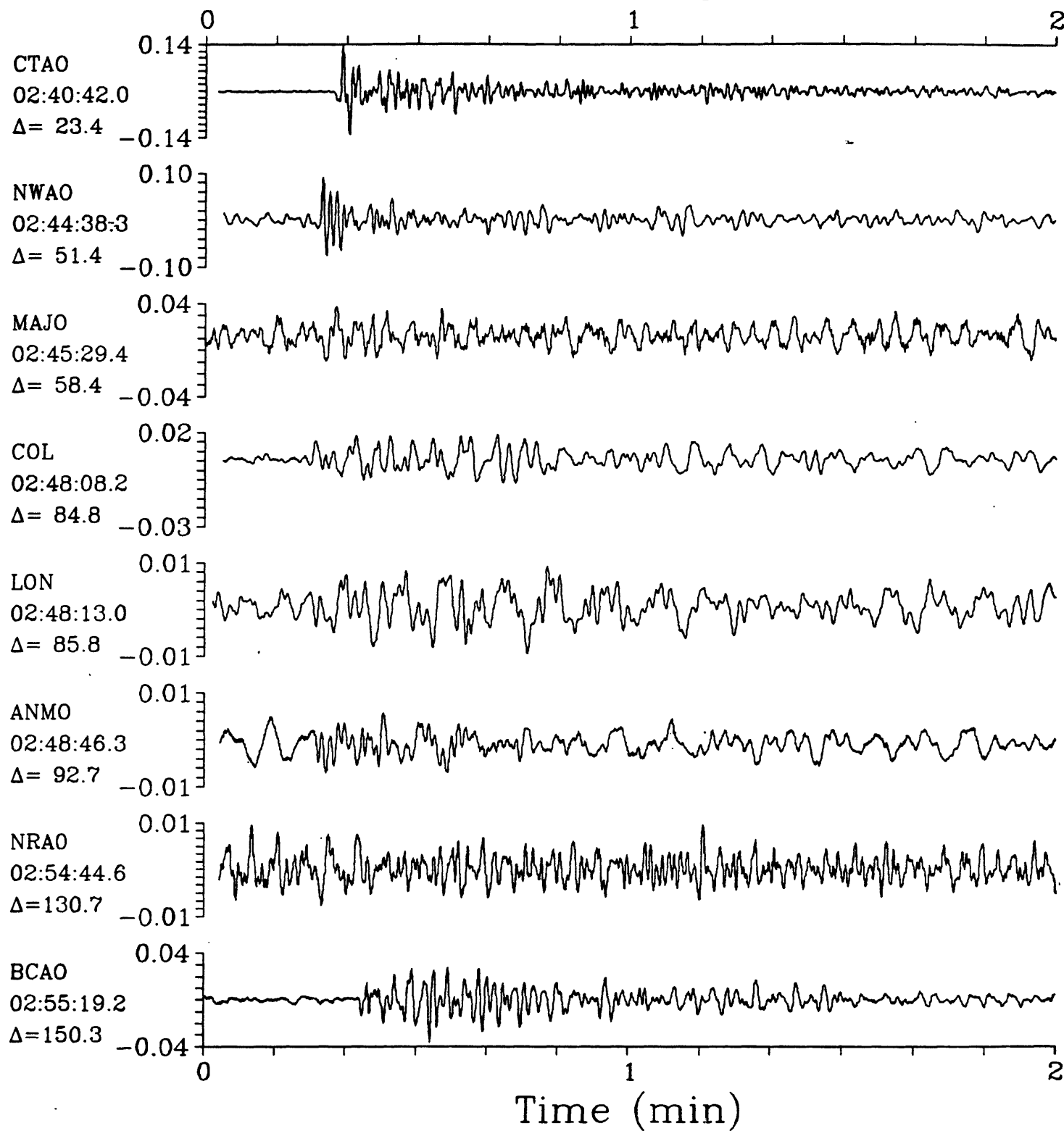




SPZ

25 December 1985 02:35:51.44

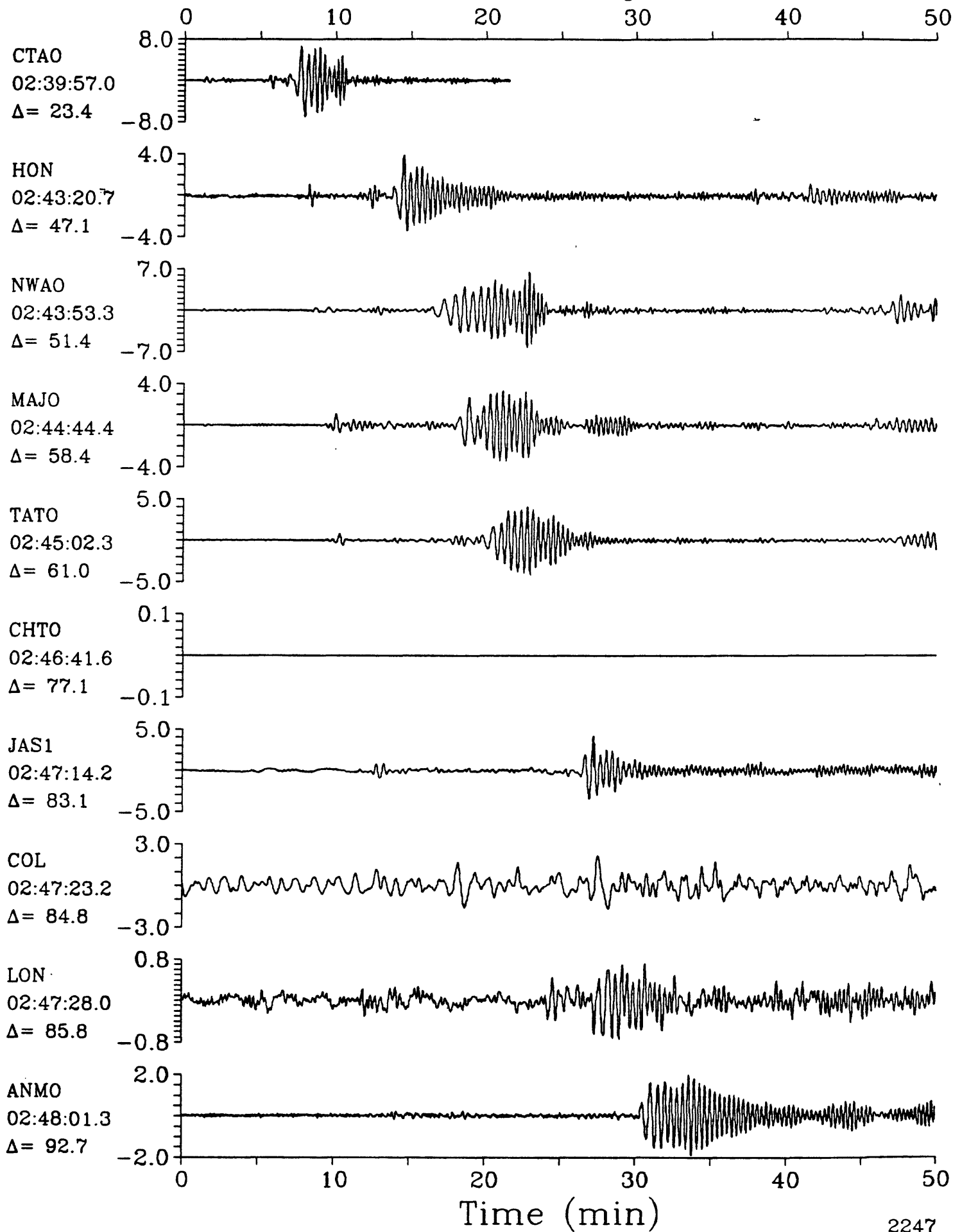
SPZ

Vanuatu Islands Region  $h=33.0$   $m_b=5.4$   $M_{sz}=5.6$ 

LPZ

25 December 1985 02:35:51.44

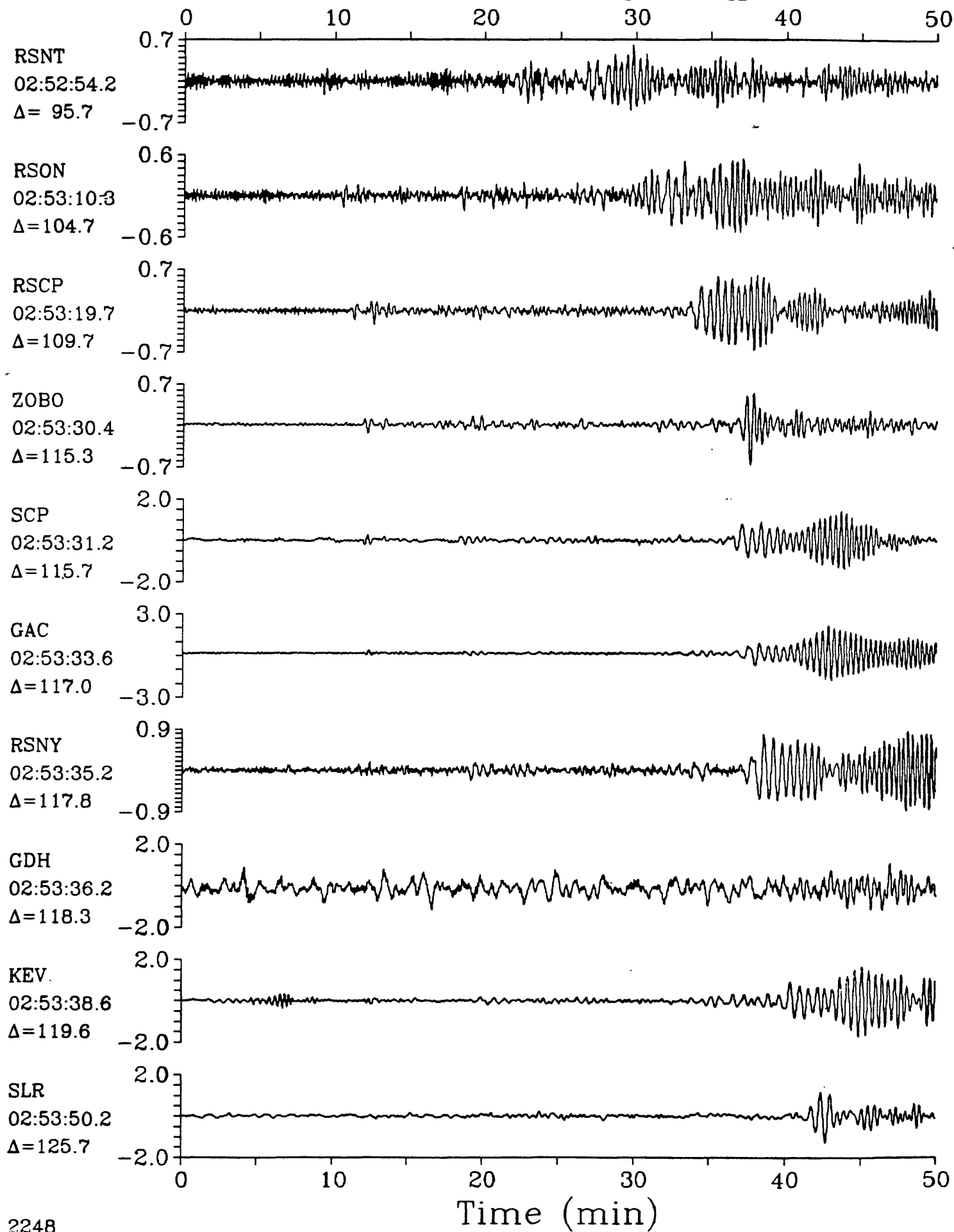
LPZ

Vanuatu Islands Region  $h=33.0$   $m_b=5.4$   $M_{sz}=5.6$ 

LPZ

25 December 1985 02:35:51.44

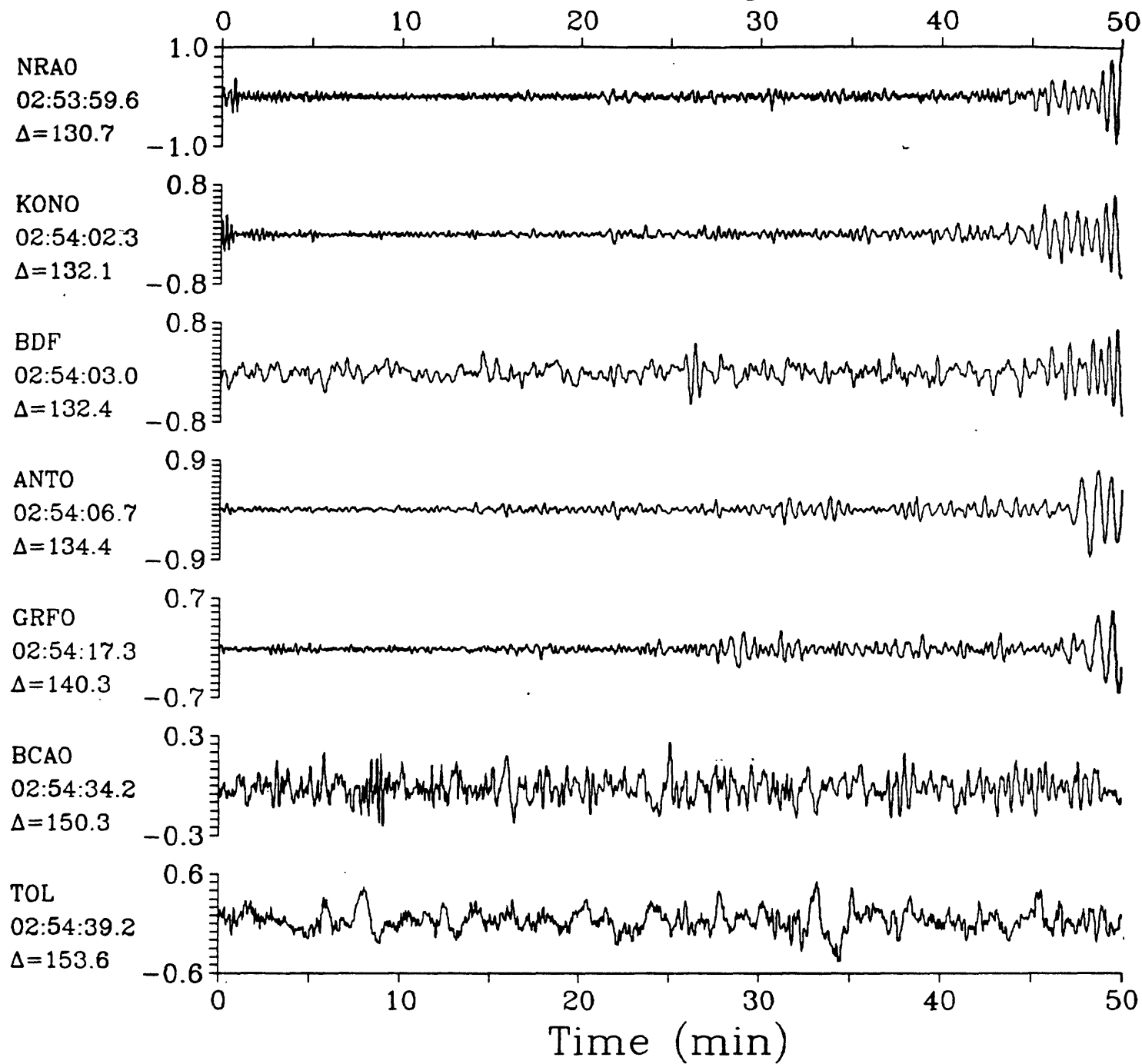
LPZ

Vanuatu Islands Region  $h=33.0$   $m_b=5.4$   $M_{sz}=5.6$ 

LPZ

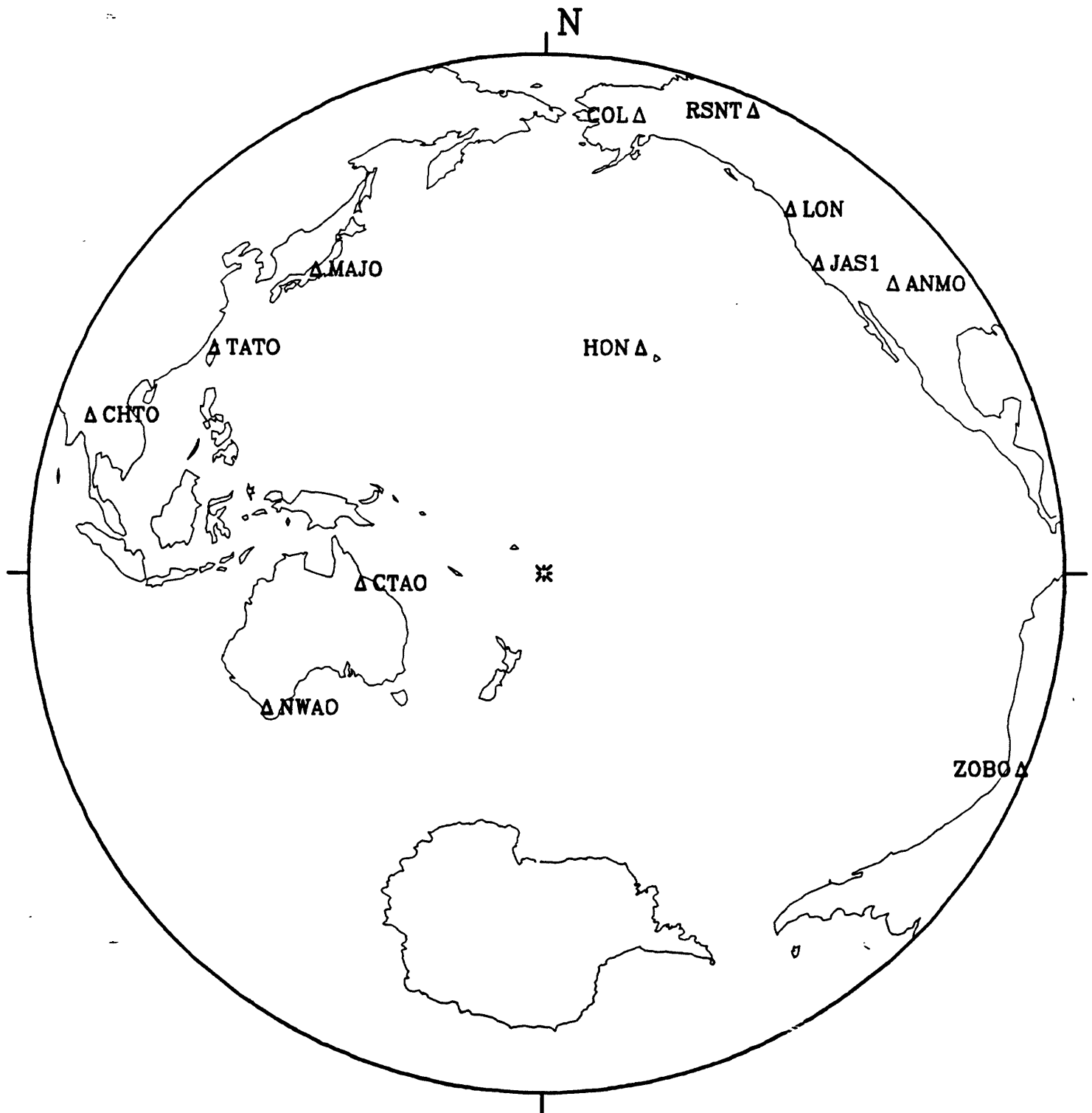
25 December 1985 02:35:51.44

LPZ

Vanuatu Islands Region  $h=33.0$   $m_b=5.4$   $M_{sz}=5.6$ 

25 December 1985 03:01:23.82

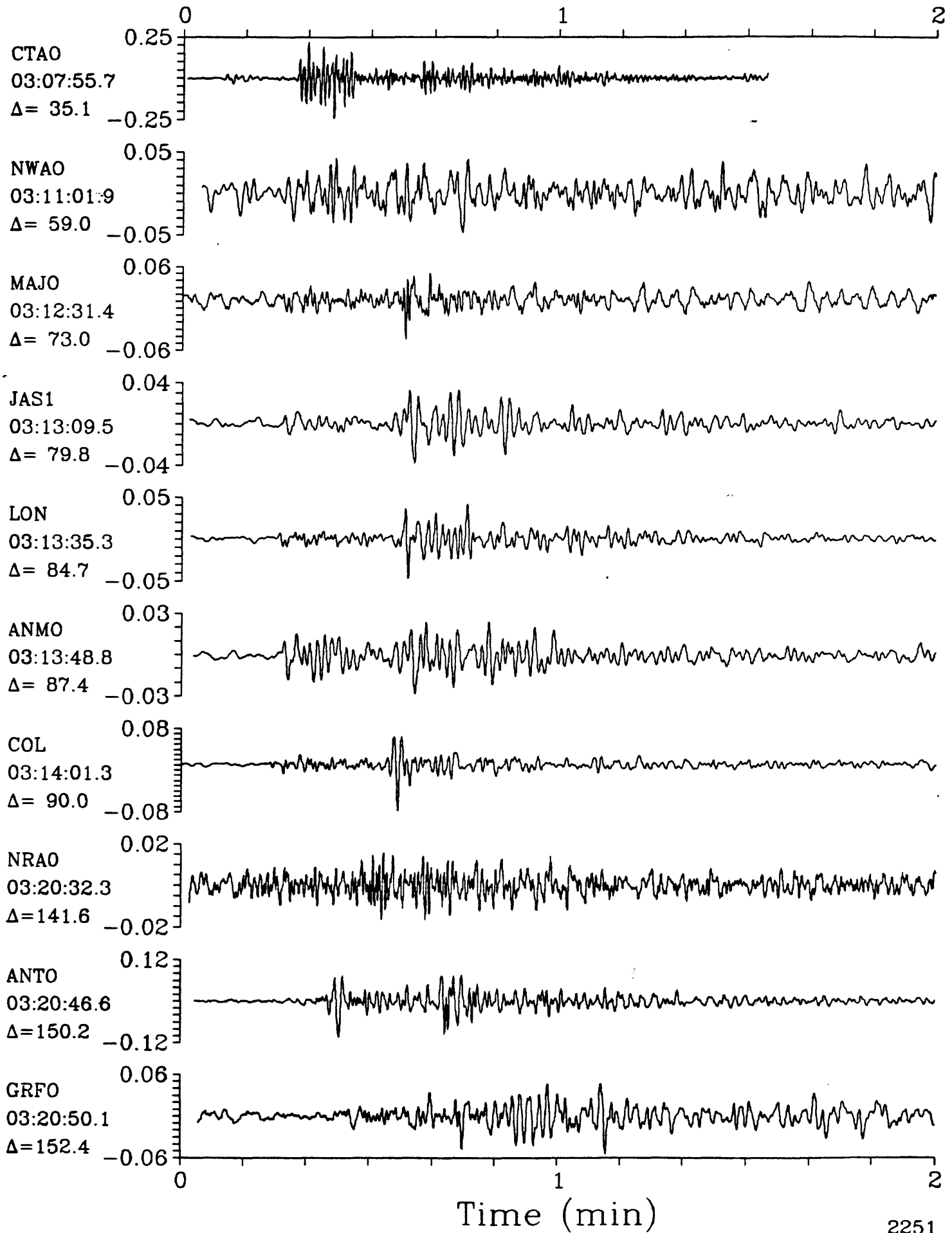
## South of Fiji Islands



SPZ

25 December 1985 03:01:23.82  
South of Fiji Islands  $h=71.4$   $m_b=5.5$ 

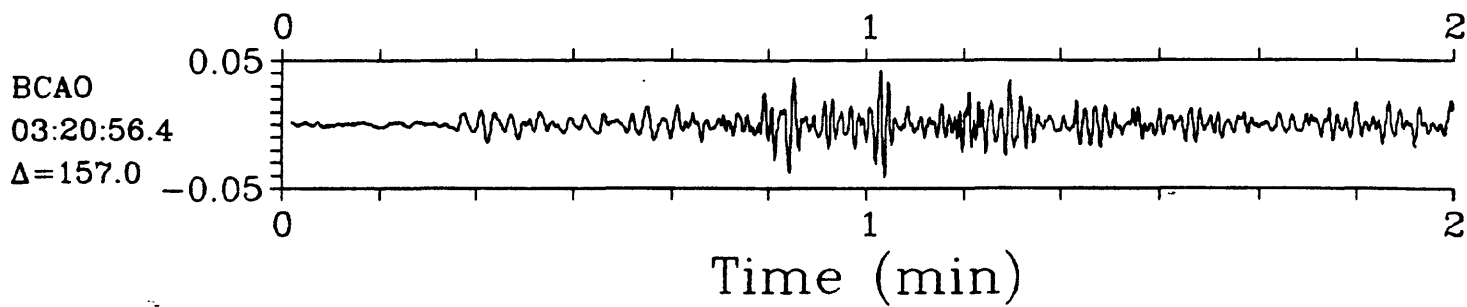
SPZ



SPZ

25 December 1985 03:01:23.82  
South of Fiji Islands  $h=71.4$   $m_b=5.5$

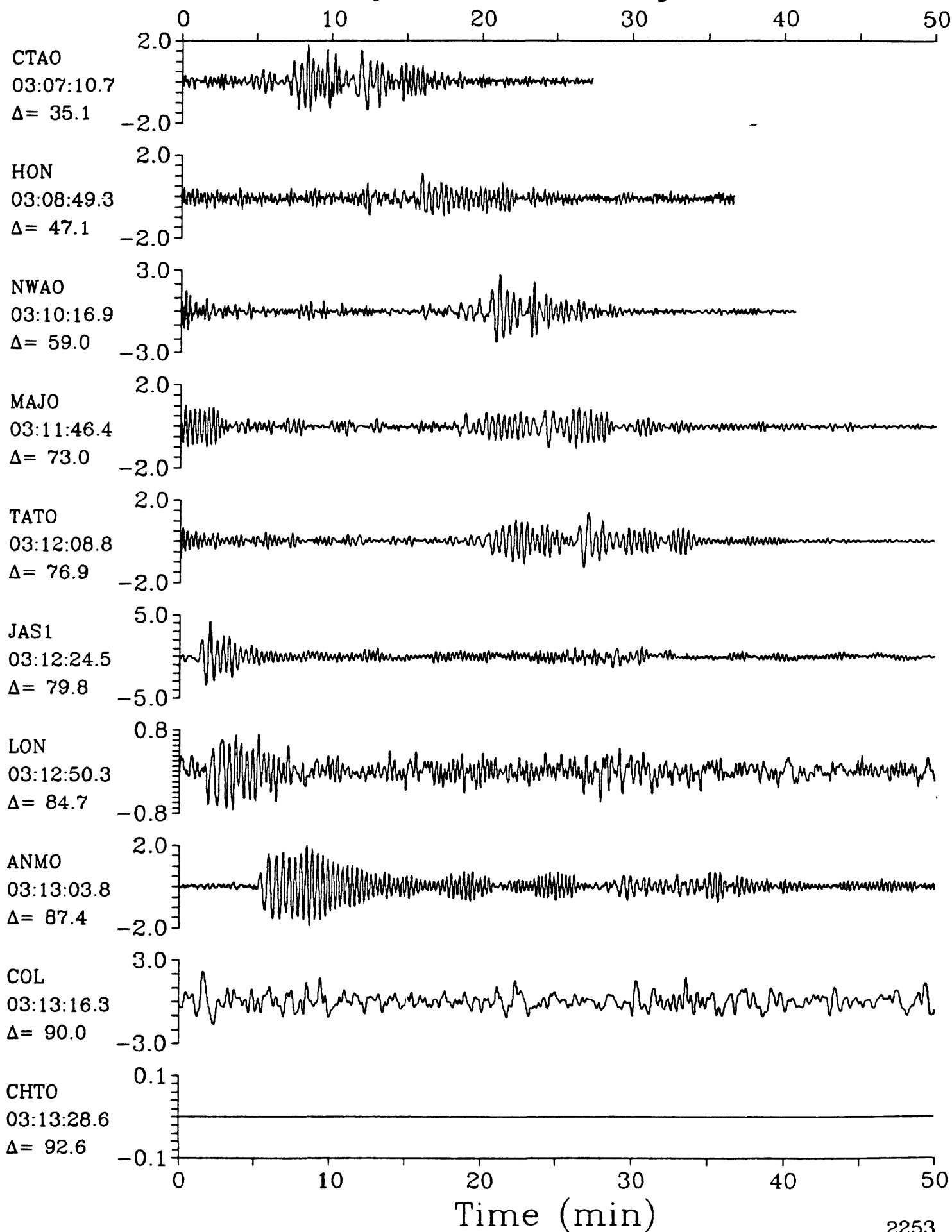
SPZ



LPZ

25 December 1985 03:01:23.82  
South of Fiji Islands  $h=71.4$   $m_b=5.5$ 

LPZ

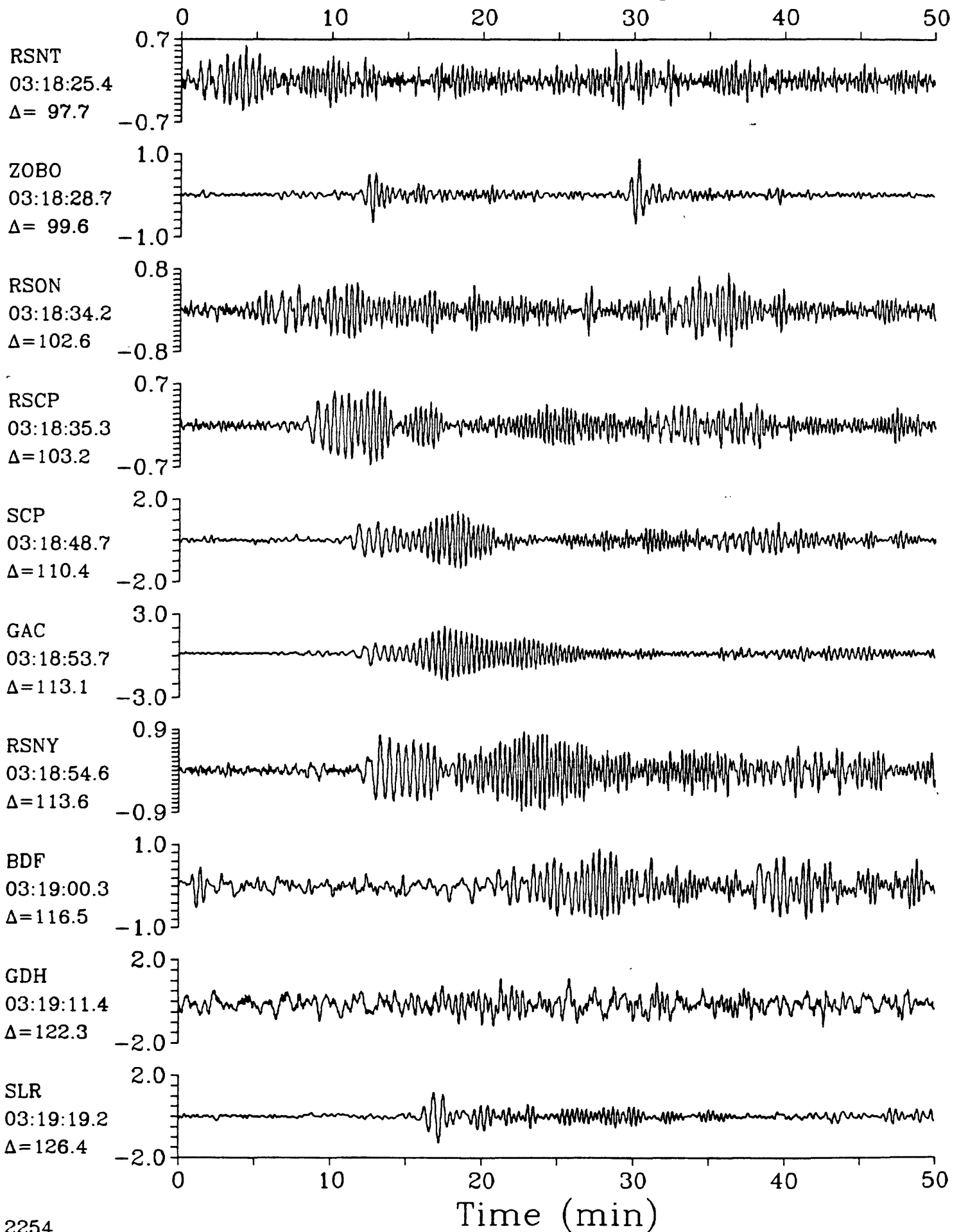




LPZ

25 December 1985 03:01:23.82  
South of Fiji Islands  $h=71.4$   $m_b=5.5$ 

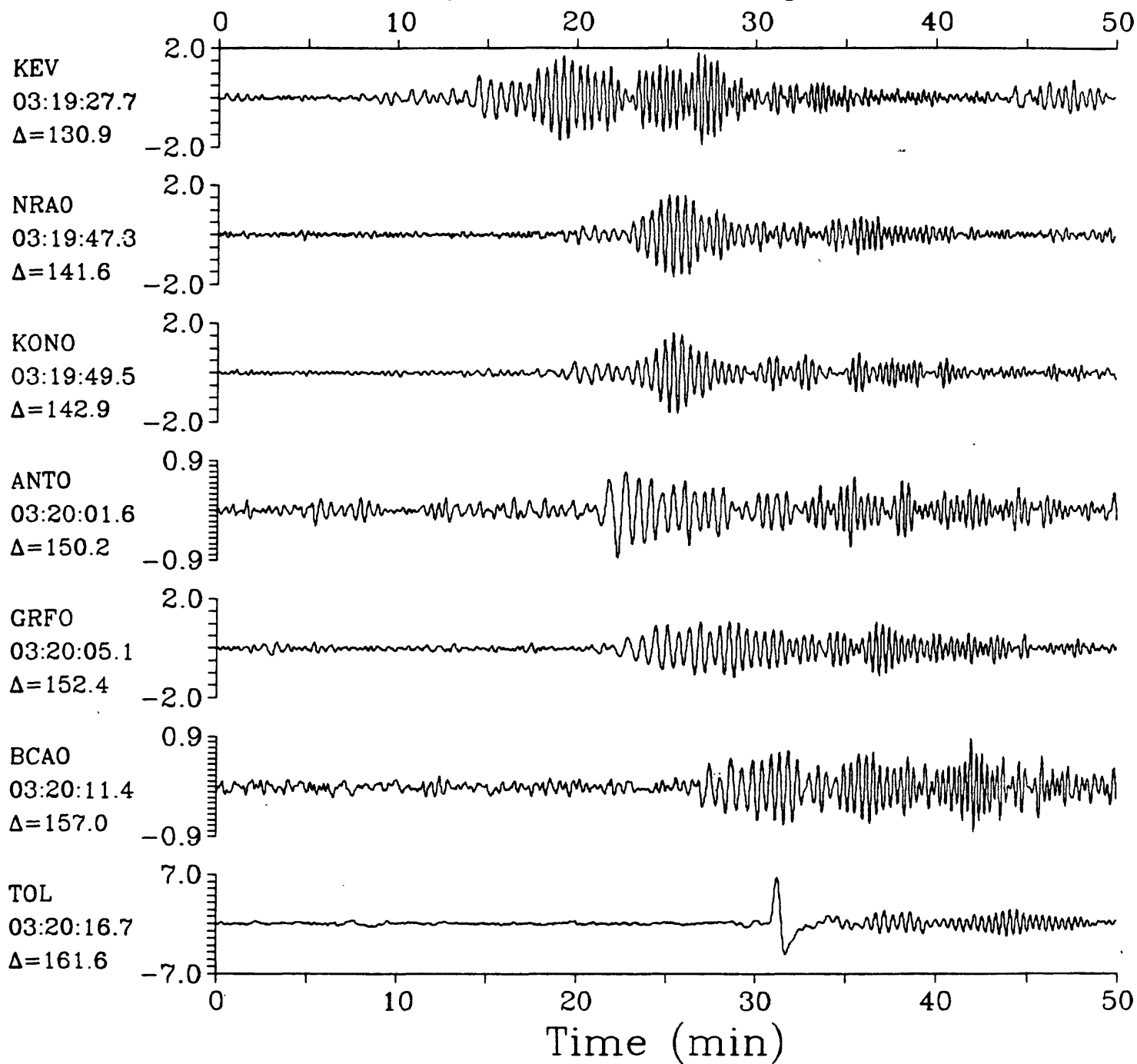
LPZ



LPZ

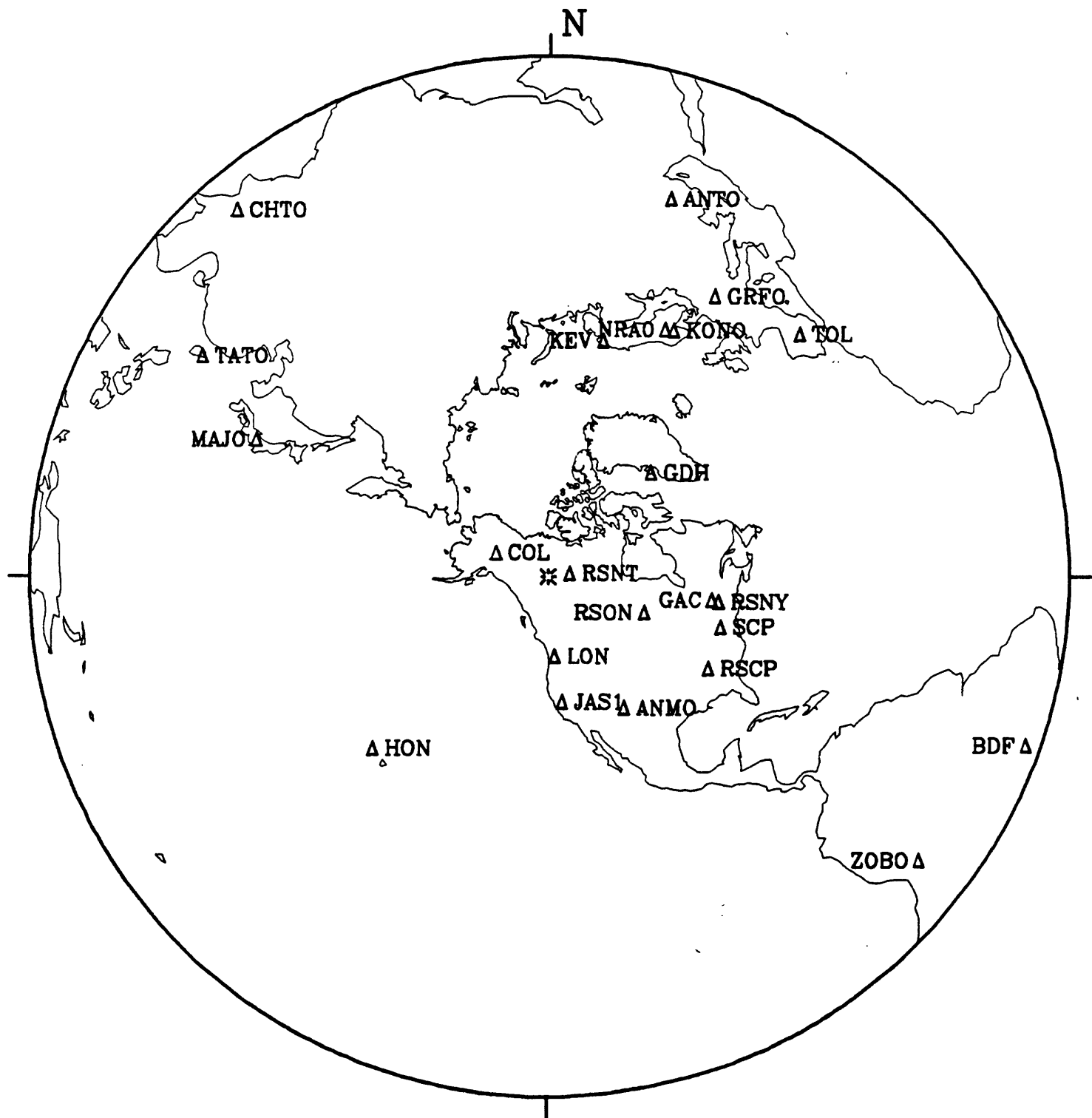
25 December 1985 03:01:23.82  
South of Fiji Islands  $h=71.4$   $m_b=5.5$ 

LPZ



25 December 1985 15:42:42.44

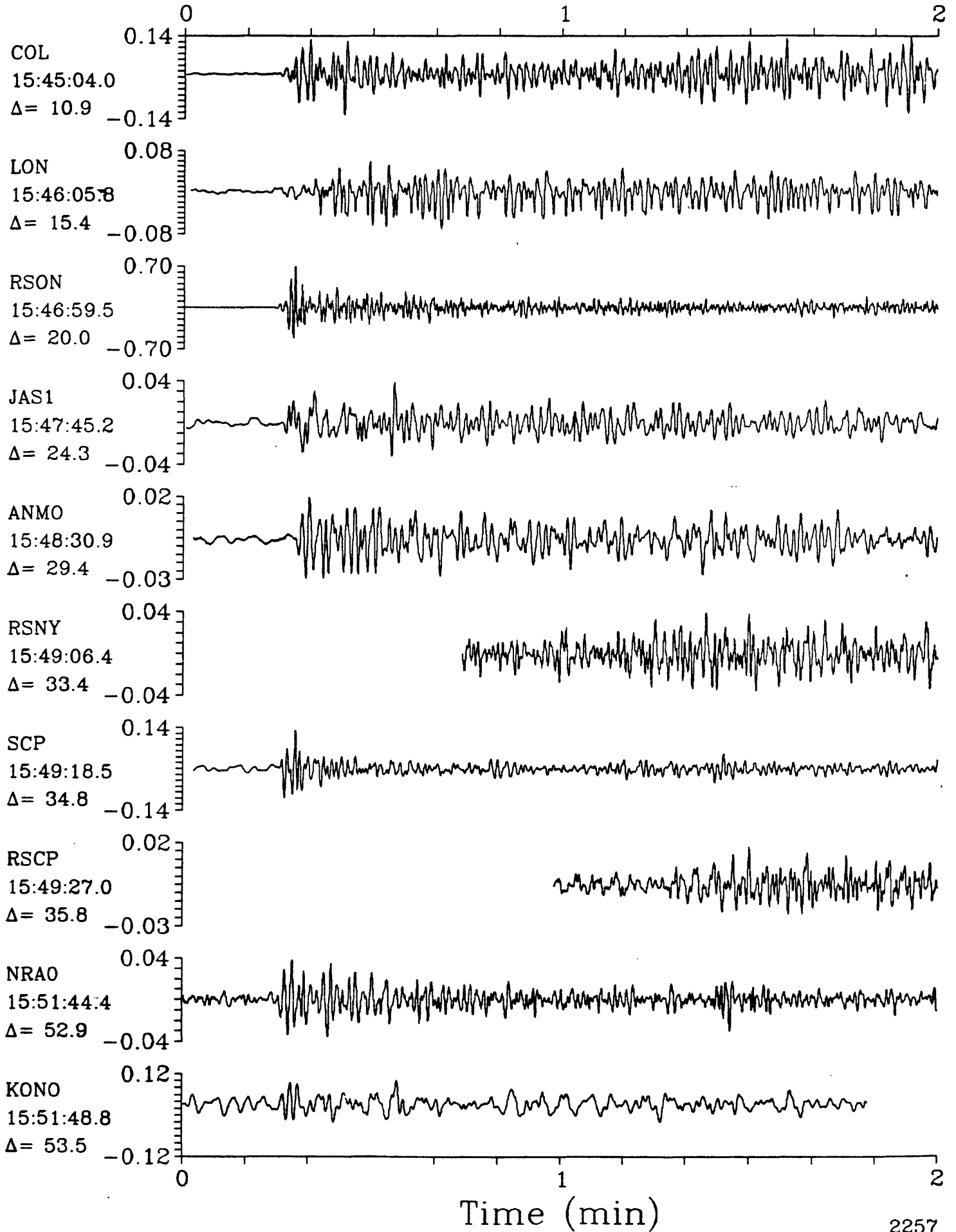
# Northwest Territories, Canada



SPZ

25 December 1985 15:42:42.44

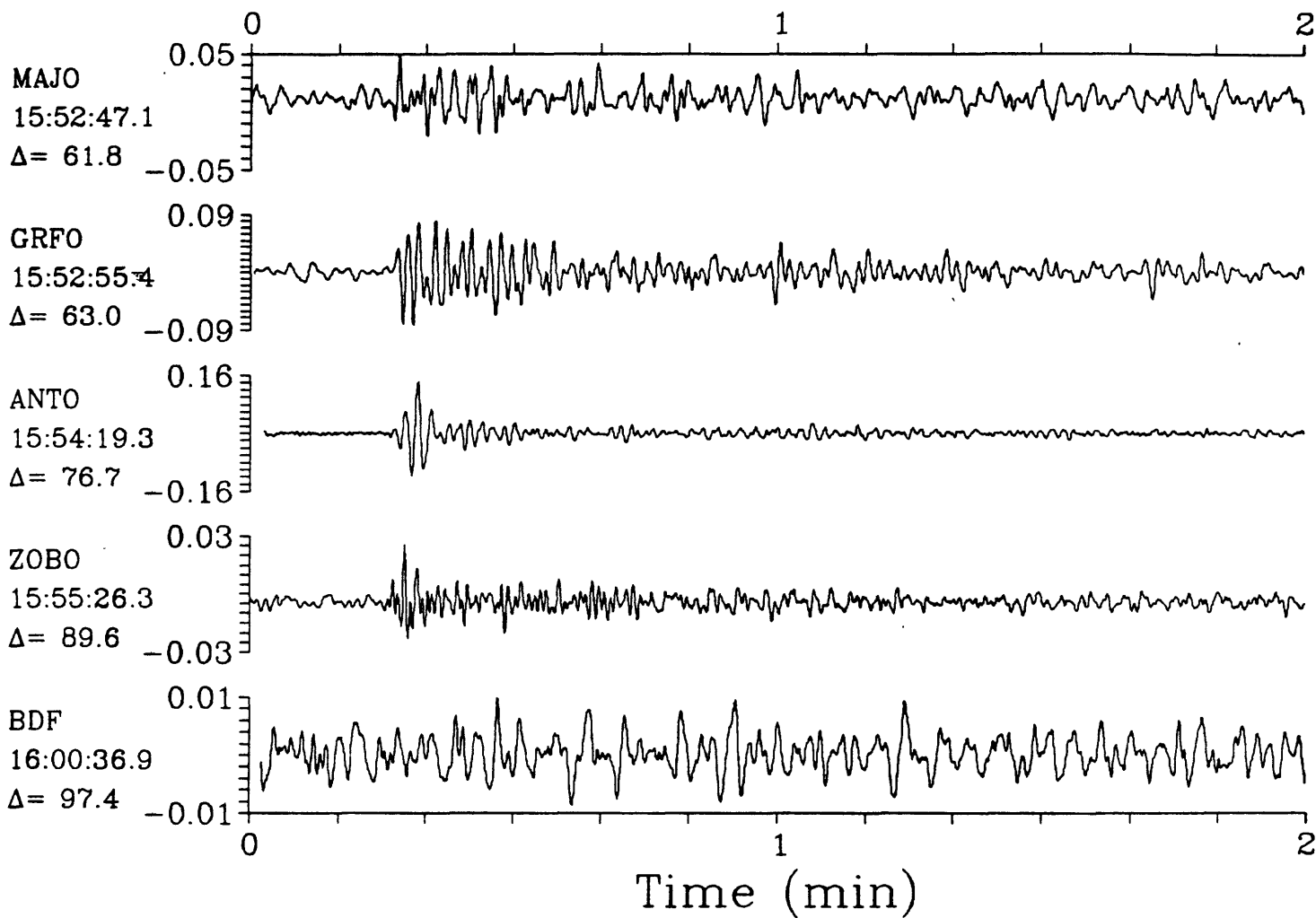
SPZ

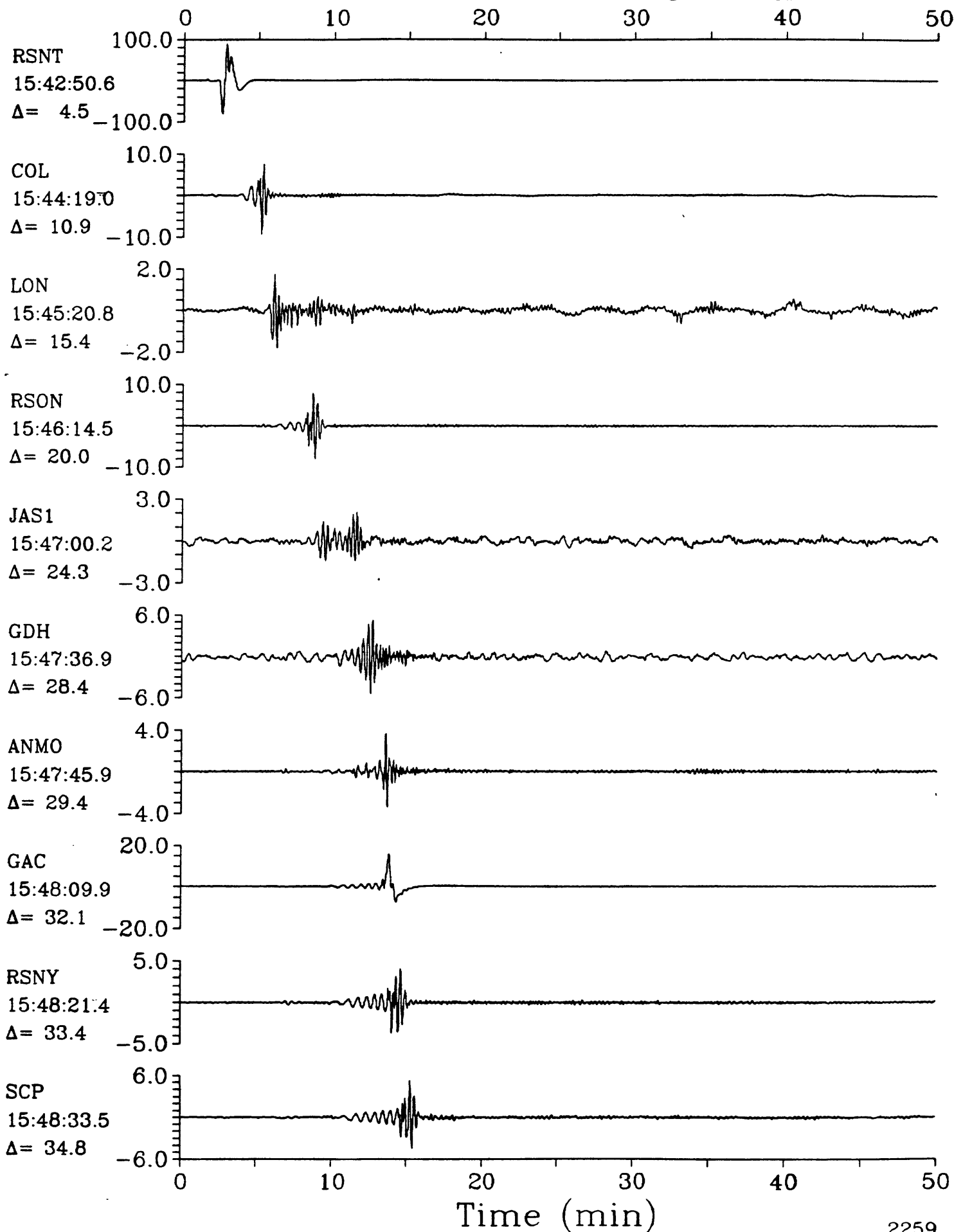
Northwest Territories, Canada  $h=10.0$   $m_b=5.7$   $M_{sz}=5.0$ 

SPZ

25 December 1985 15:42:42.44

SPZ

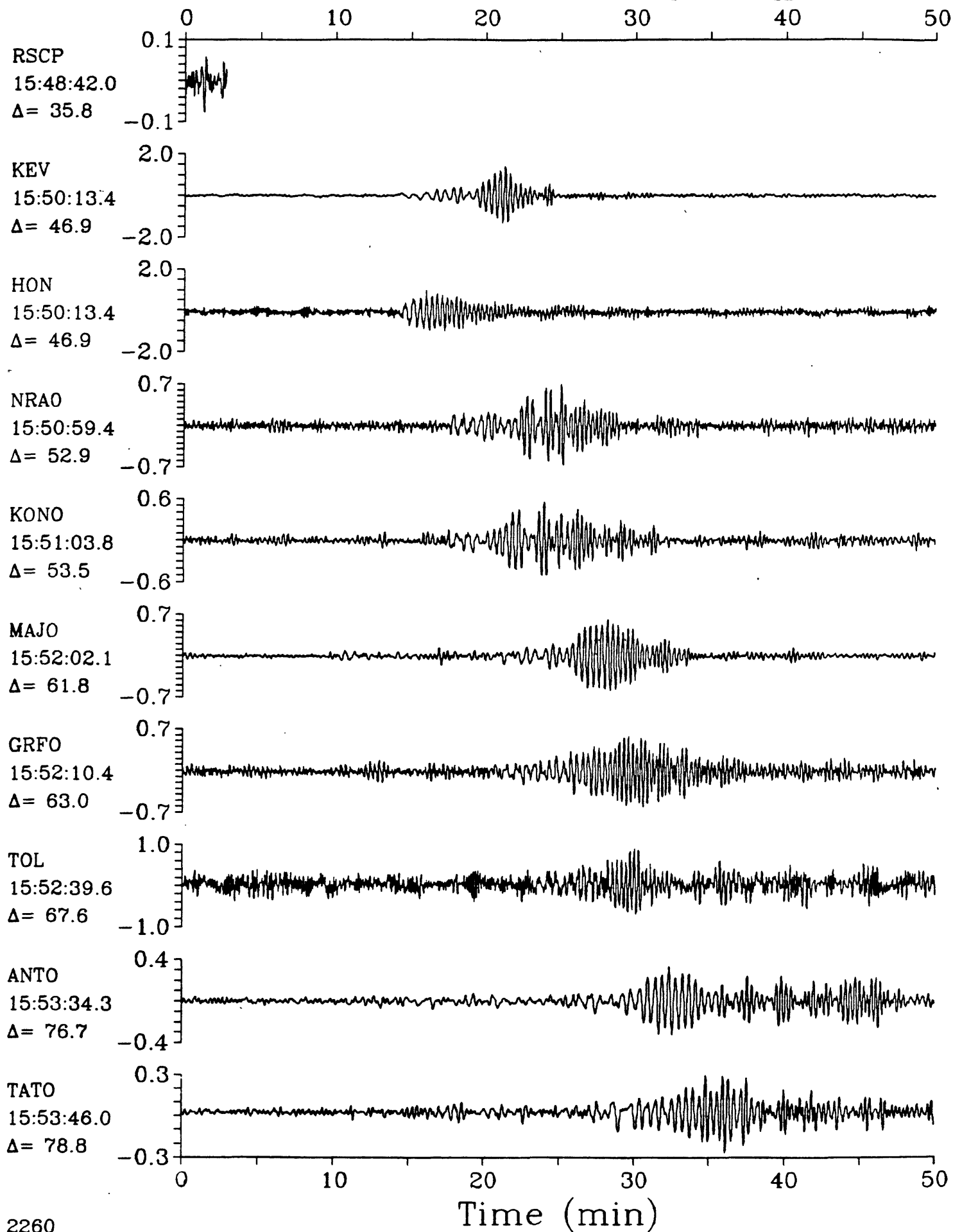
Northwest Territories, Canada  $h=10.0$   $m_b=5.7$   $M_{sz}=5.0$ 



LPZ

25 December 1985 15:42:42.44

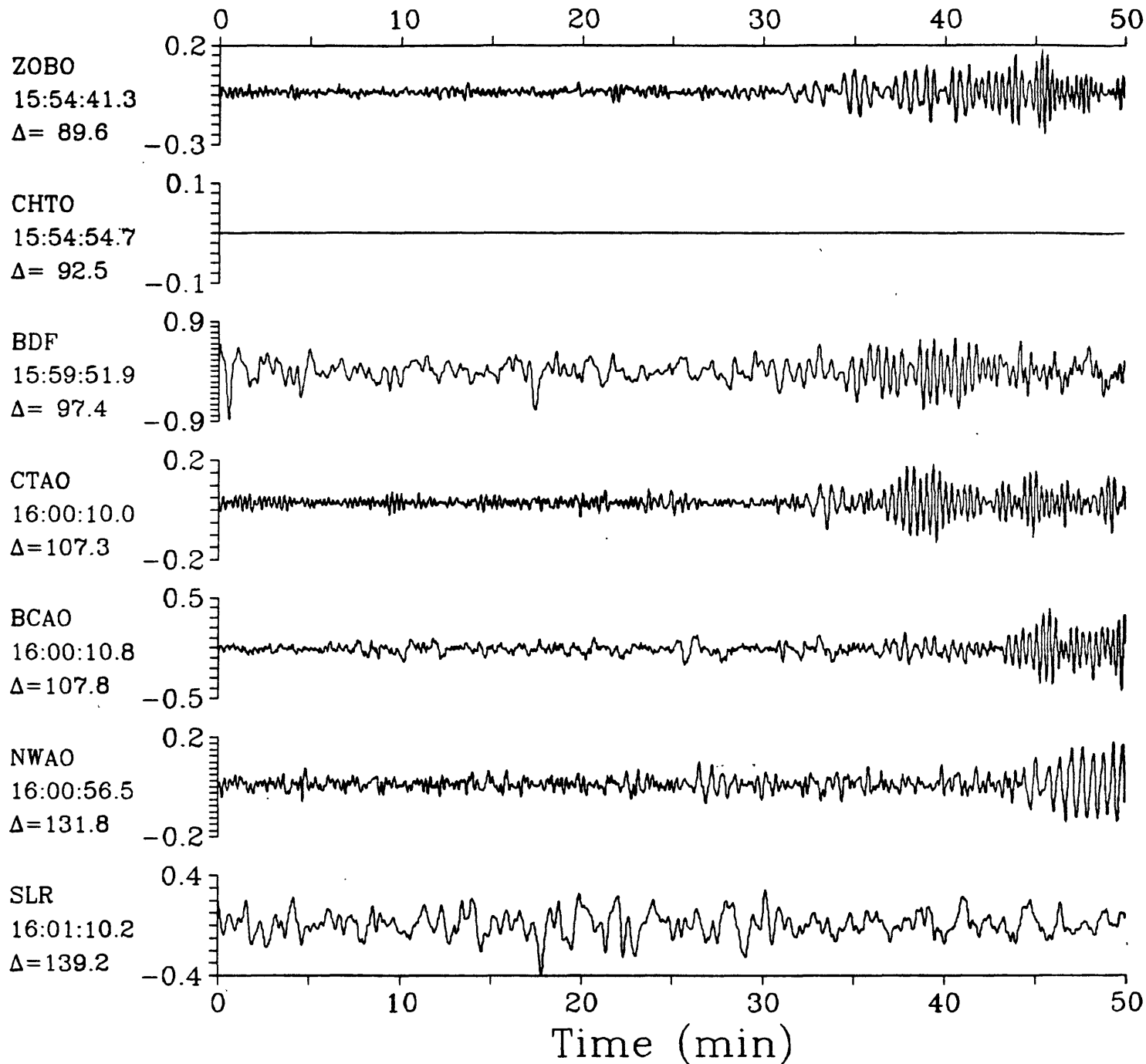
LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.7$   $M_{sz}=5.0$ 

LPZ

25 December 1985 15:42:42.44

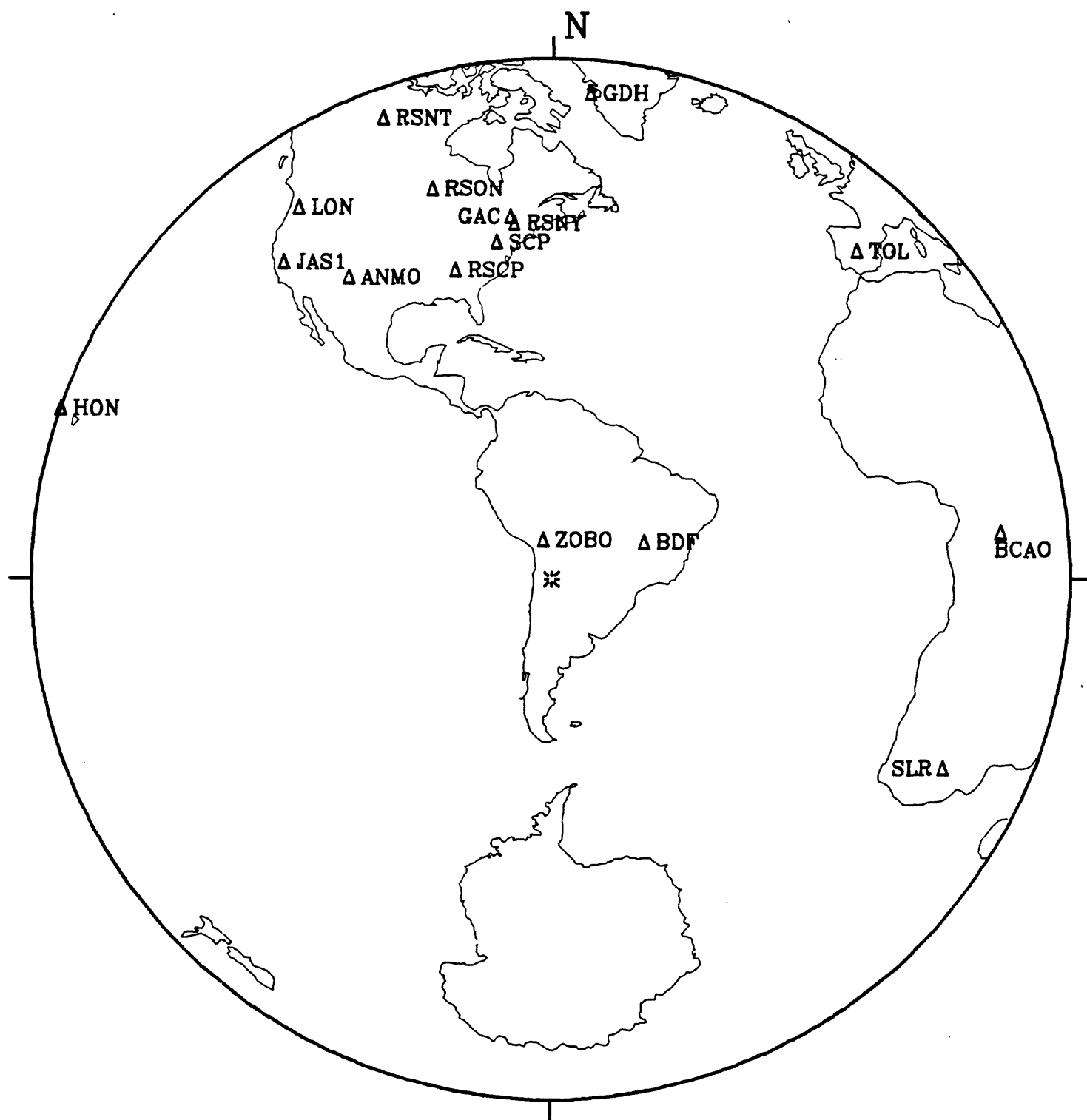
LPZ

Northwest Territories, Canada  $h=10.0$   $m_b=5.7$   $M_{sz}=5.0$ 



25 December 1985 15:43:56.30

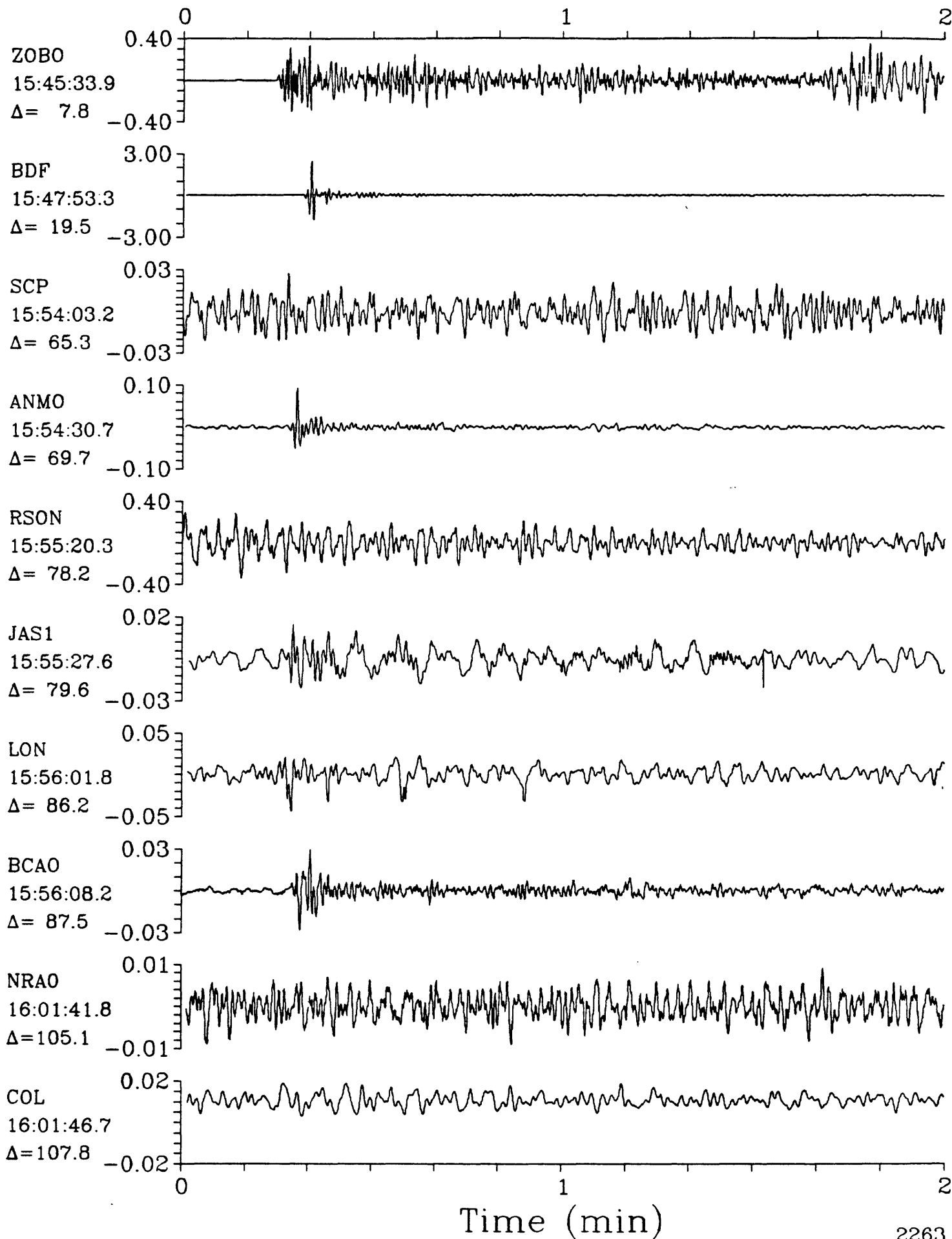
## Jujuy Province, Argentina



SPZ

25 December 1985 15:43:56.30

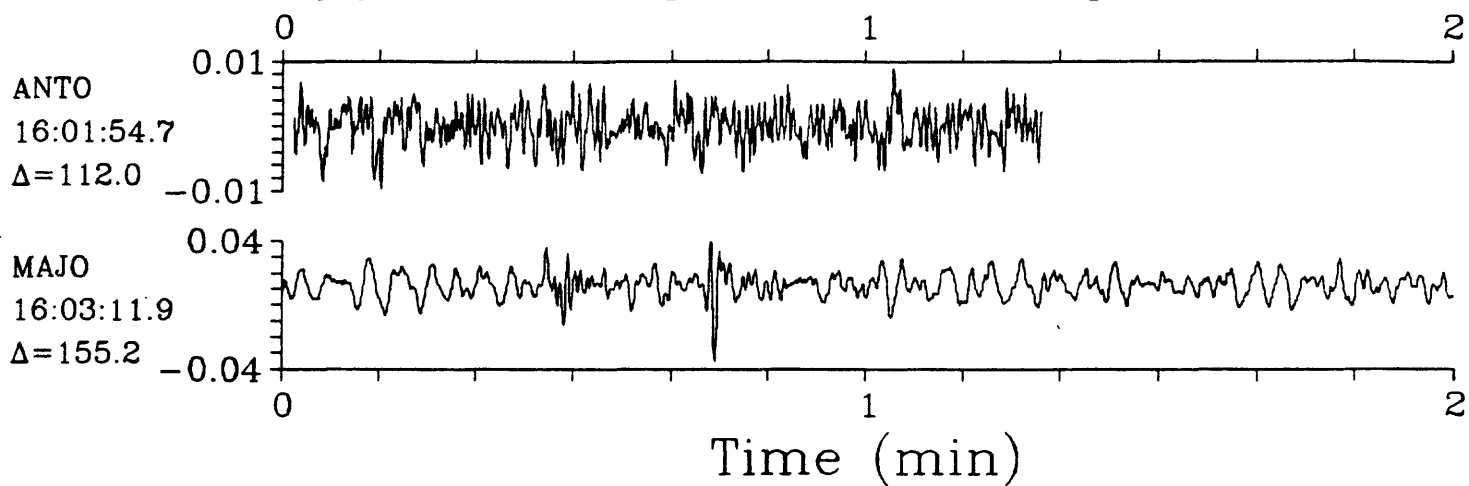
SPZ

Jujuy Province, Argentina  $h=186.6$   $m_b=5.5$ 

SPZ

25 December 1985 15:43:56.30

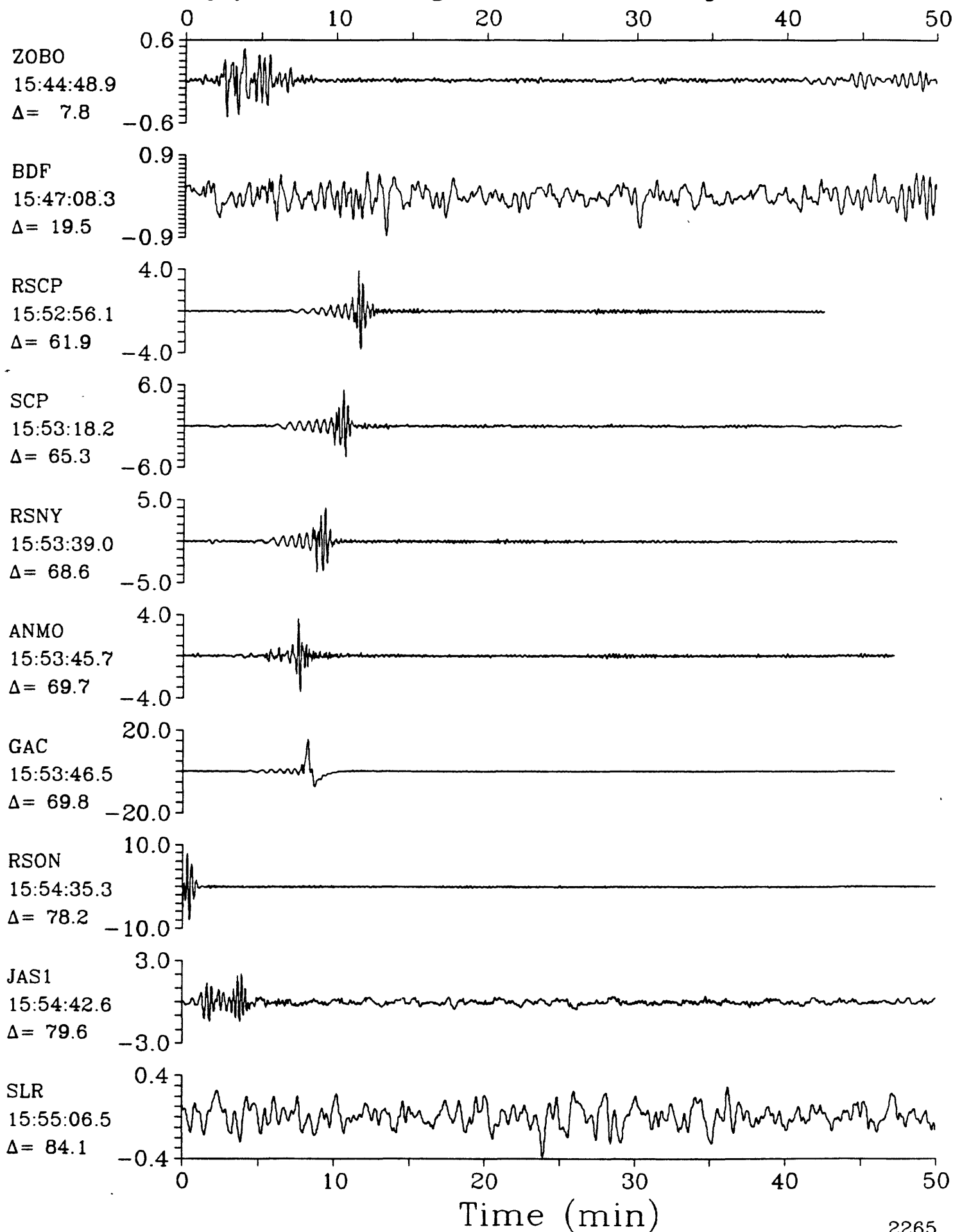
SPZ

Jujuy Province, Argentina  $h=186.6$   $m_b=5.5$ 

LPZ

25 December 1985 15:43:56.30

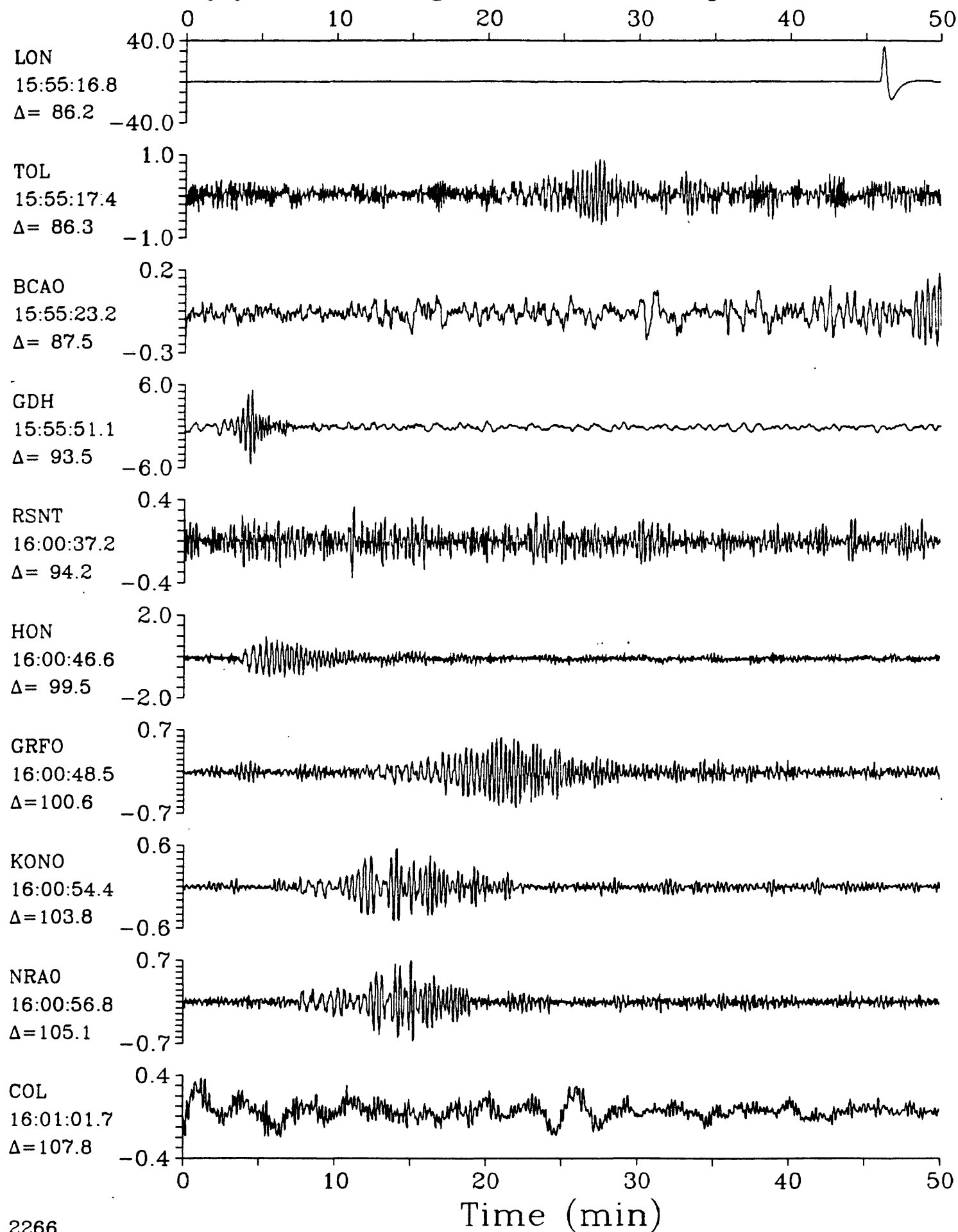
LPZ

Jujuy Province, Argentina  $h=186.6$   $m_b=5.5$ 

LPZ

25 December 1985 15:43:56.30

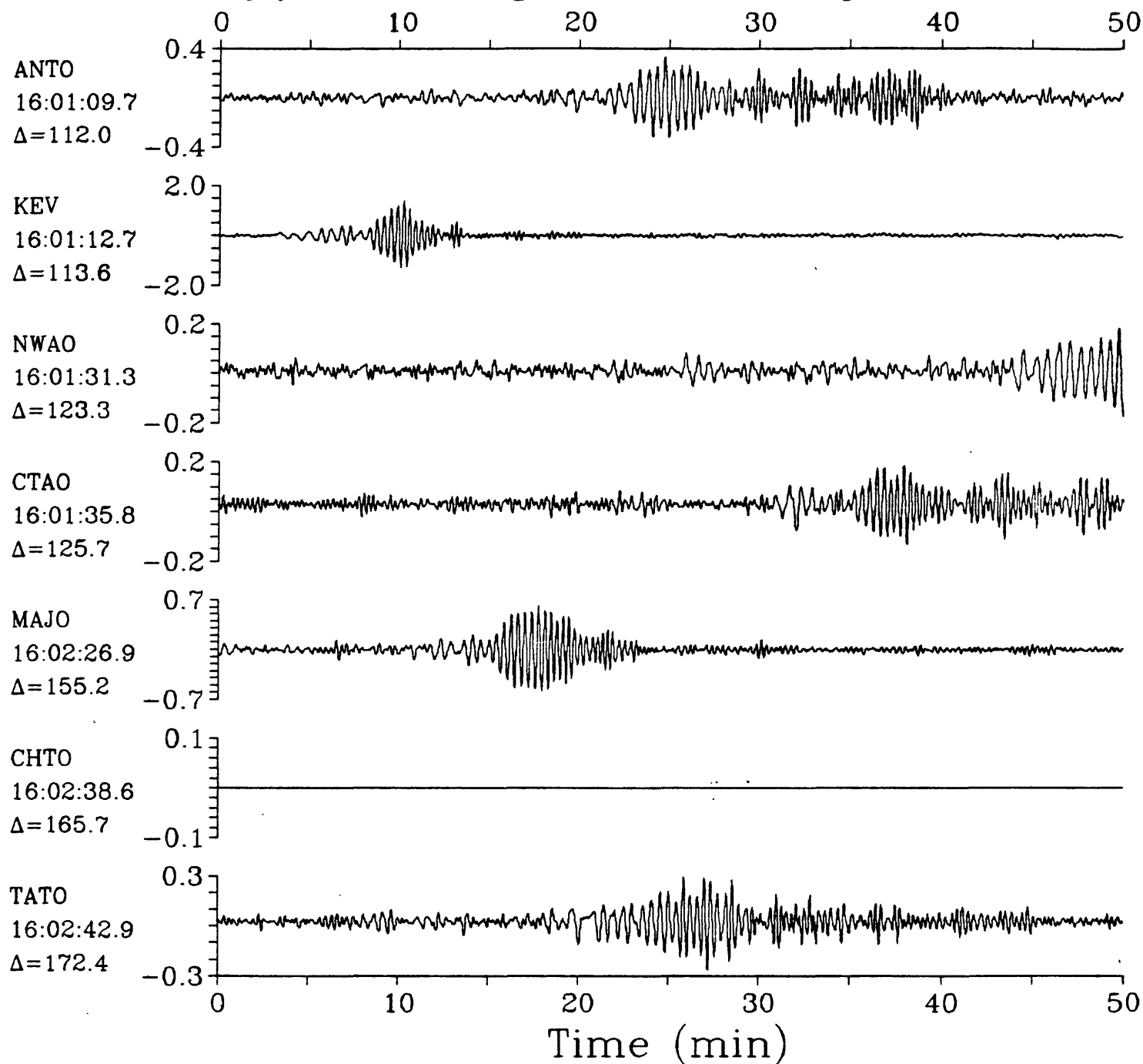
LPZ

Jujuy Province, Argentina  $h=186.6$   $m_b=5.5$ 

LPZ

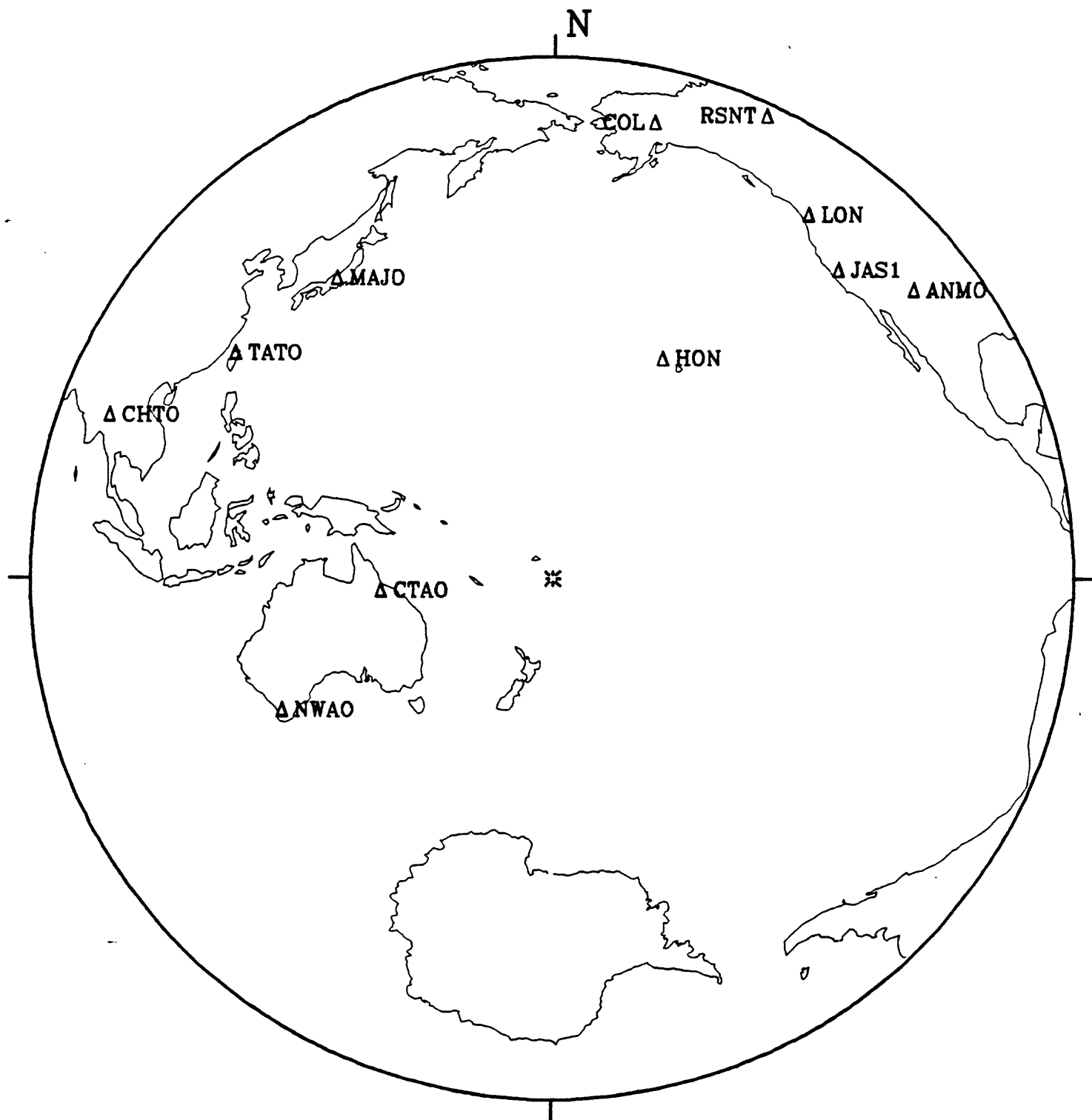
25 December 1985 15:43:56.30

LPZ

Jujuy Province, Argentina  $h=186.6$   $m_b=5.5$ 

25 December 1985 22:15:12.43

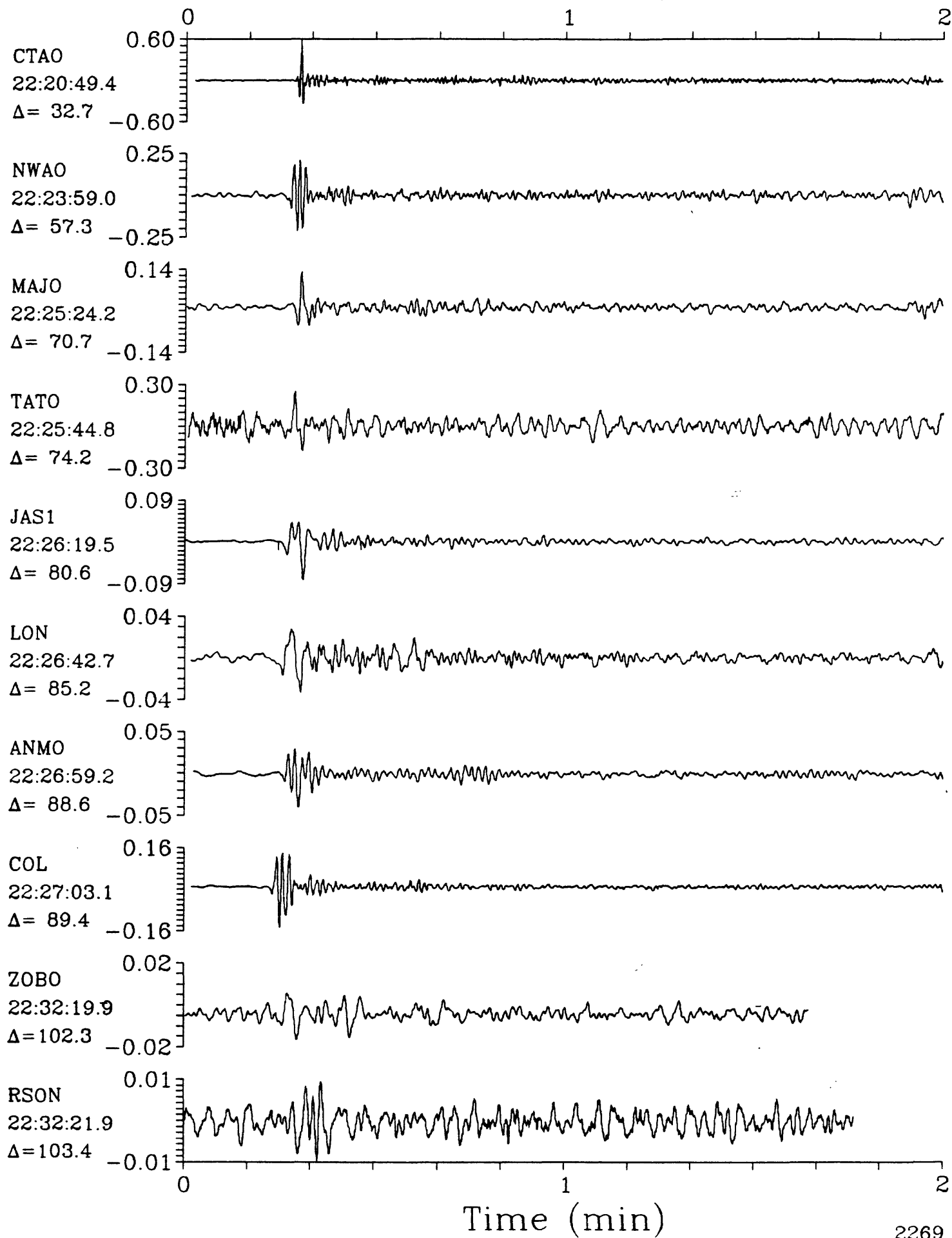
## Fiji Islands Region



SPZ

25 December 1985 22:15:12.43  
Fiji Islands Region  $h=481.7$   $m_b=5.6$ 

SPZ

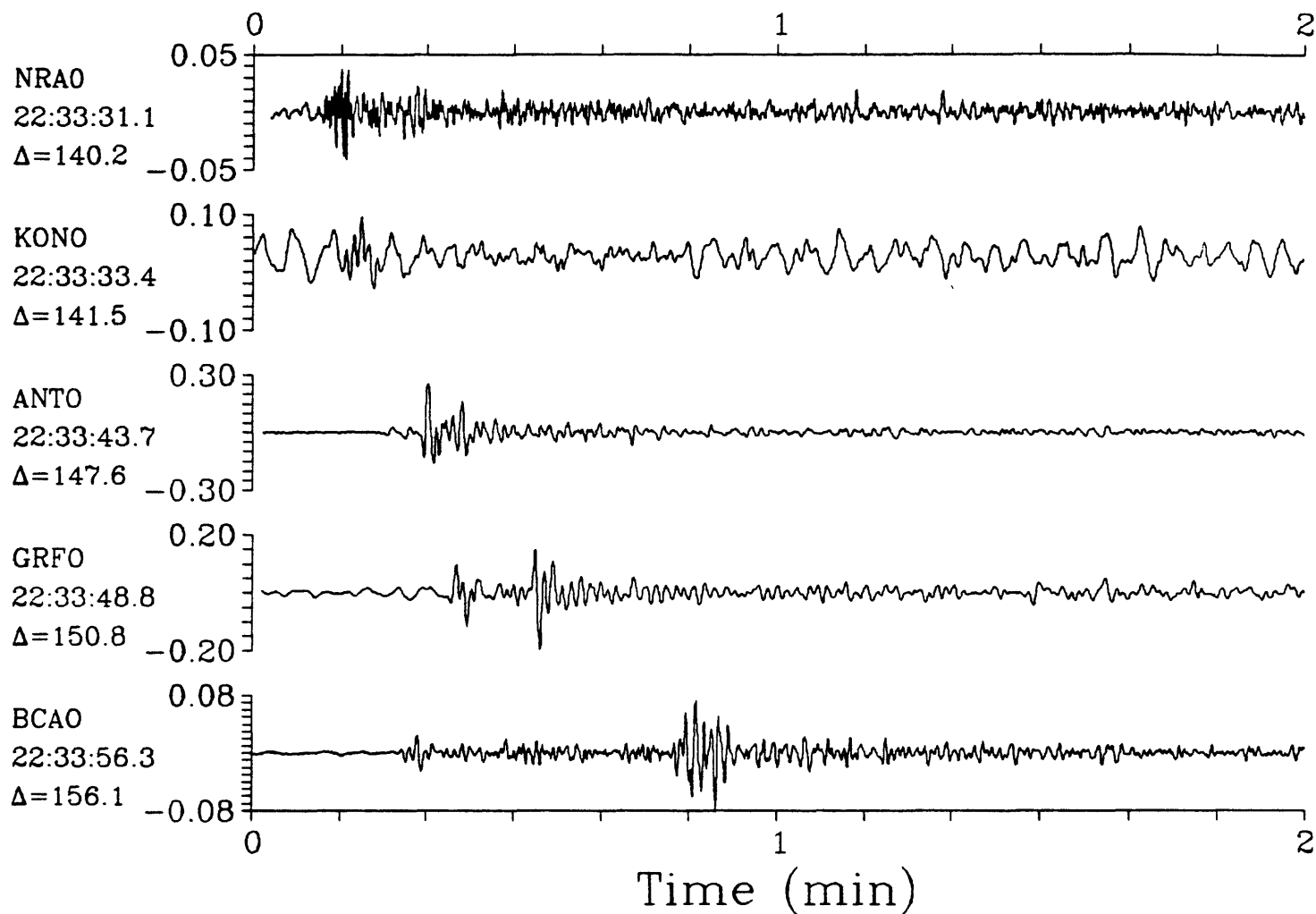




SPZ

25 December 1985 22:15:12.43  
Fiji Islands Region  $h=481.7$   $m_b=5.6$ 

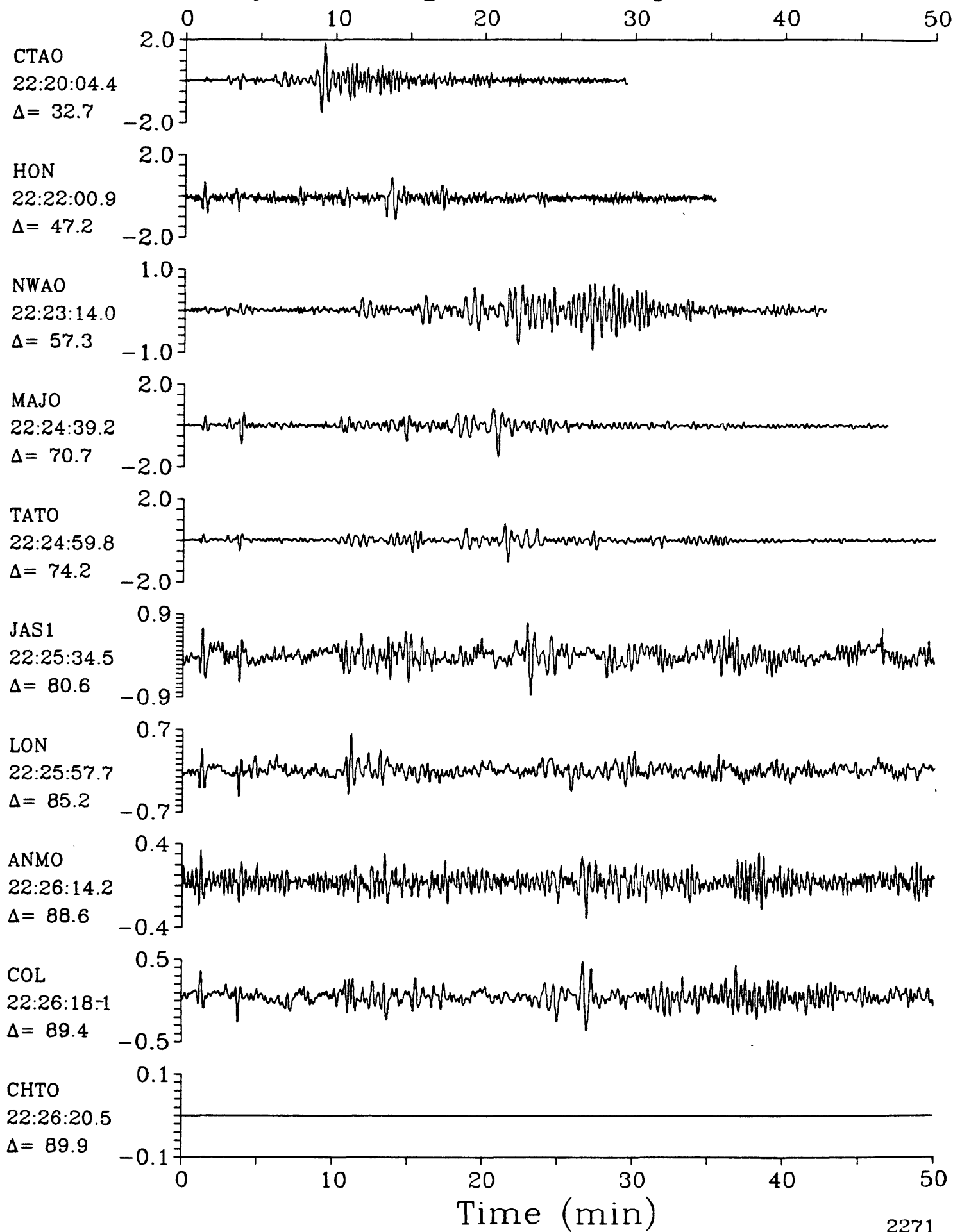
SPZ



LPZ

25 December 1985 22:15:12.43  
Fiji Islands Region  $h=481.7$   $m_b=5.6$ 

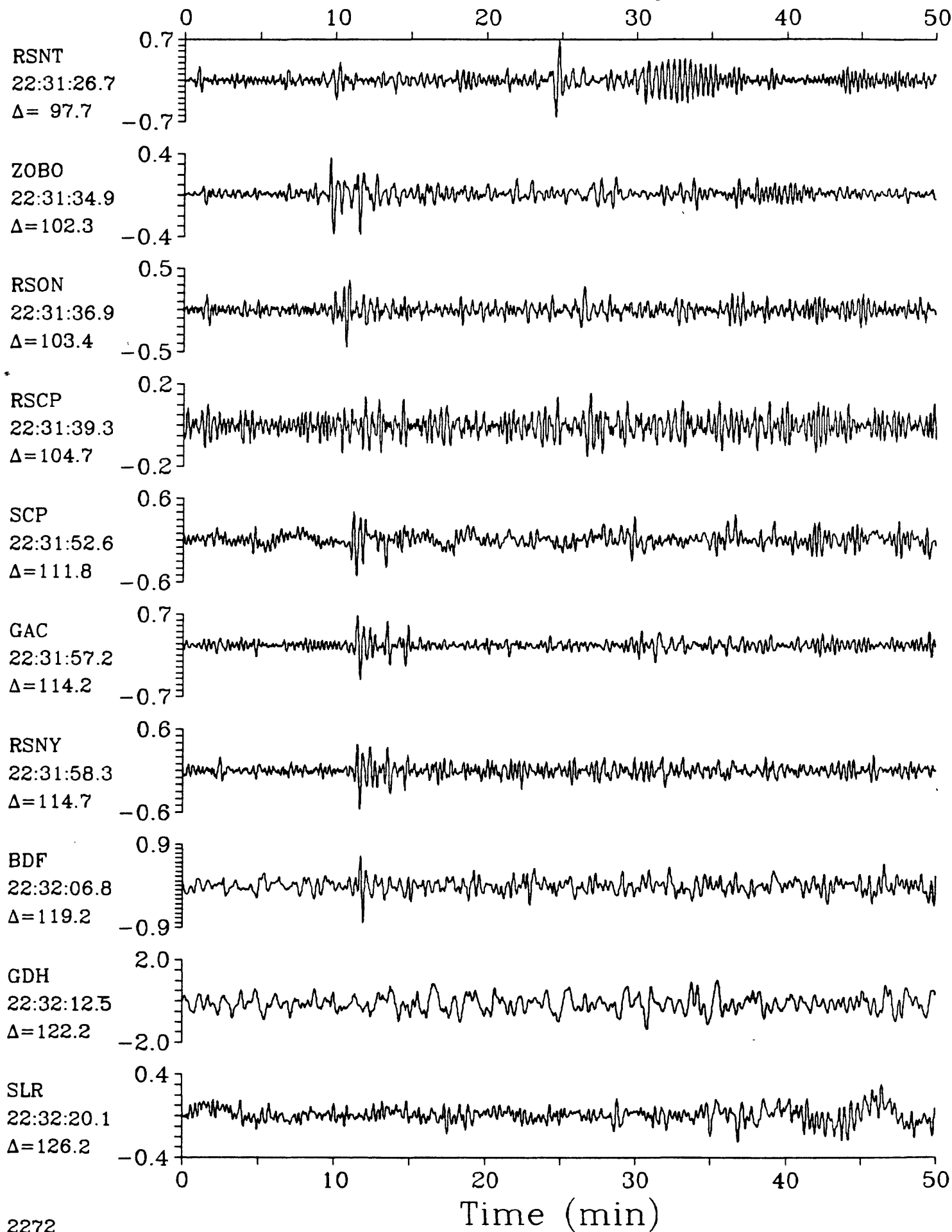
LPZ



LPZ

25 December 1985 22:15:12.43  
Fiji Islands Region  $h=481.7$   $m_b=5.6$ 

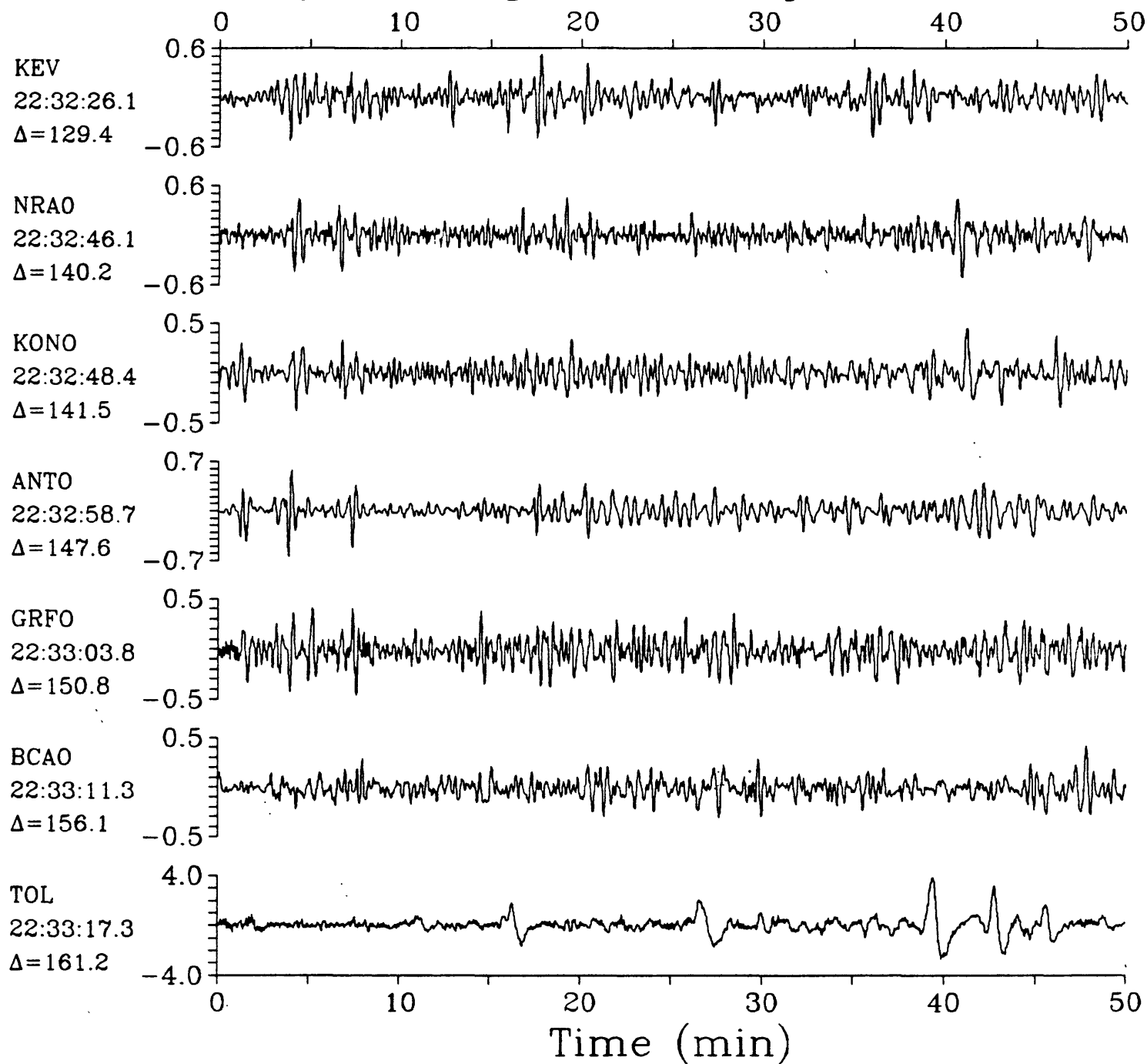
LPZ



LPZ

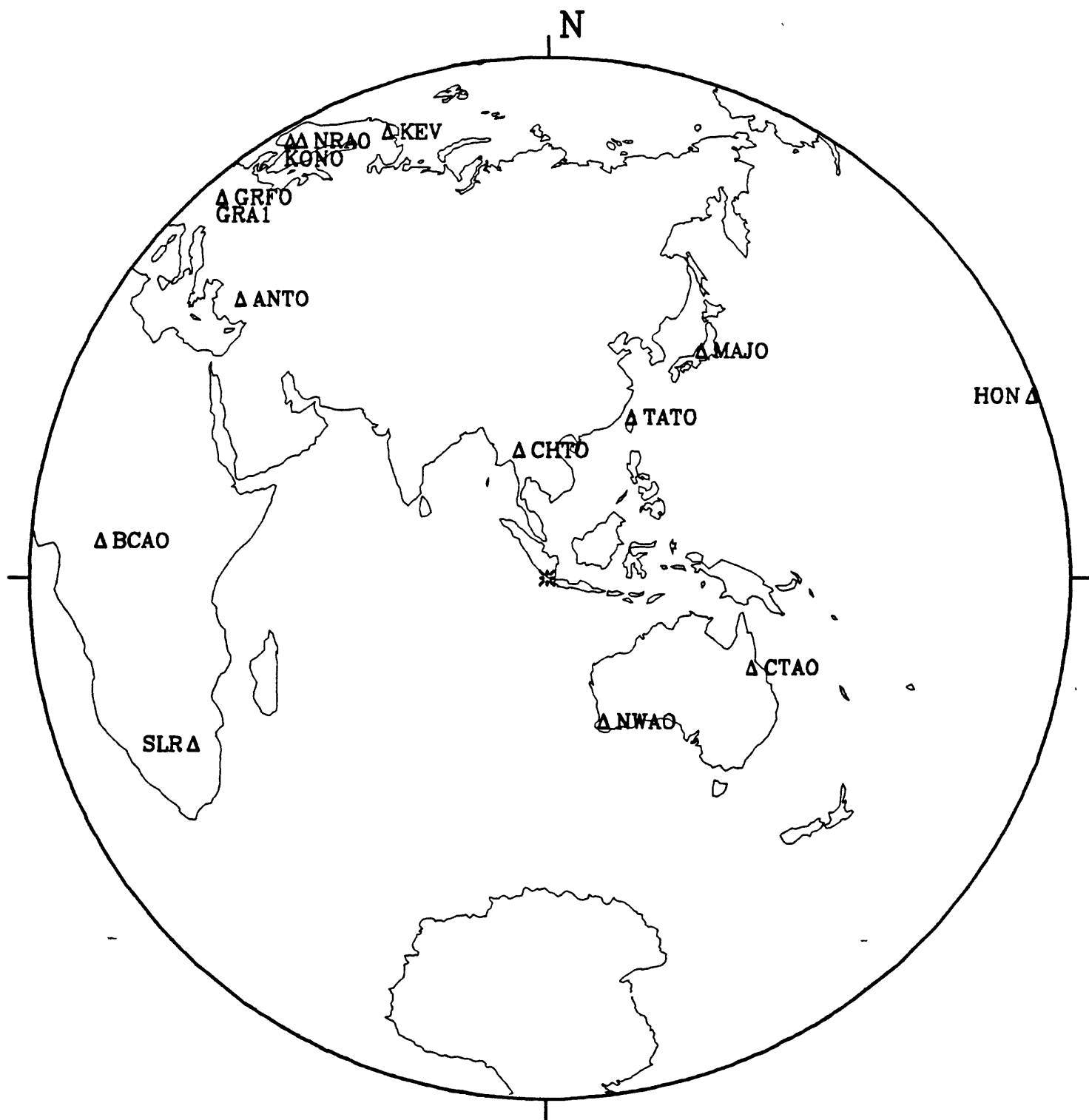
25 December 1985 22:15:12.43  
Fiji Islands Region  $h=481.7$   $m_b=5.6$ 

LPZ



27 December 1985 05:38:54.86

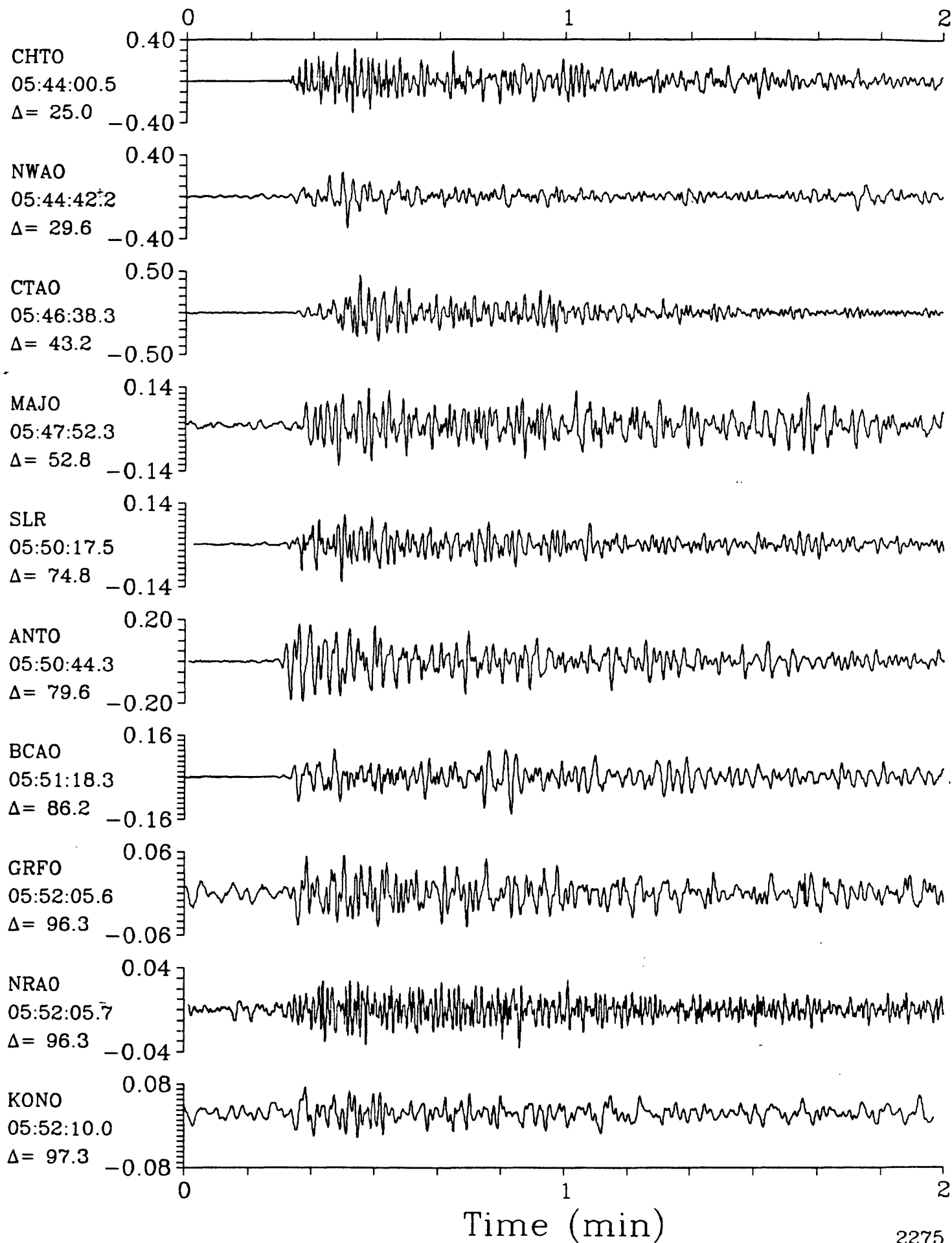
## Southern Sumatra



SPZ

27 December 1985 05:38:54.86

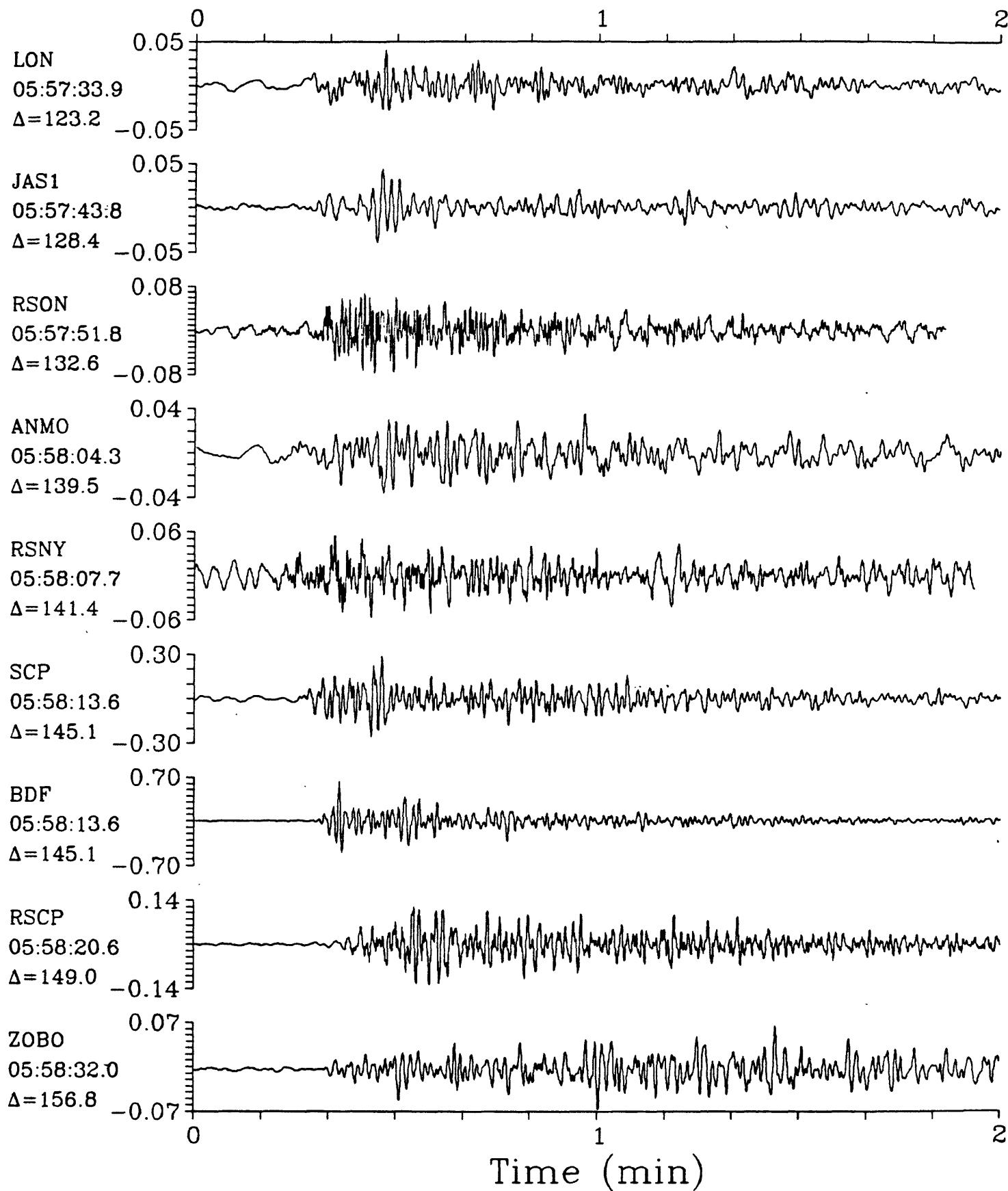
SPZ

Southern Sumatera  $h=33.0$   $m_b=5.8$   $M_{sz}=6.6$ 

SPZ

27 December 1985 05:38:54.86

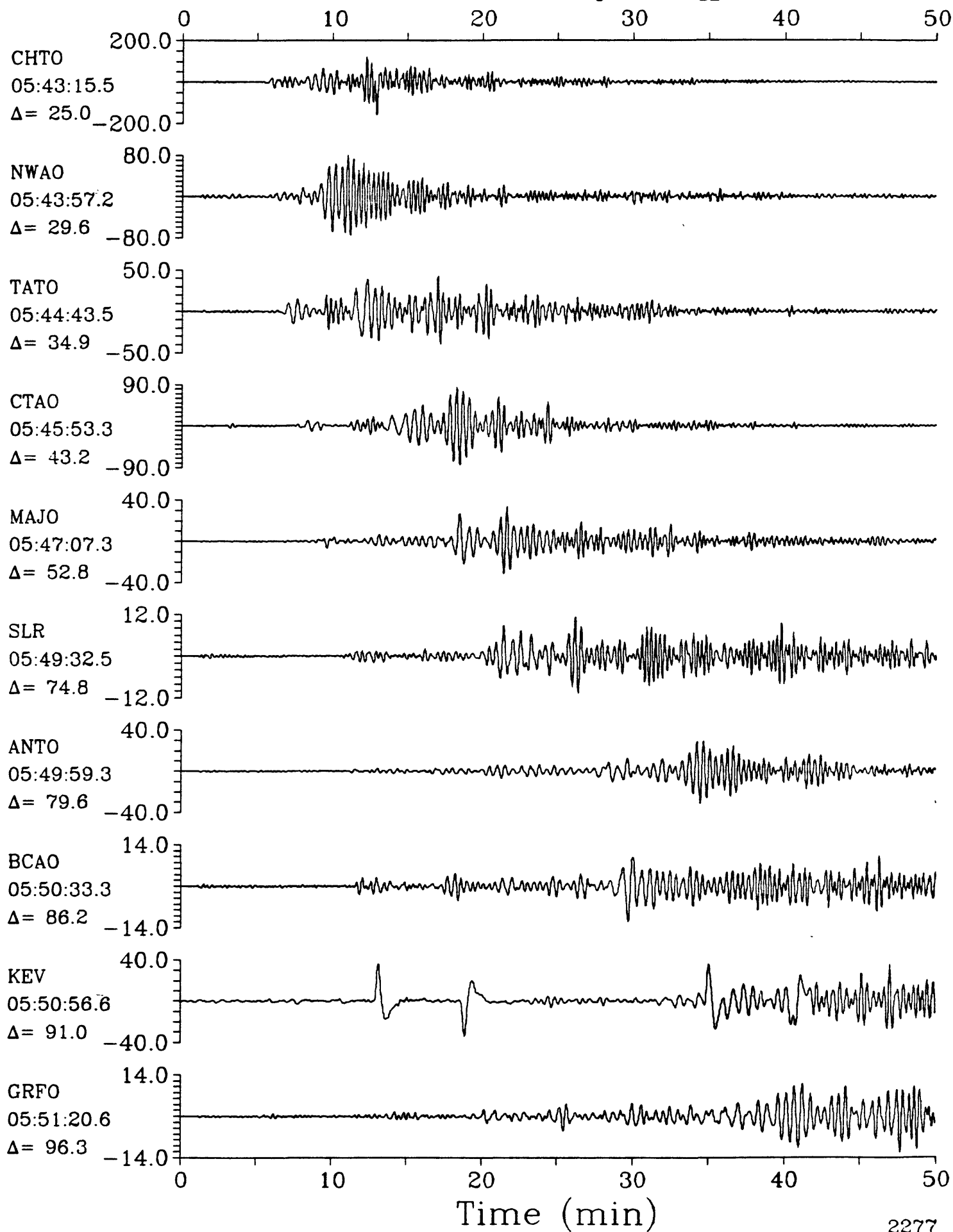
SPZ

Southern Sumatera  $h=33.0$   $m_b=5.8$   $M_{SZ}=6.6$ 

LPZ

27 December 1985 05:38:54.86

LPZ

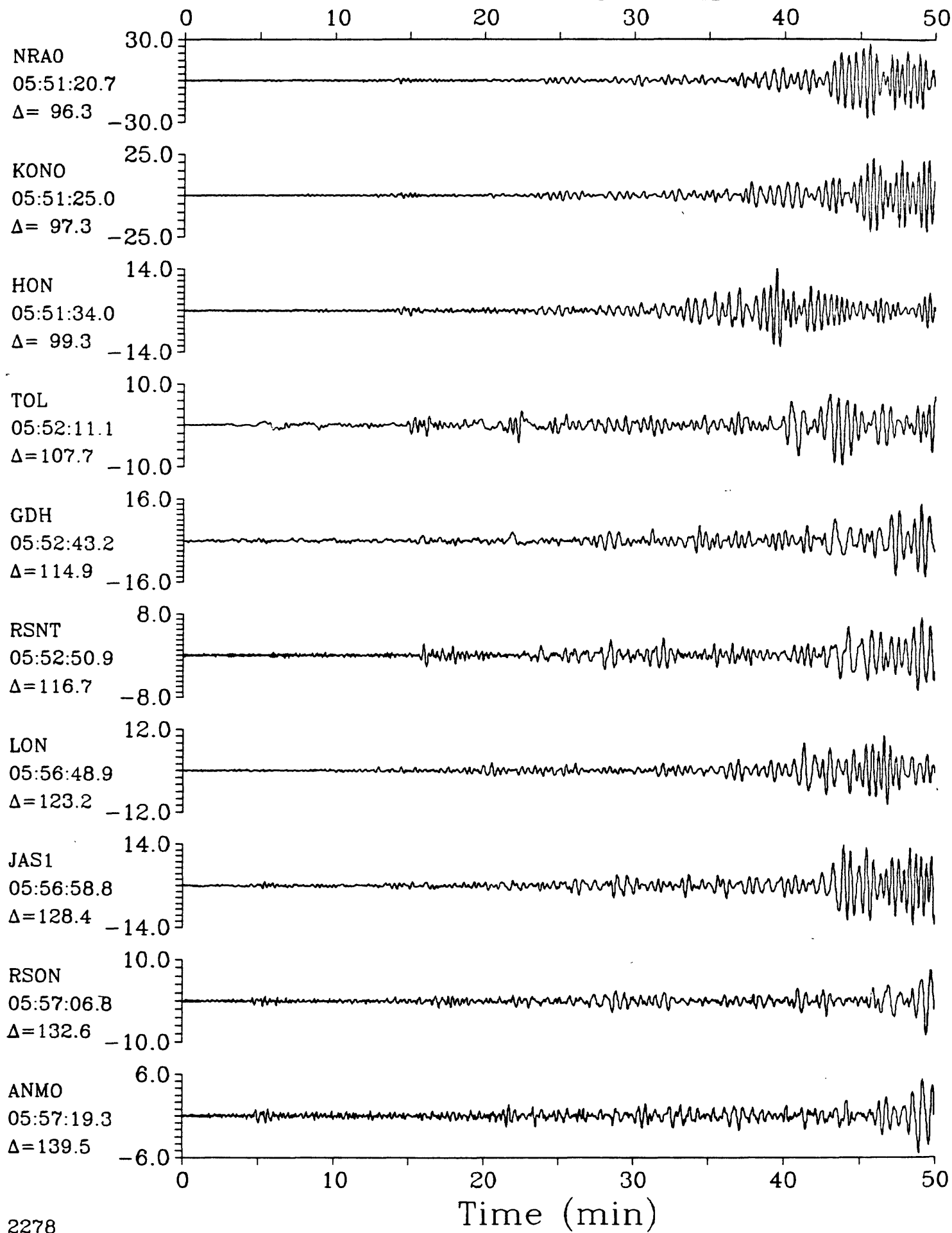
Southern Sumatera  $h=33.0$   $m_b=5.8$   $M_{sz}=6.6$ 



LPZ

27 December 1985 05:38:54.86

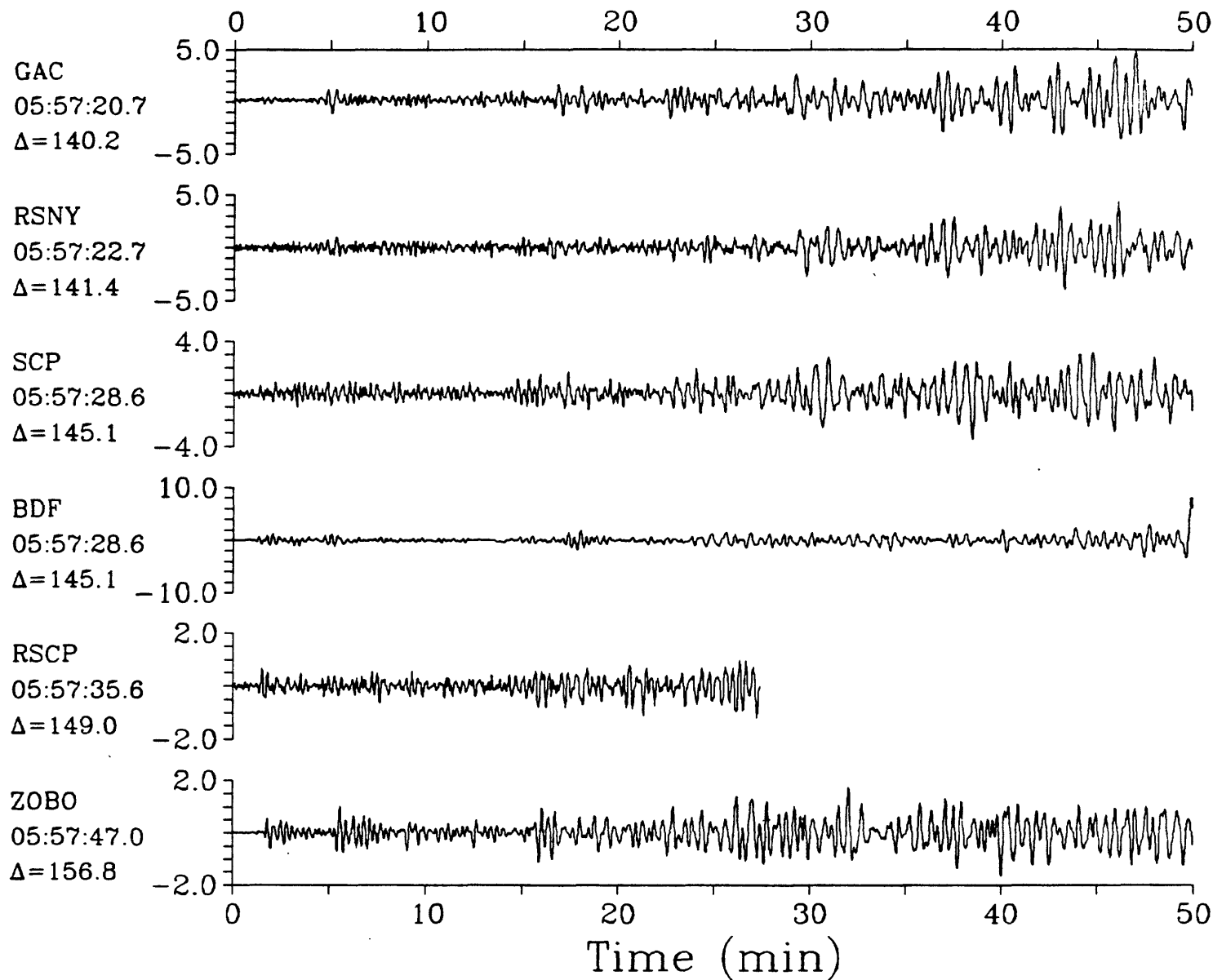
LPZ

Southern Sumatera  $h=33.0$   $m_b=5.8$   $M_{sz}=6.6$ 

LPZ

27 December 1985 05:38:54.86

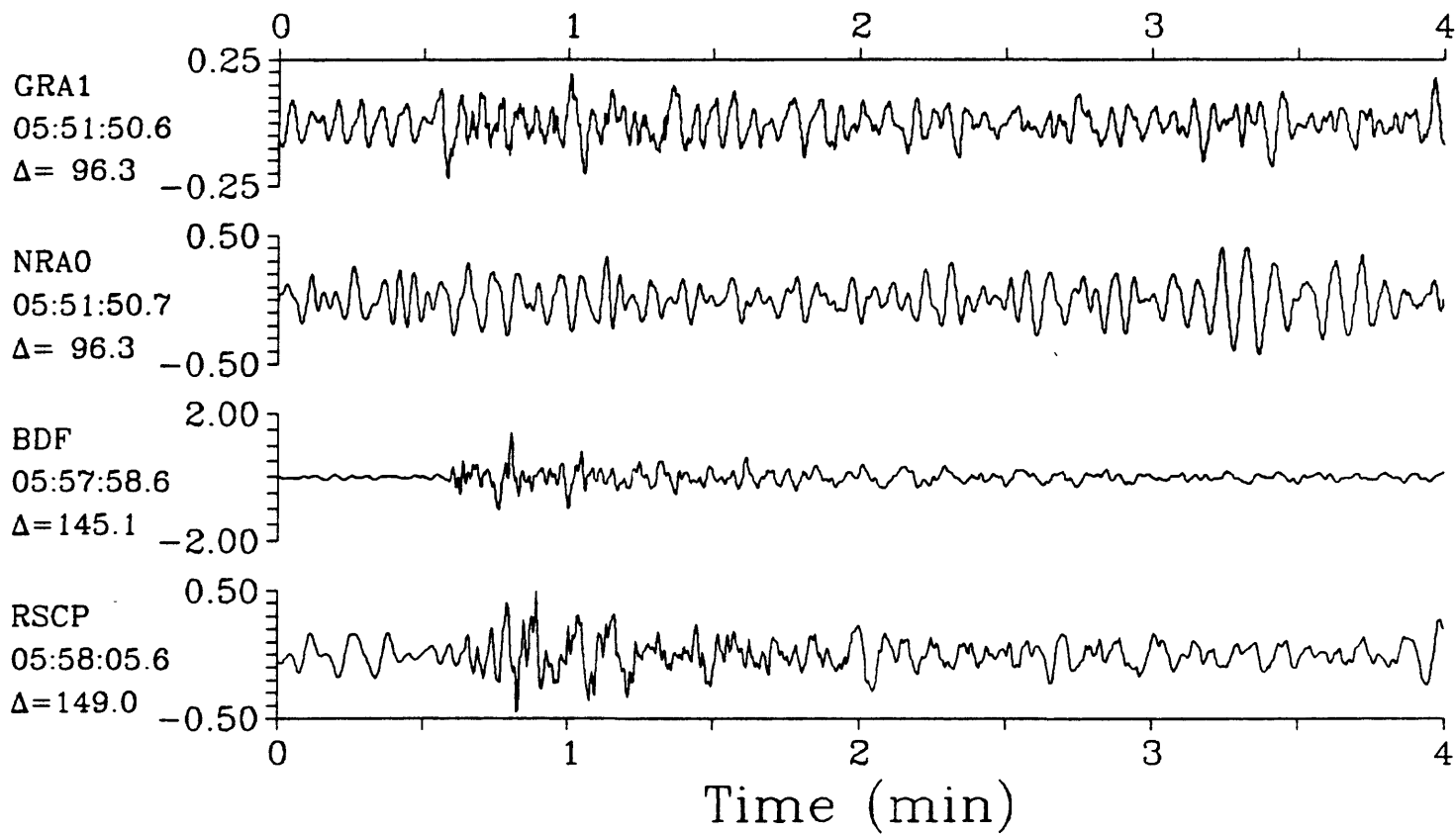
LPZ

Southern Sumatra  $h=33.0$   $m_b=5.8$   $M_{sz}=6.6$ 

IPZ

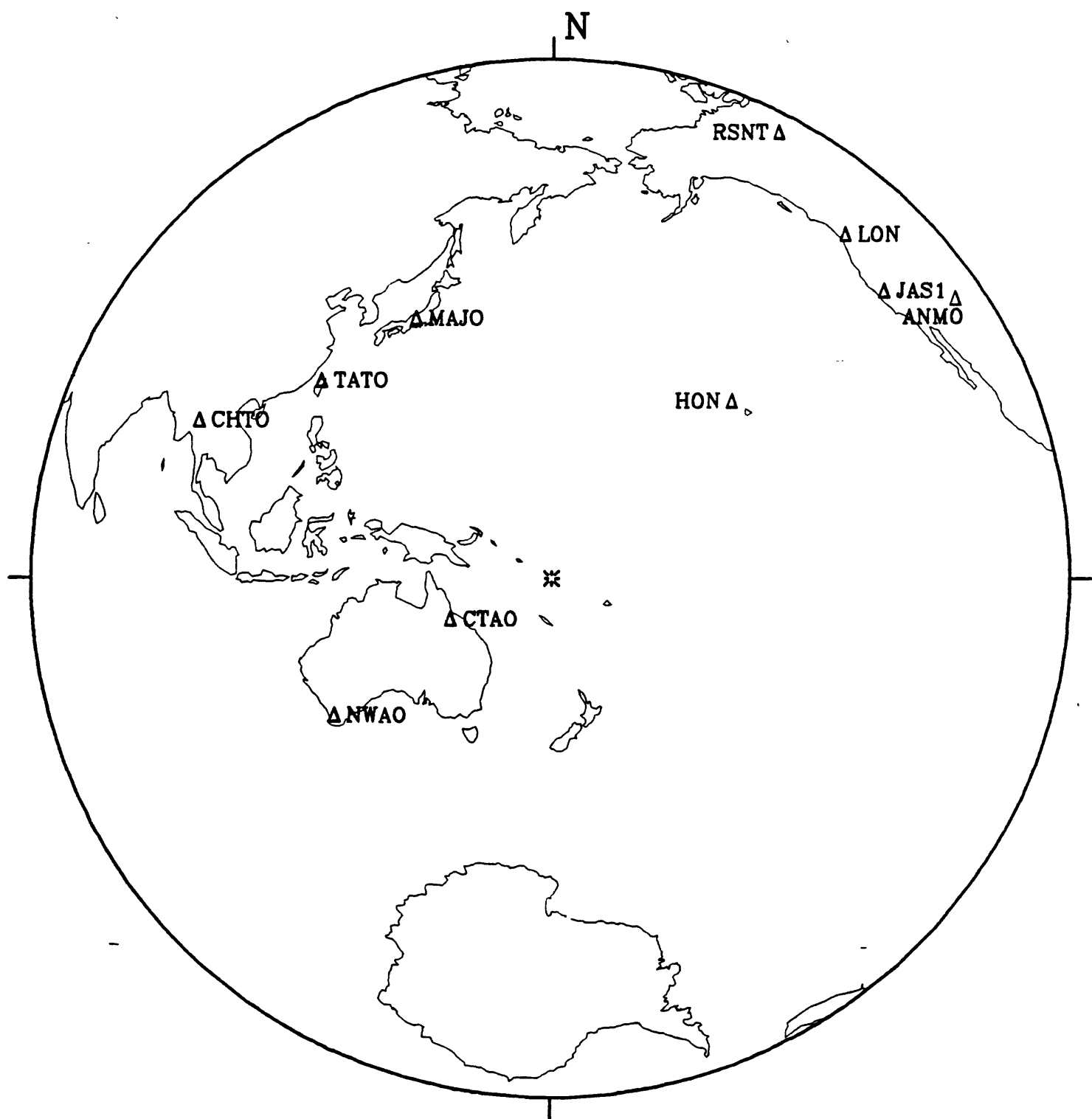
27 December 1985 05:38:54.86

IPZ

Southern Sumatera  $h=33.0$   $m_b=5.8$   $M_{sz}=6.6$ 

28 December 1985 15:41:03.18

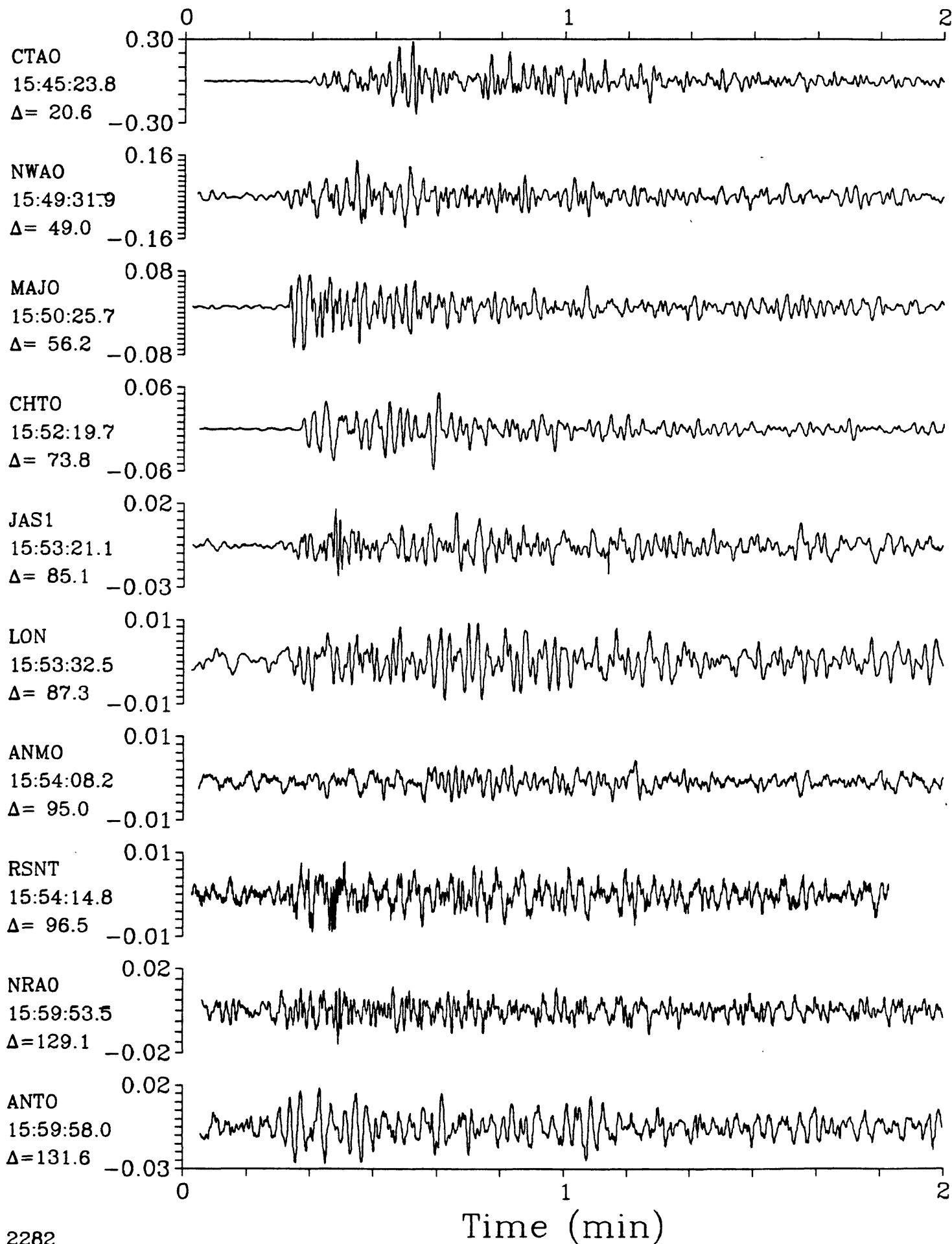
## Vanuatu Islands



SPZ

28 December 1985 15:41:03.18

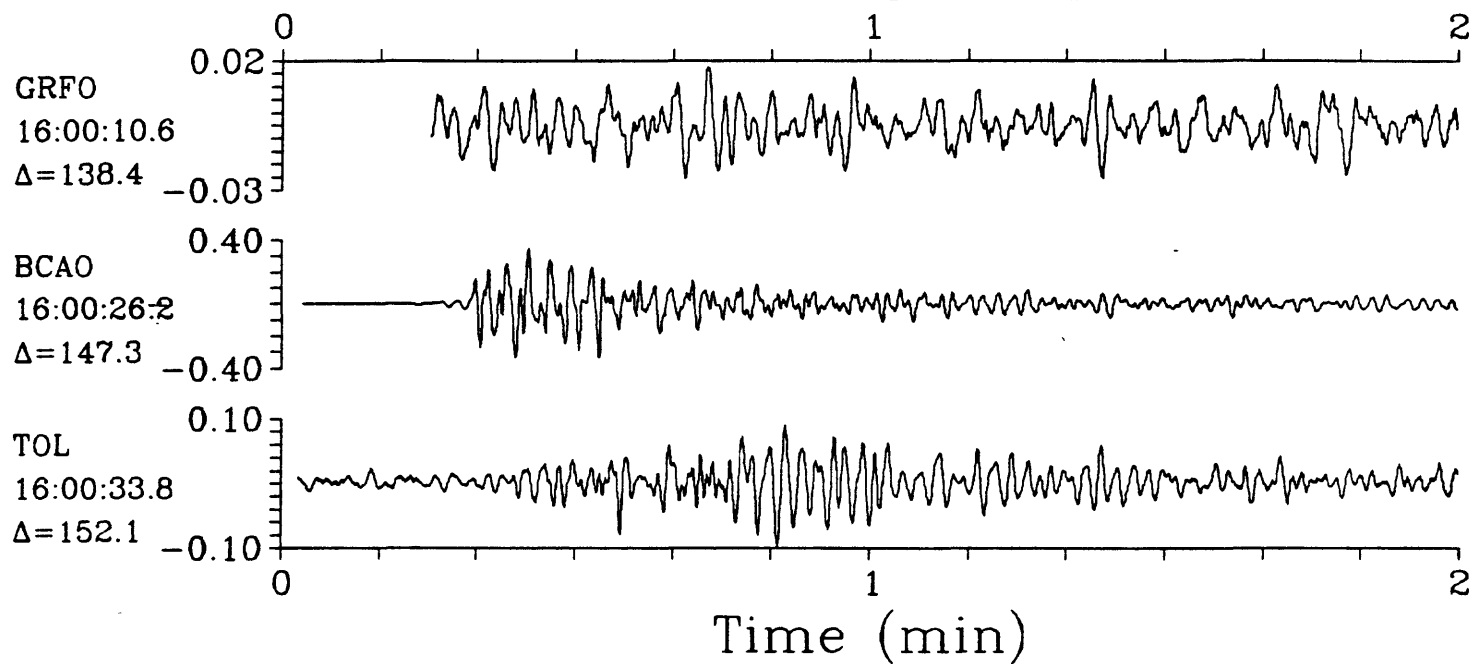
SPZ

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

SPZ

28 December 1985 15:41:03.18

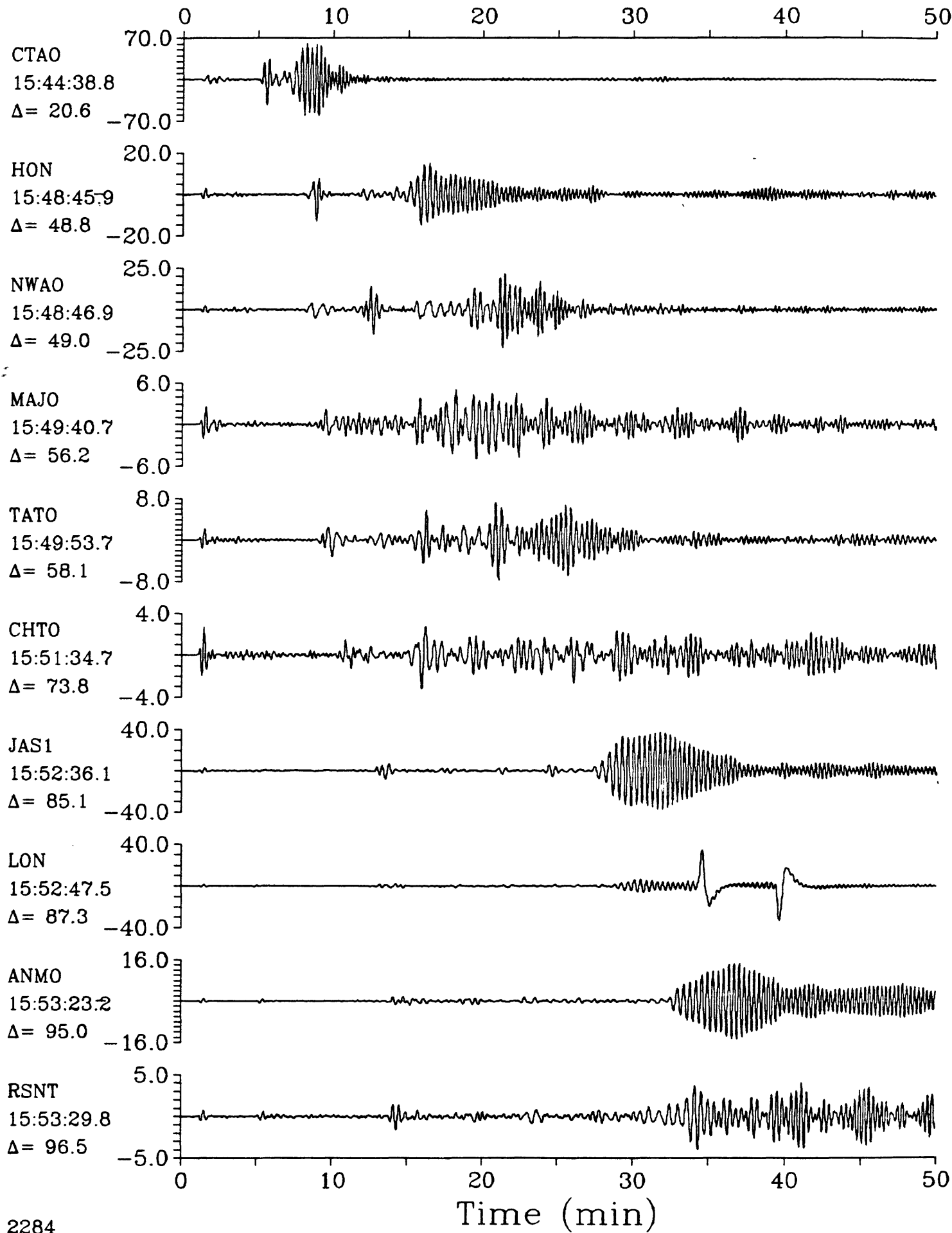
SPZ

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

LPZ

28 December 1985 15:41:03.18  
Vanuatu Islands  $h=33.0$   $m_b=5.8$   $M_{sz}=6.2$ 

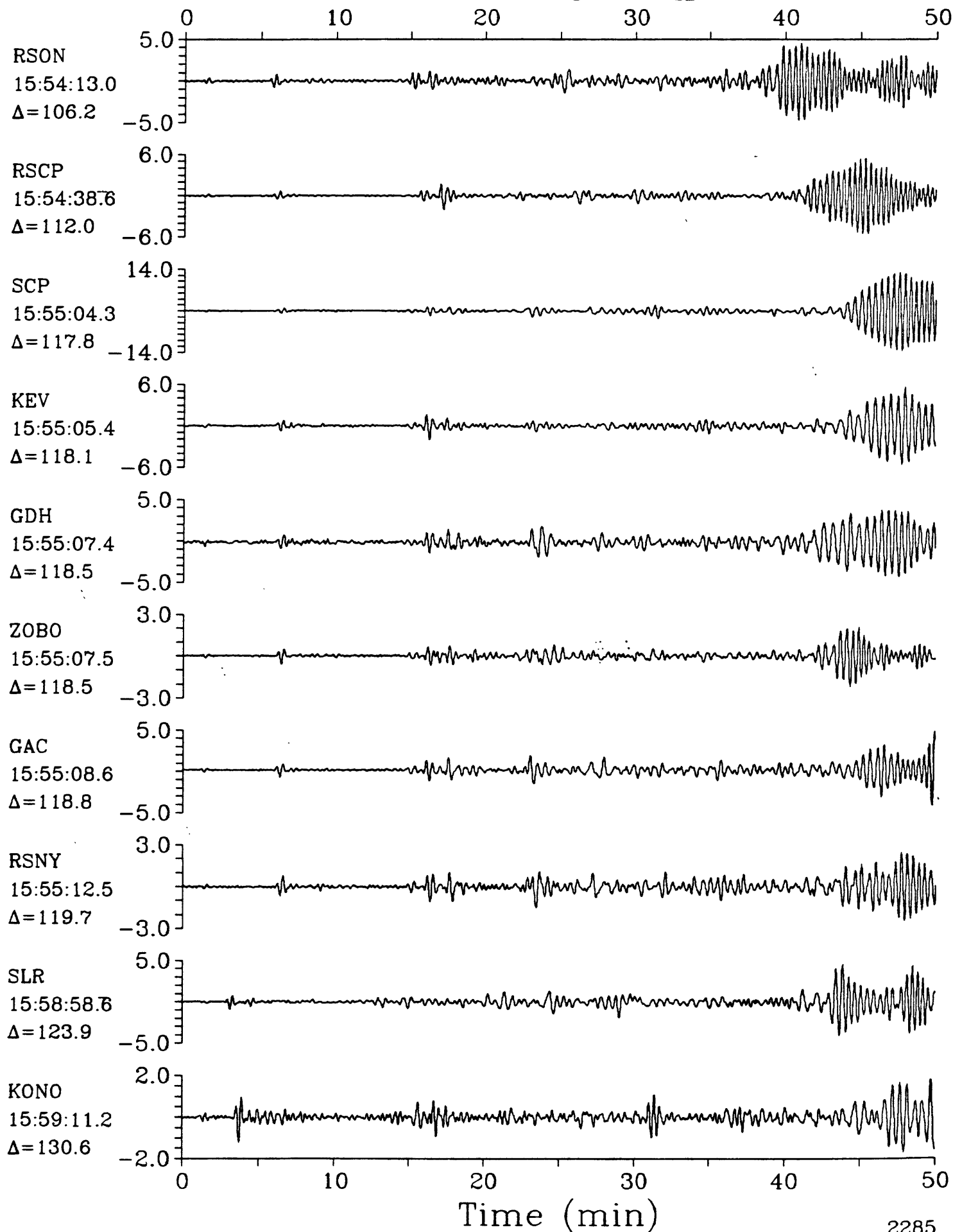
LPZ



LPZ

28 December 1985 15:41:03.18

LPZ

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

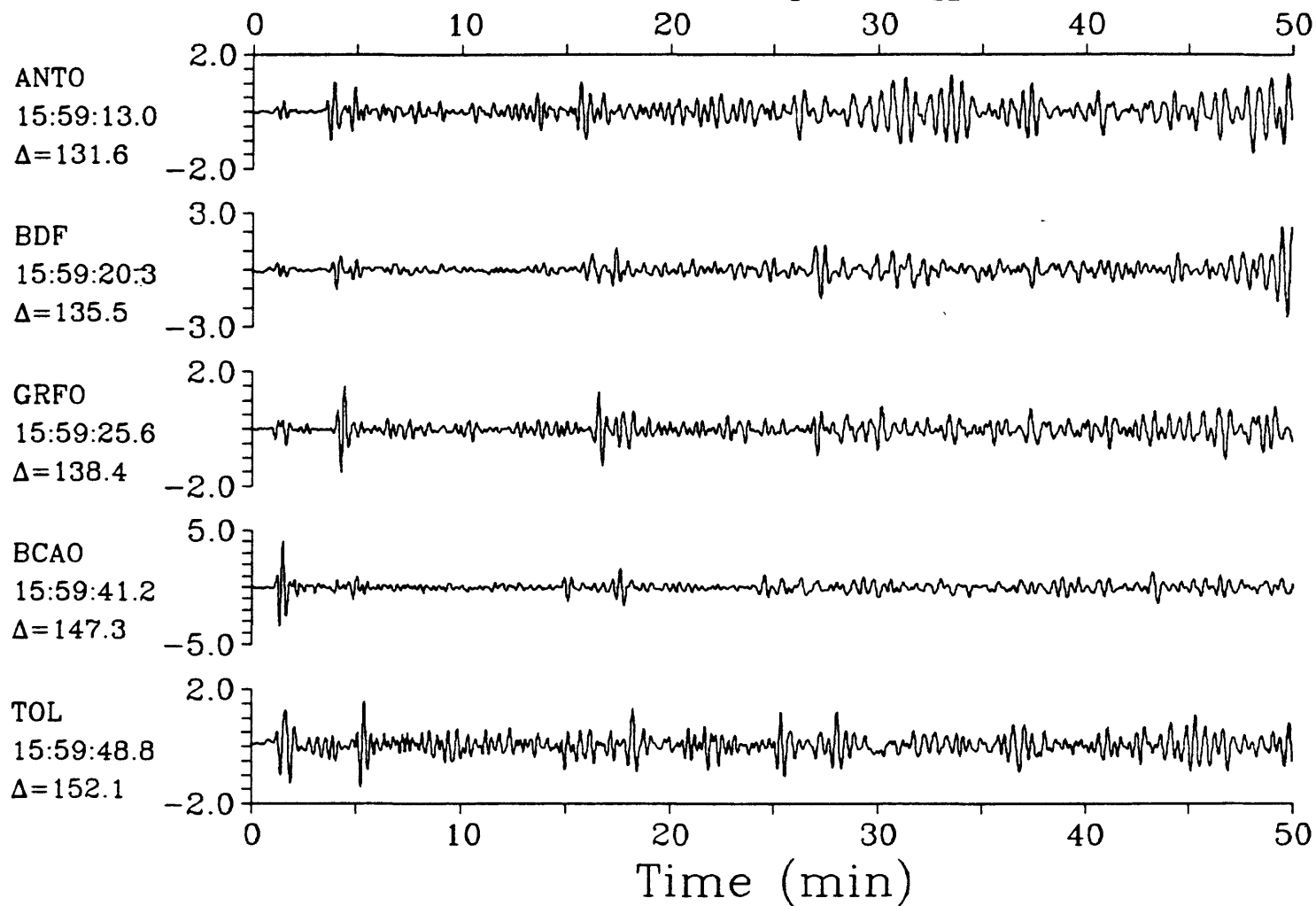
2285



LPZ

28 December 1985 15:41:03.18

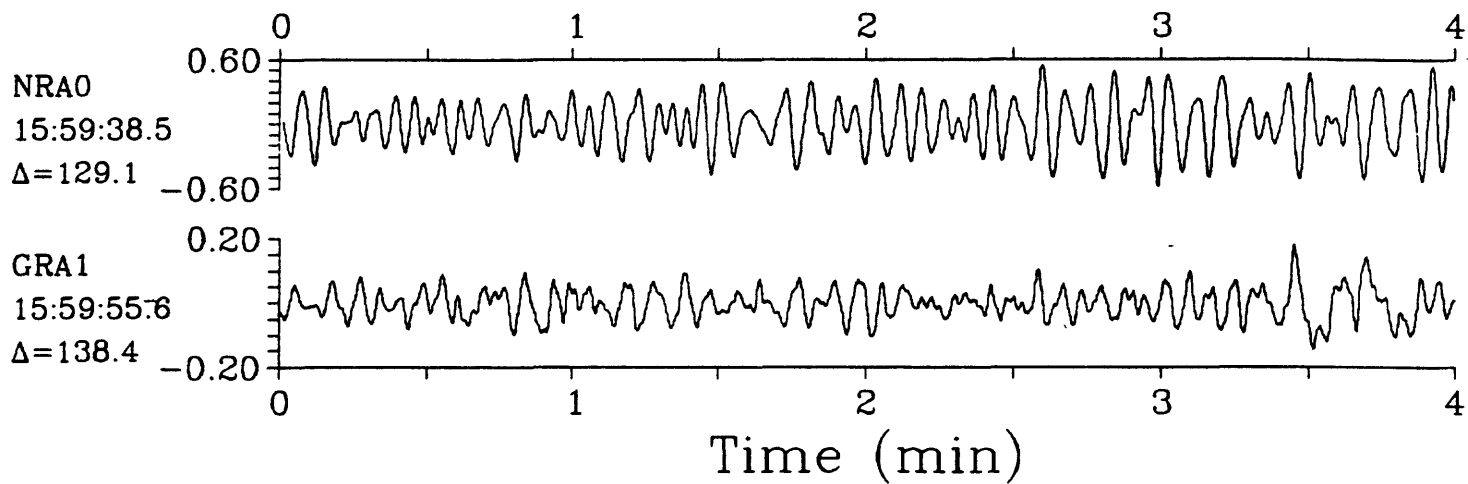
LPZ

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

IPZ

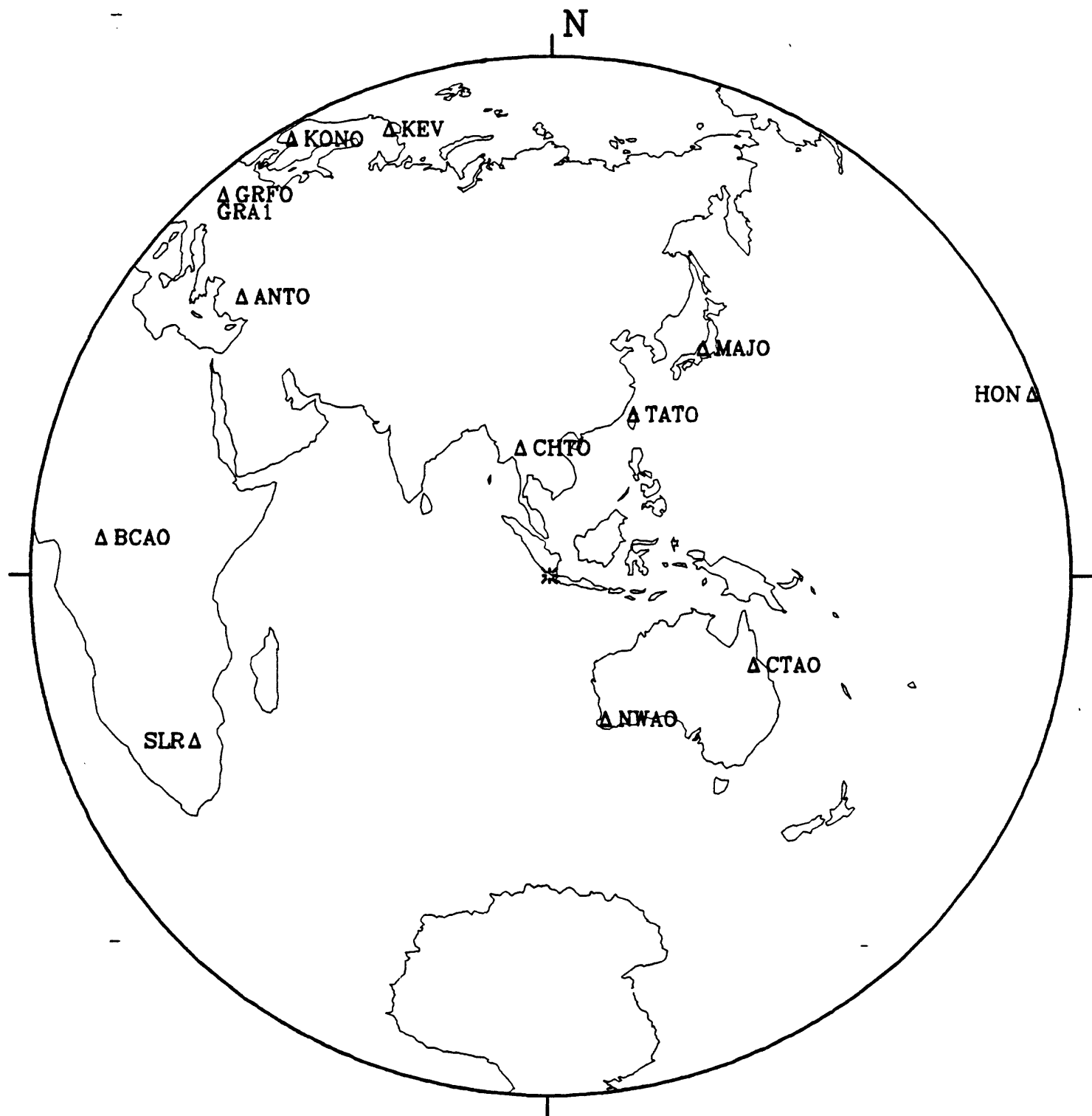
28 December 1985 15:41:03.18

IPZ

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

28 December 1985 23:10:53.31

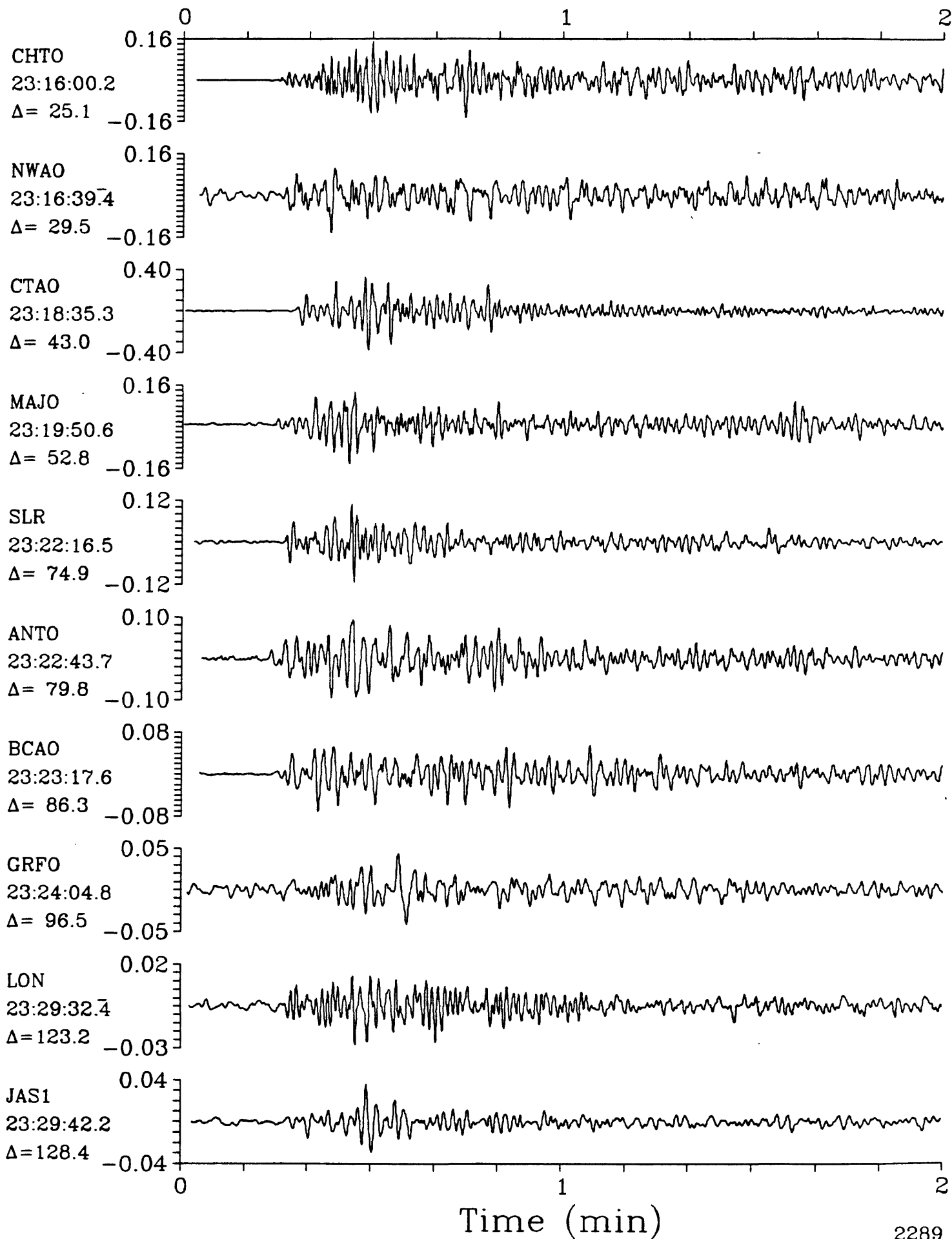
## Southern Sumatera

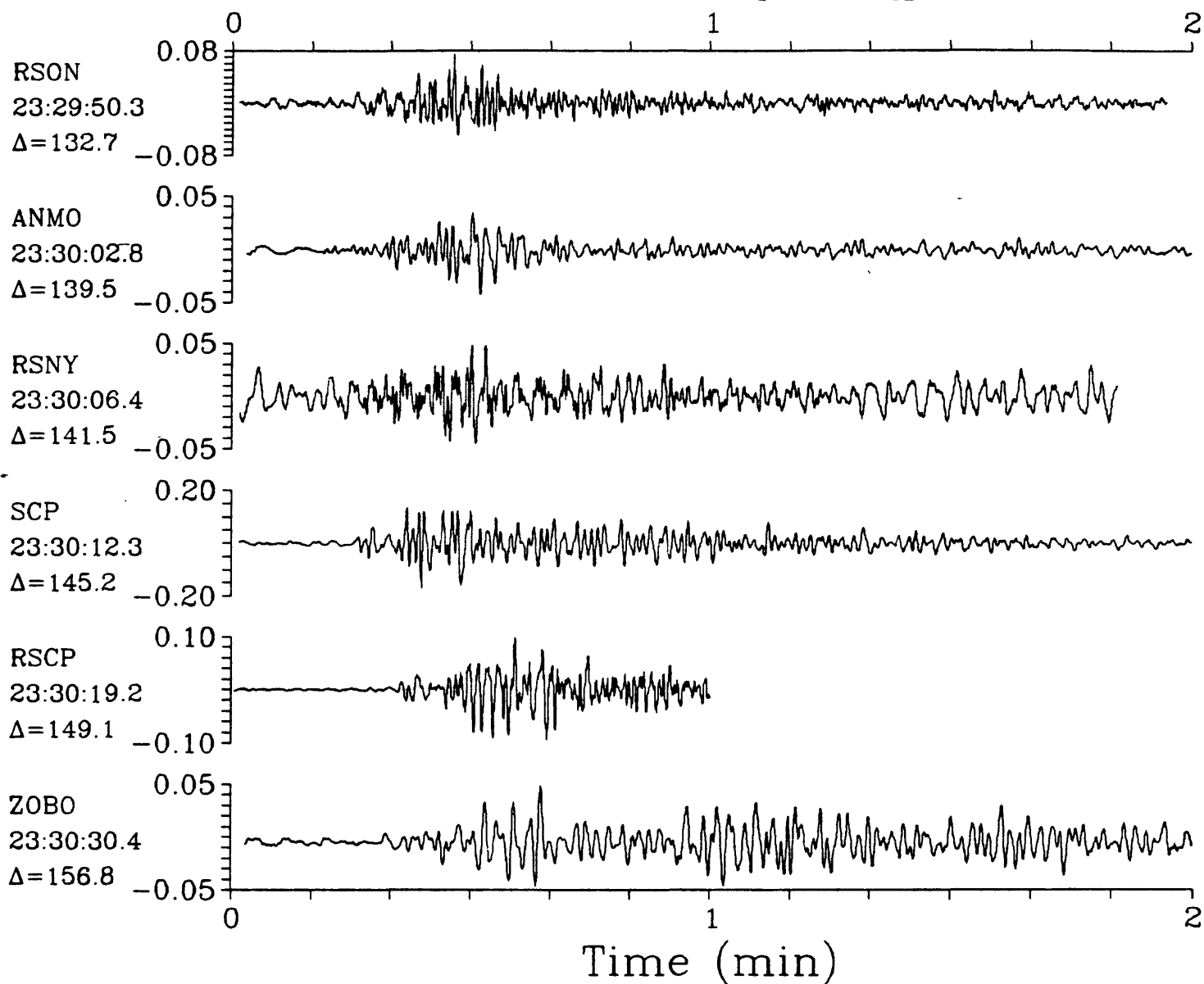


SPZ

28 December 1985 23:10:53.31  
Southern Sumatera  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

SPZ

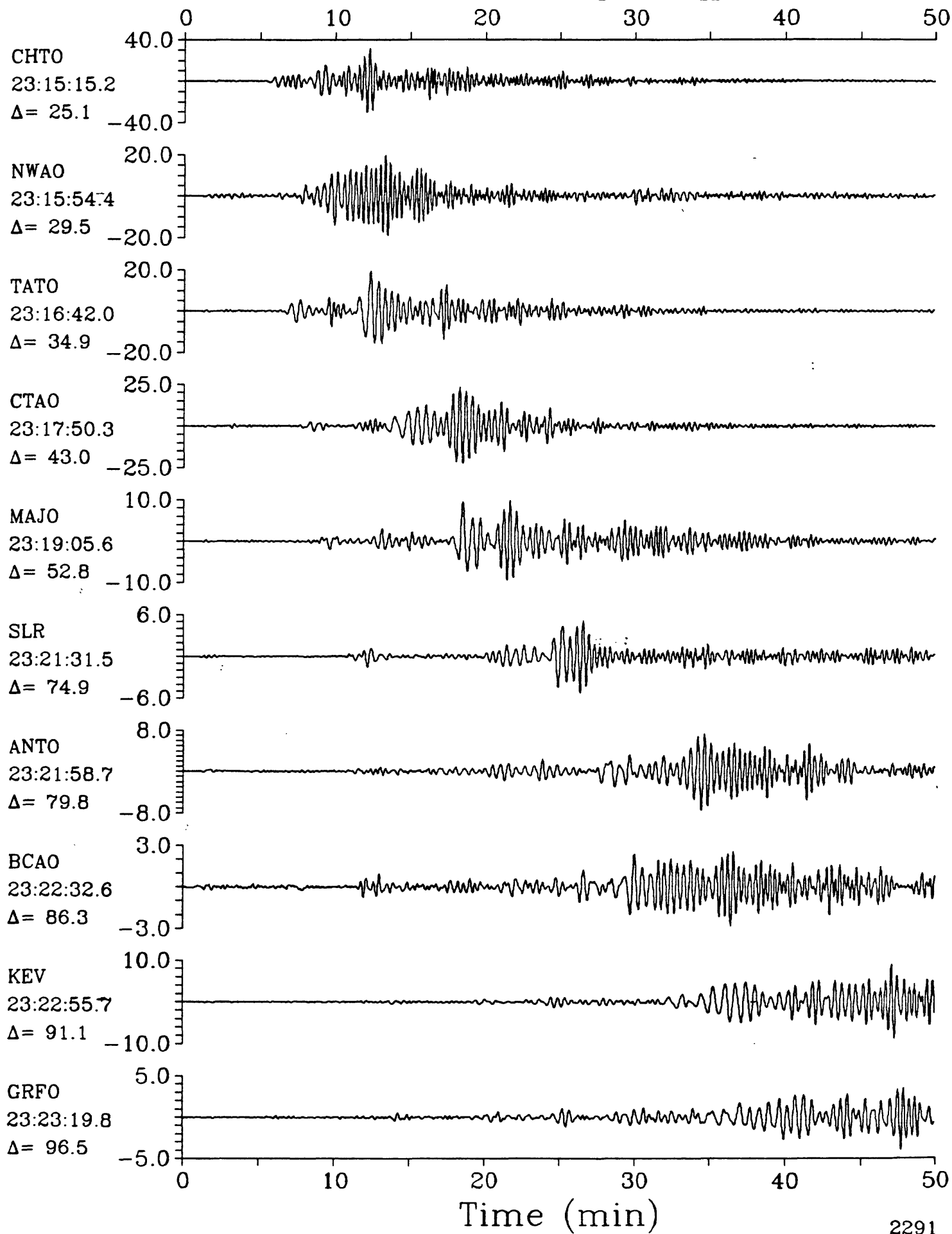




LPZ

28 December 1985 23:10:53.31

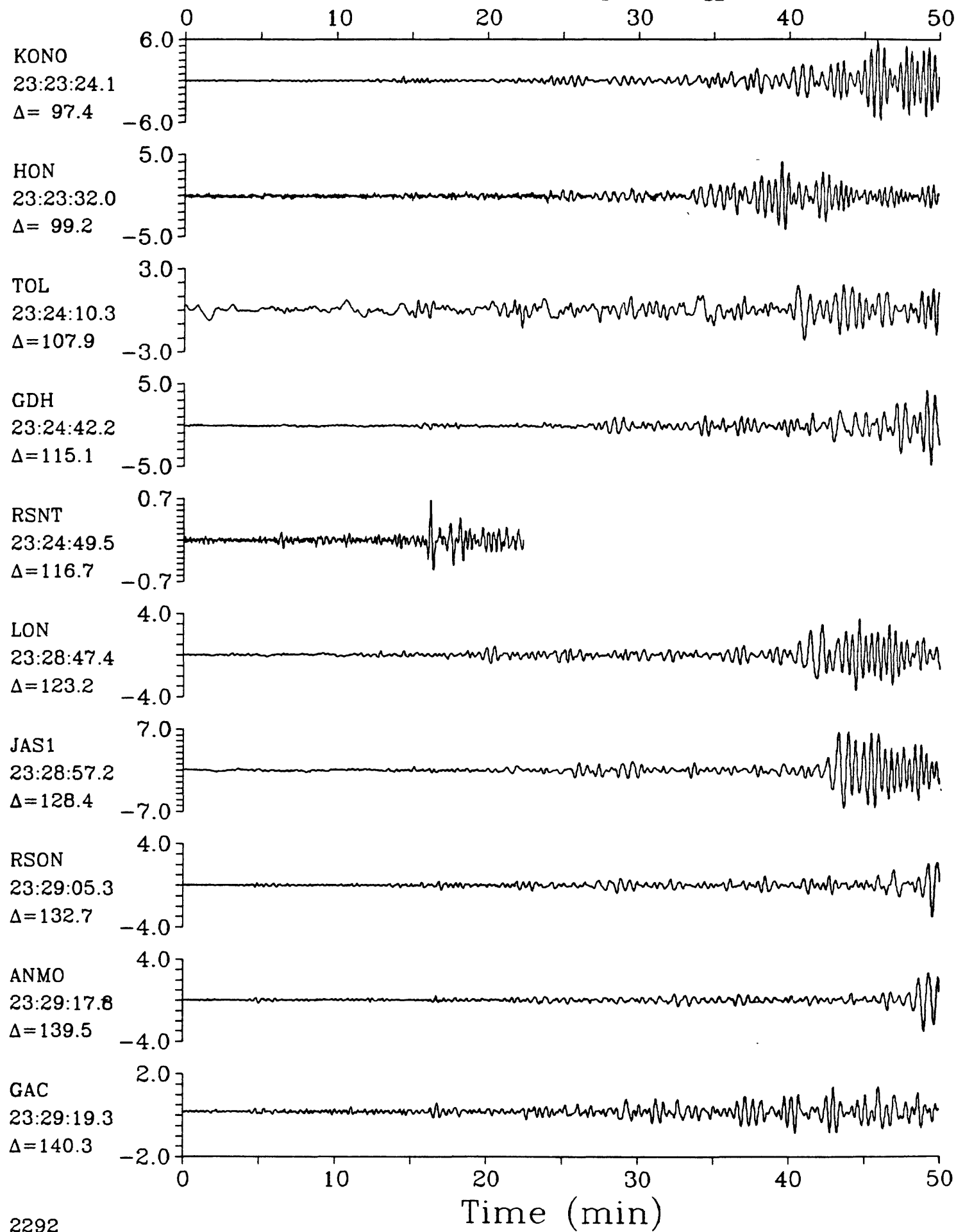
LPZ

Southern Sumatera  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

LPZ

28 December 1985 23:10:53.31

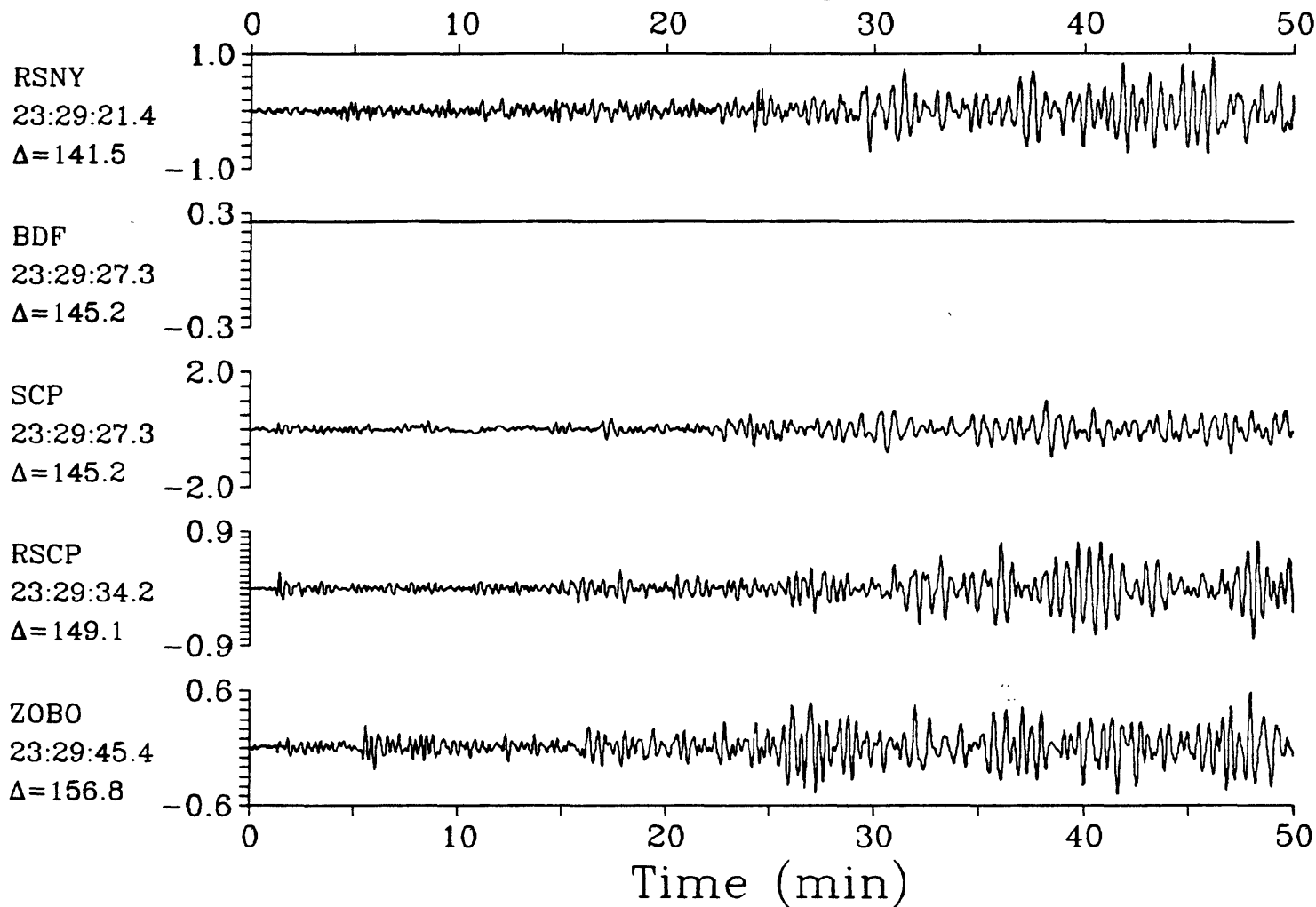
LPZ

Southern Sumatera  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

LPZ

28 December 1985 23:10:53.31

LPZ

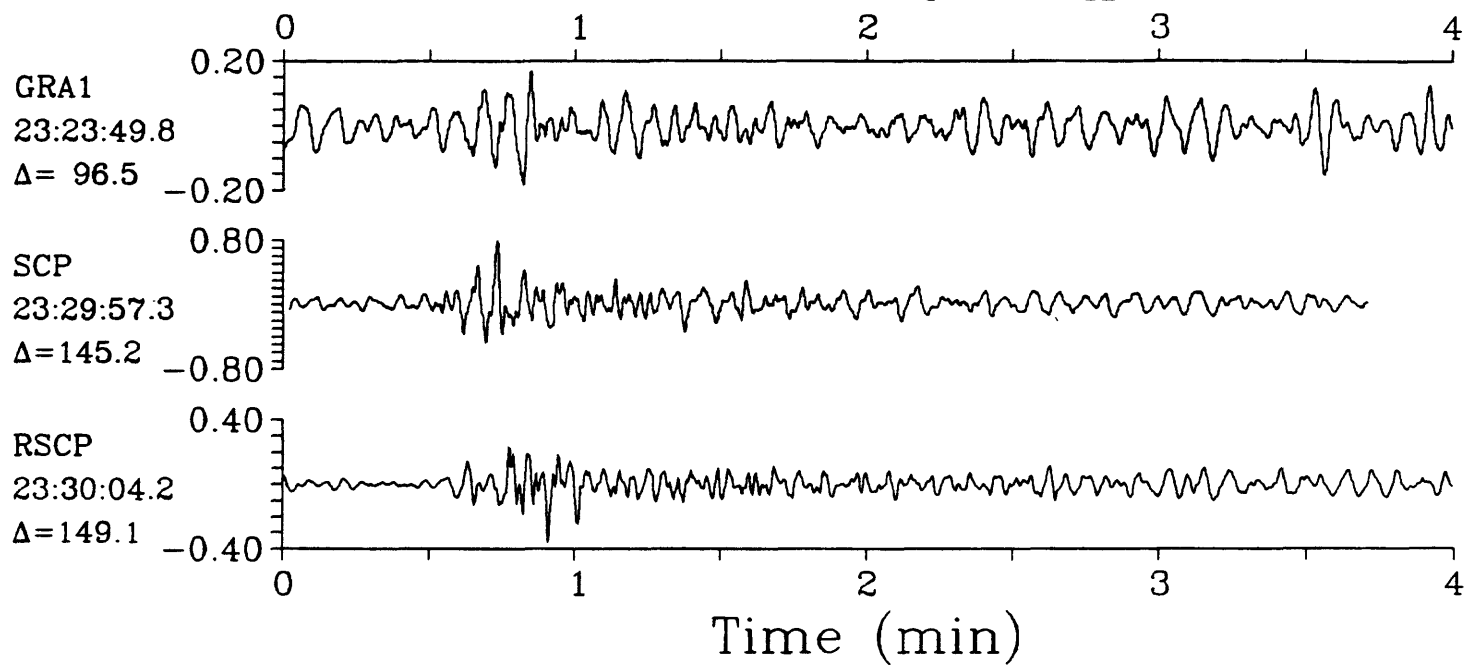
Southern Sumatera  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 



IPZ

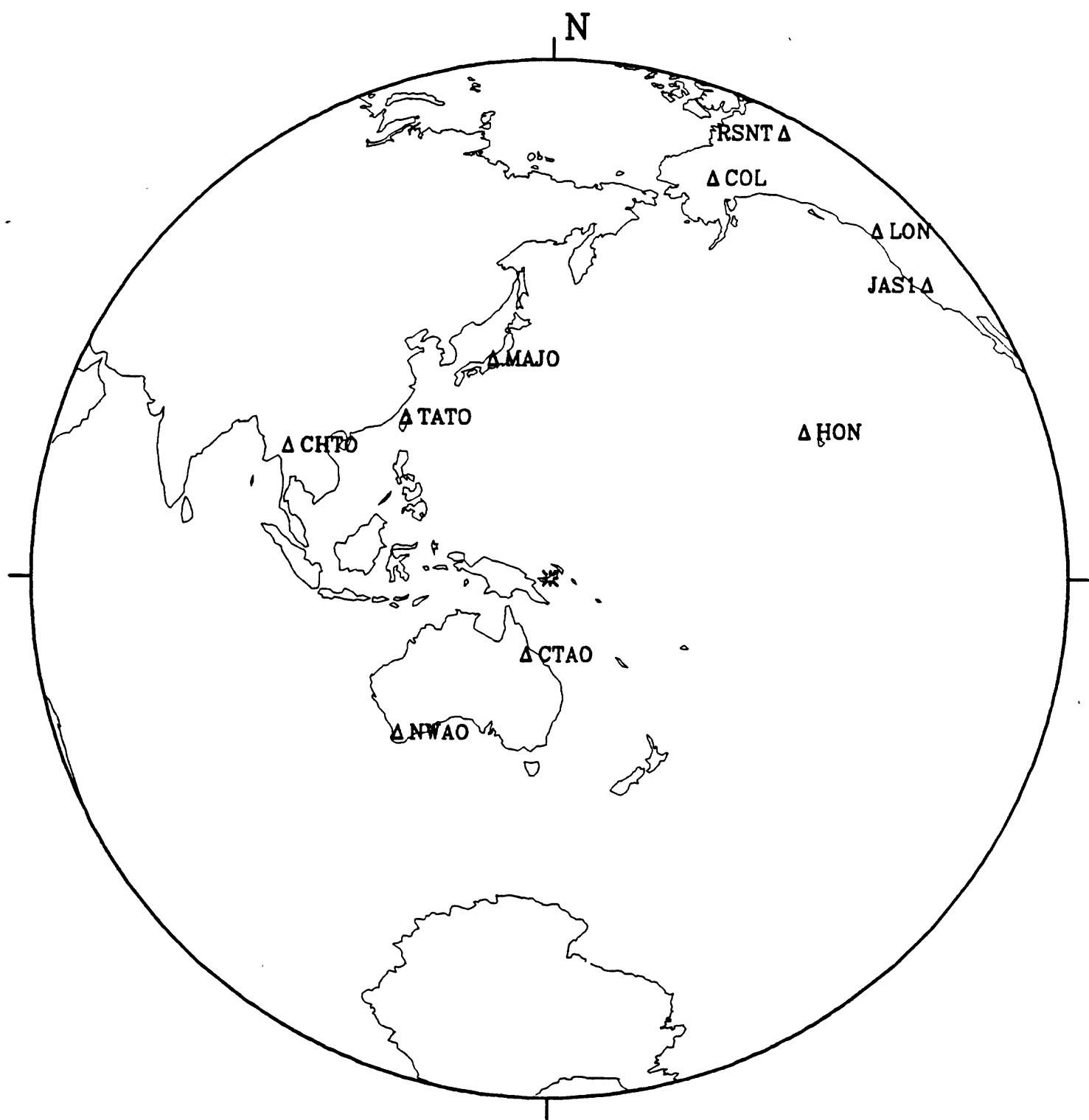
28 December 1985 23:10:53.31

IPZ

Southern Sumatera  $h=33.0$   $m_b=5.7$   $M_{sz}=6.0$ 

30 December 1985 11:13:14.89

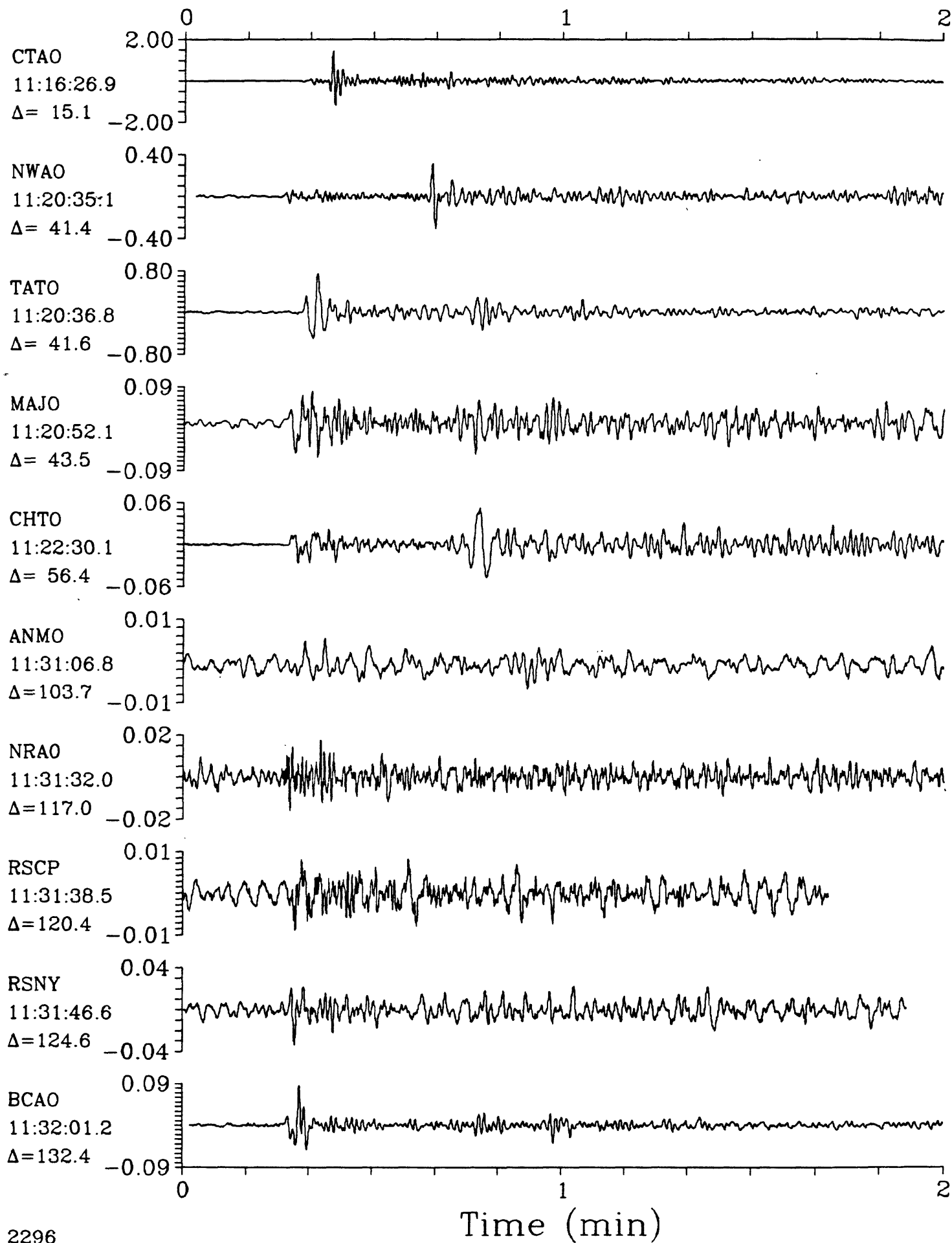
## New Britain Region



SPZ

30 December 1985 11:13:14.89  
New Britain Region  $h=114.3$   $m_b=5.7$ 

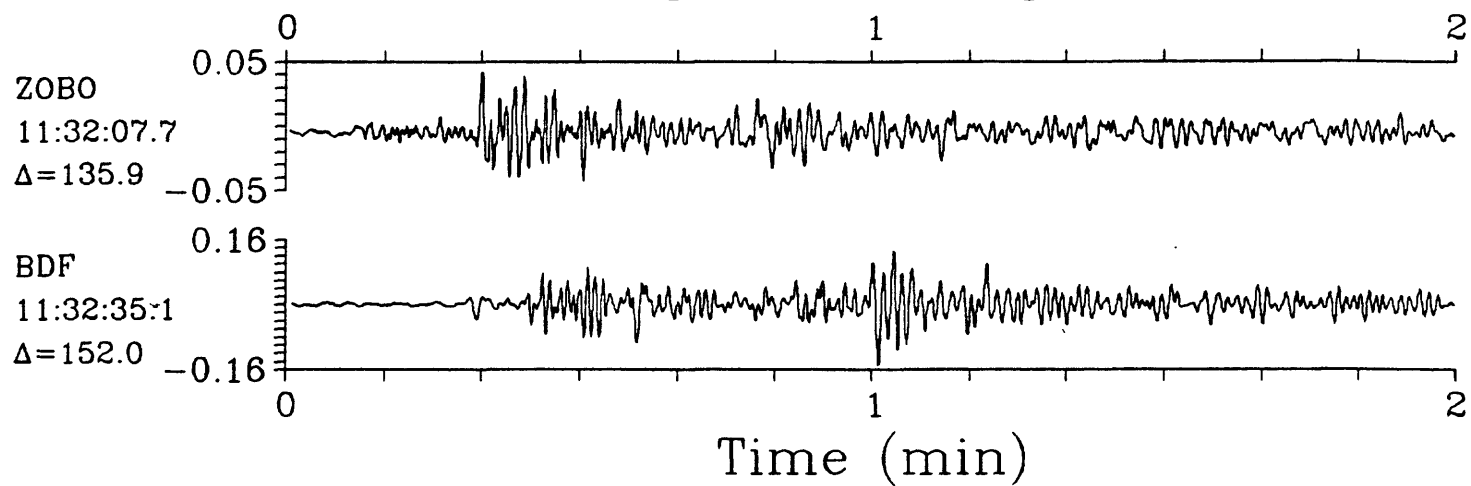
SPZ



SPZ

30 December 1985 11:13:14.89  
New Britain Region  $h=114.3$   $m_b=5.7$ 

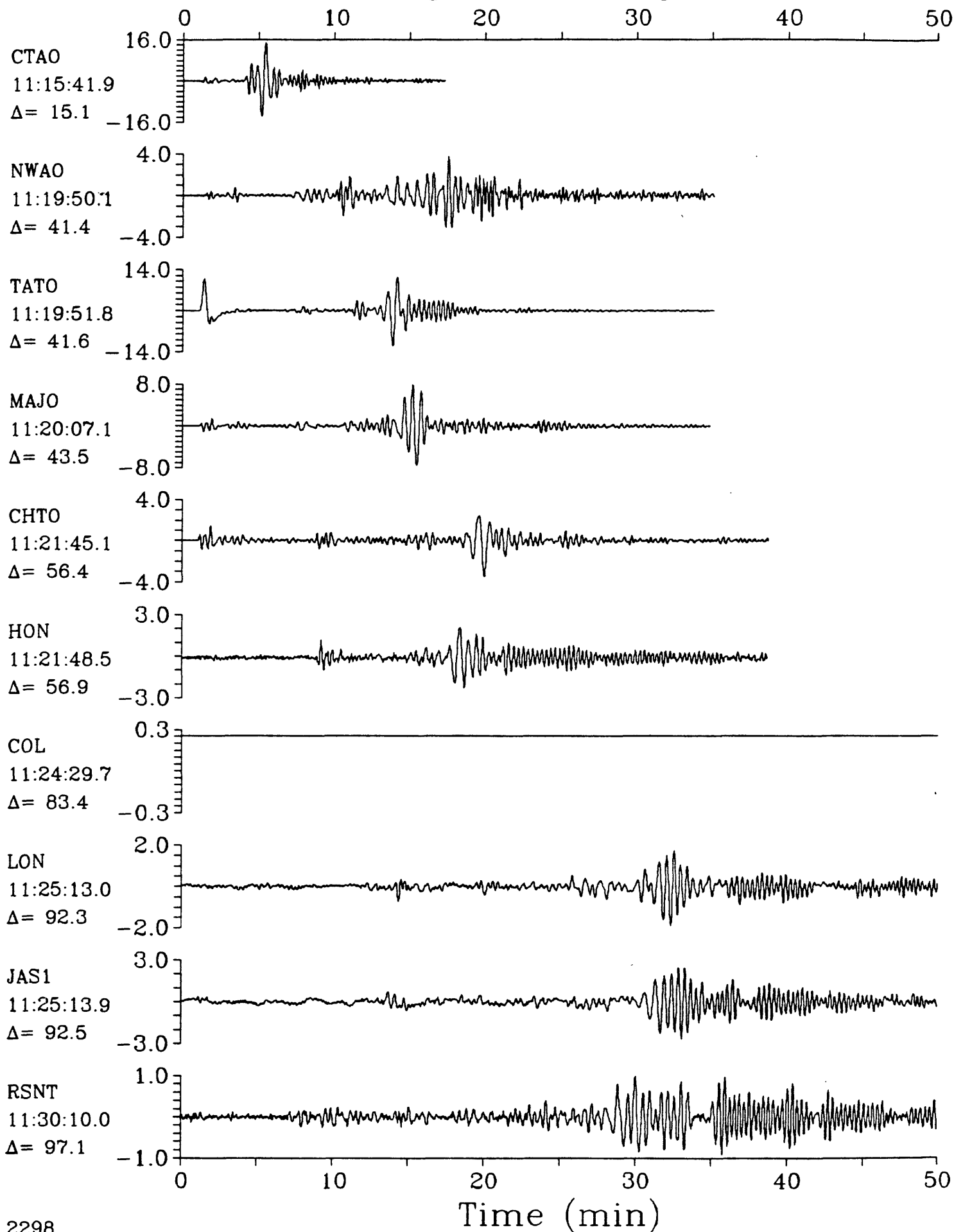
SPZ



LPZ

30 December 1985 11:13:14.89  
New Britain Region  $h=114.3$   $m_b=5.7$ 

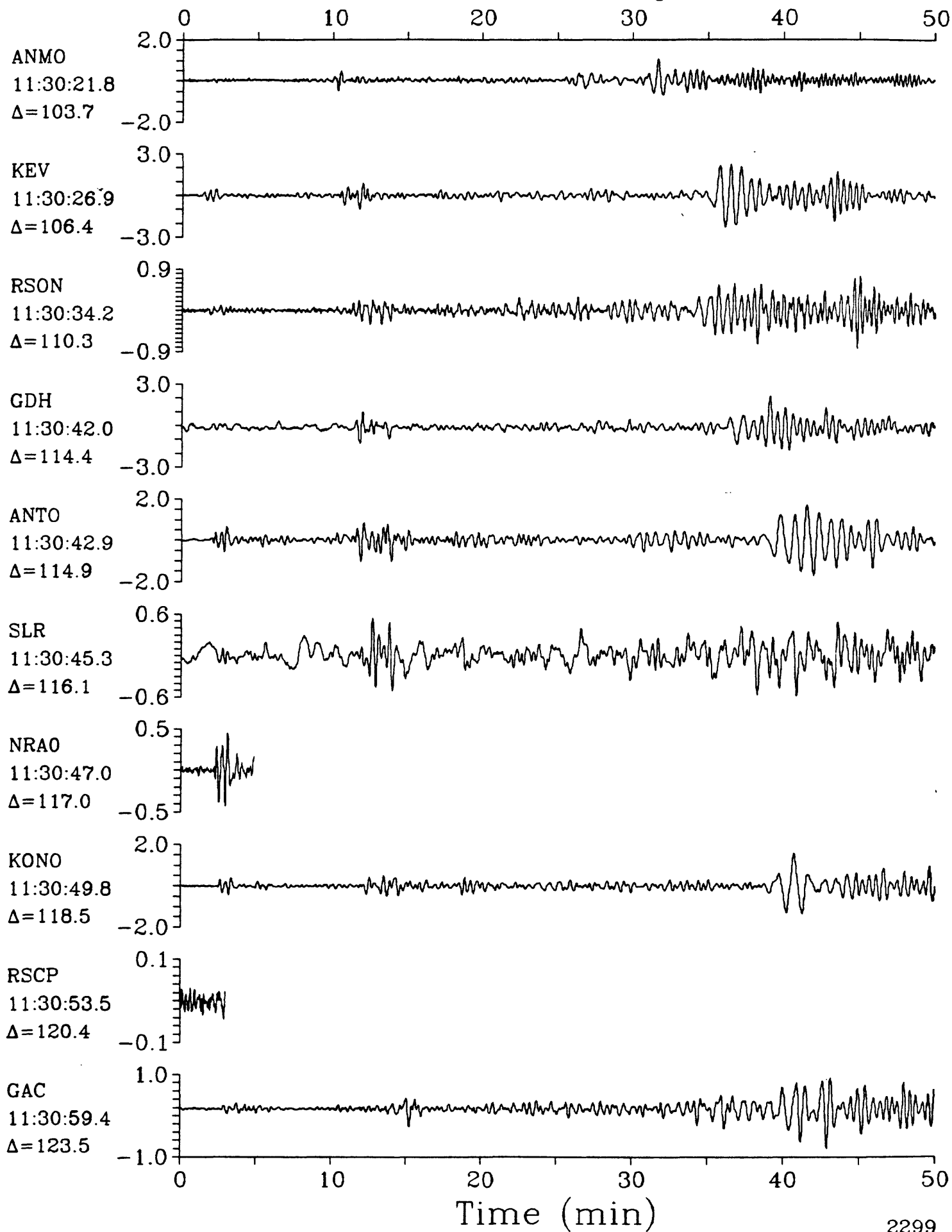
LPZ



LPZ

30 December 1985 11:13:14.89  
New Britain Region  $h=114.3$   $m_b=5.7$ 

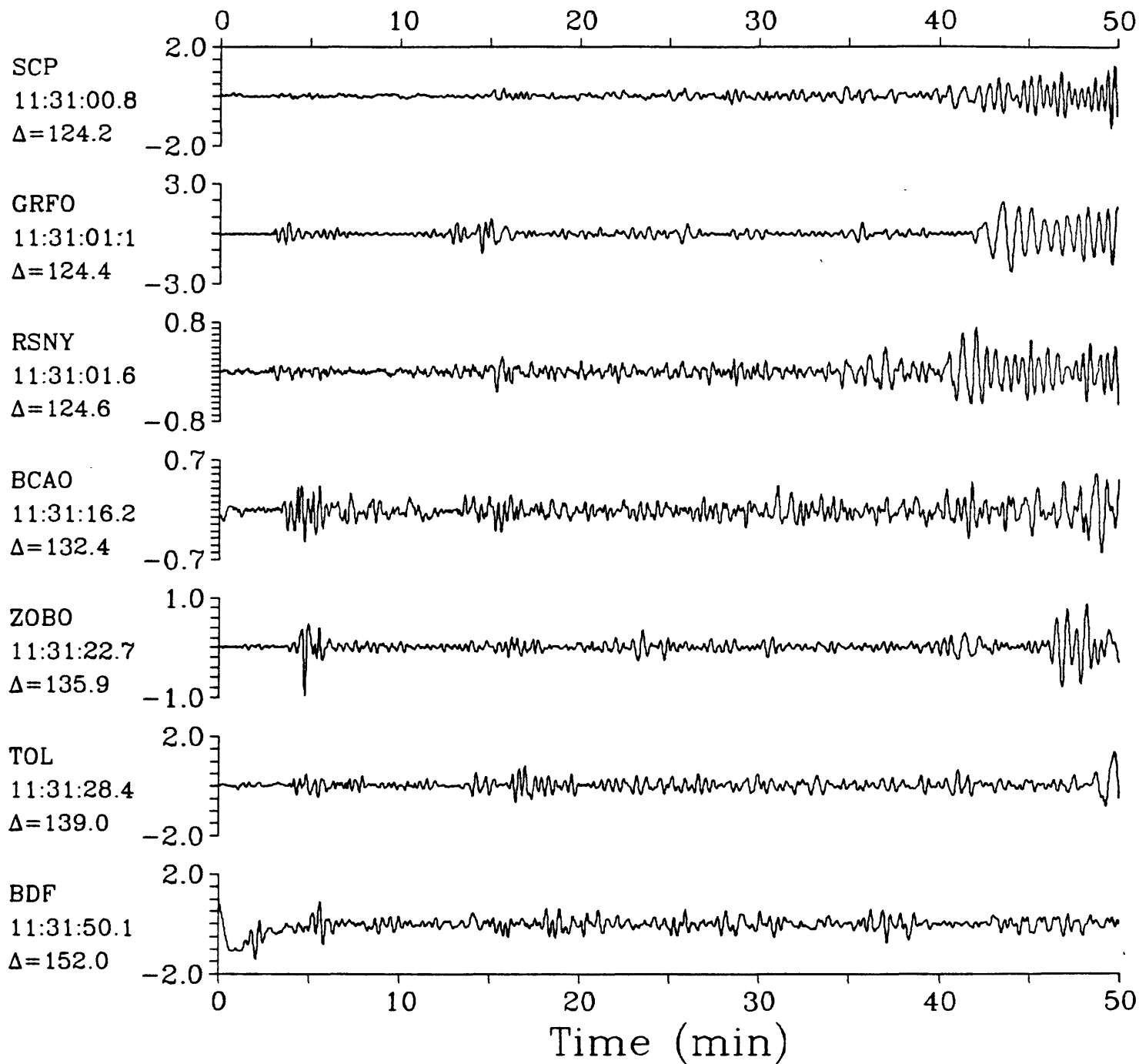
LPZ



LPZ

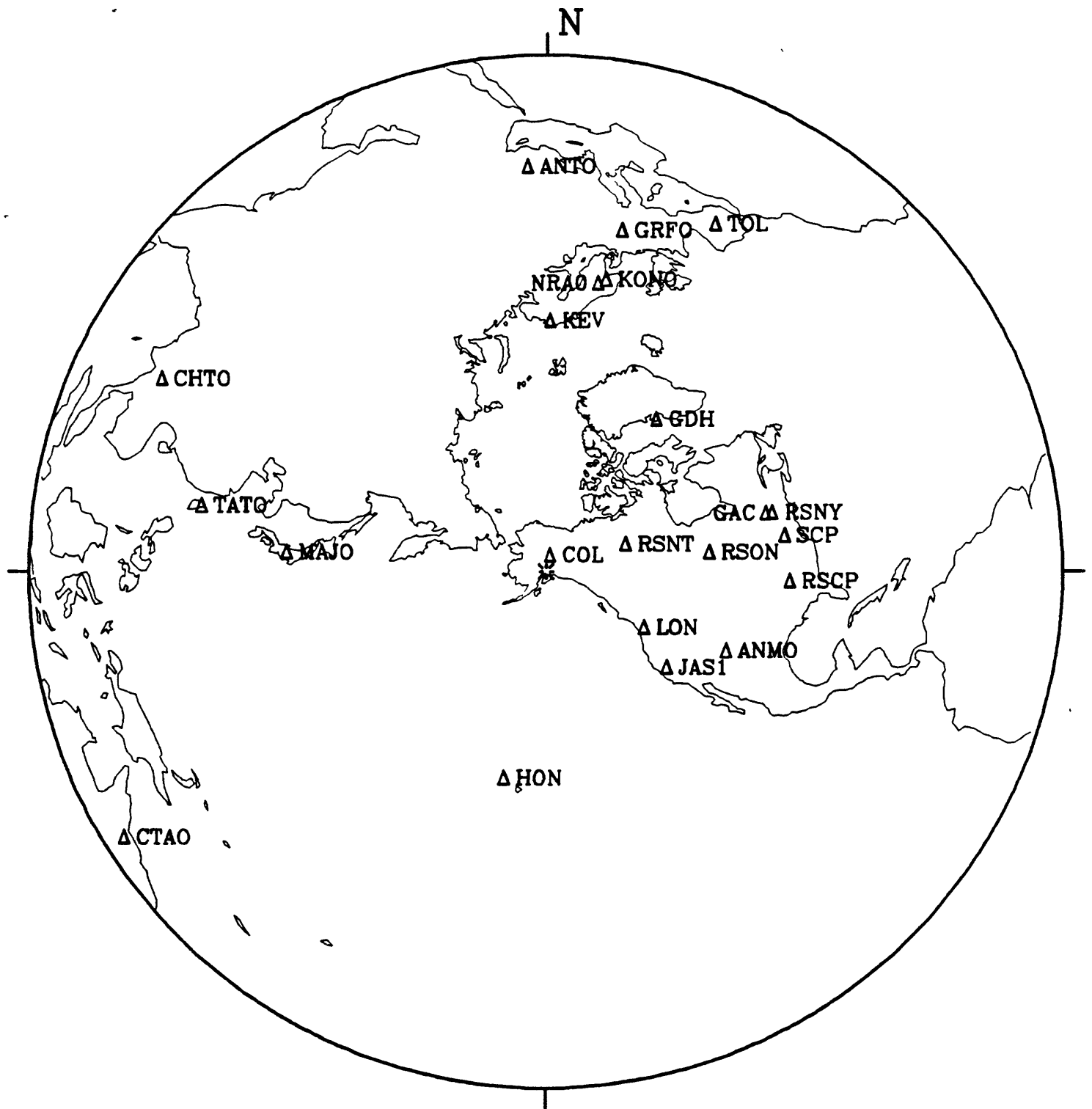
30 December 1985 11:13:14.89  
New Britain Region  $h=114.3$   $m_b=5.7$ 

LPZ



30 December 1985 12:41:03.01

## Southern Alaska

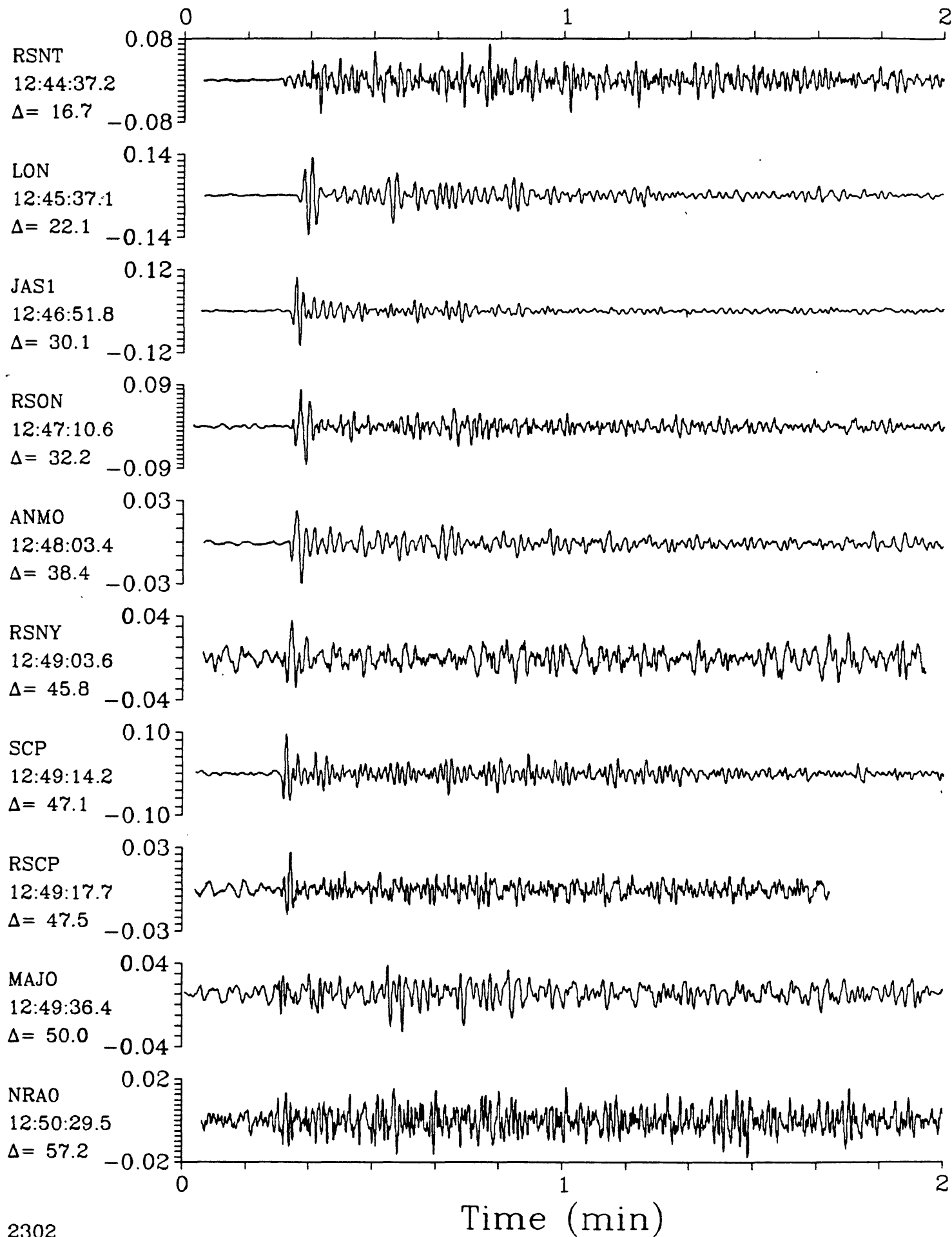




SPZ

30 December 1985 12:41:03.01  
Southern Alaska  $h=61.6$   $m_b=5.5$ 

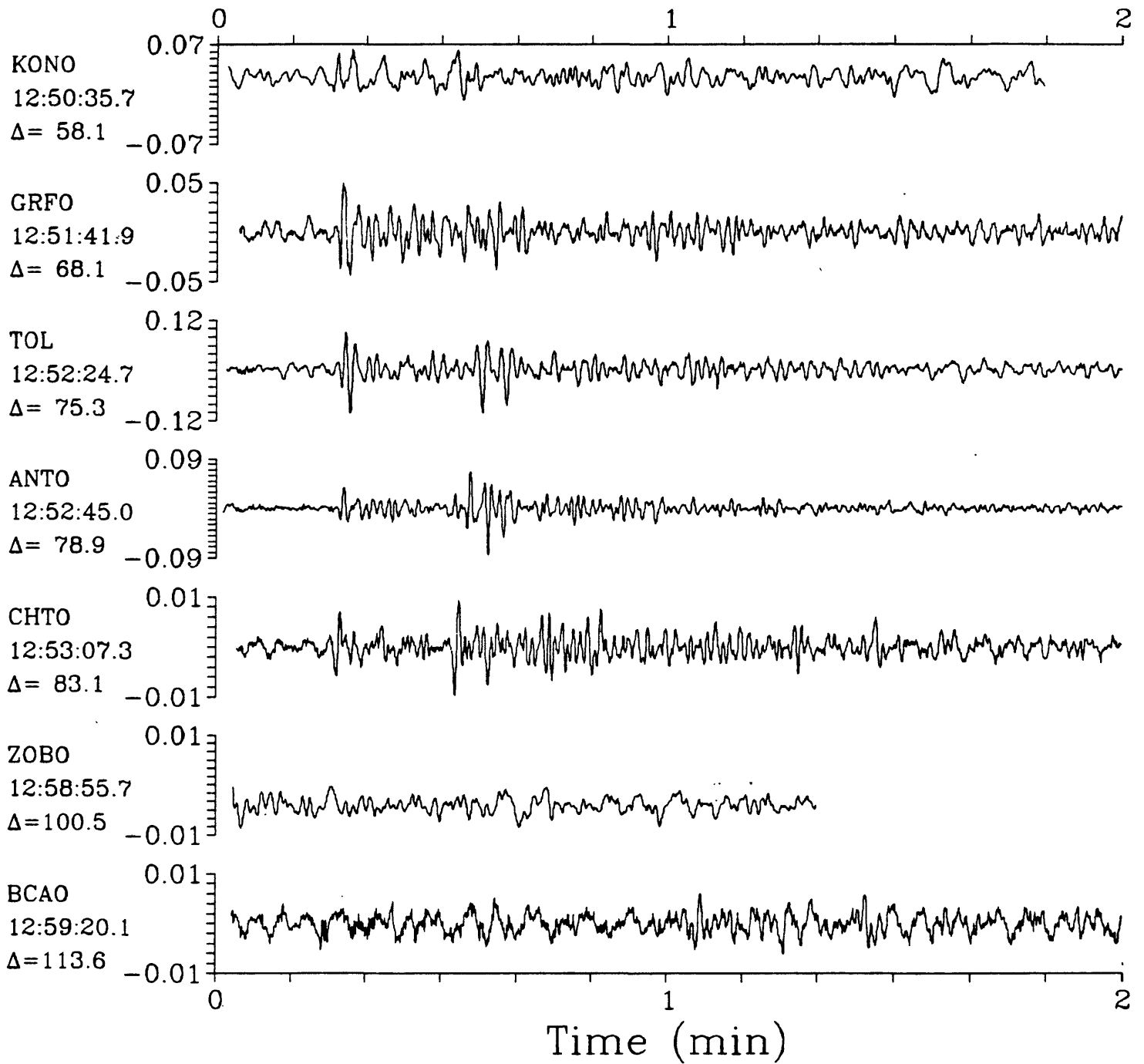
SPZ



SPZ

30 December 1985 12:41:03.01  
Southern Alaska  $h=61.6$   $m_b=5.5$ 

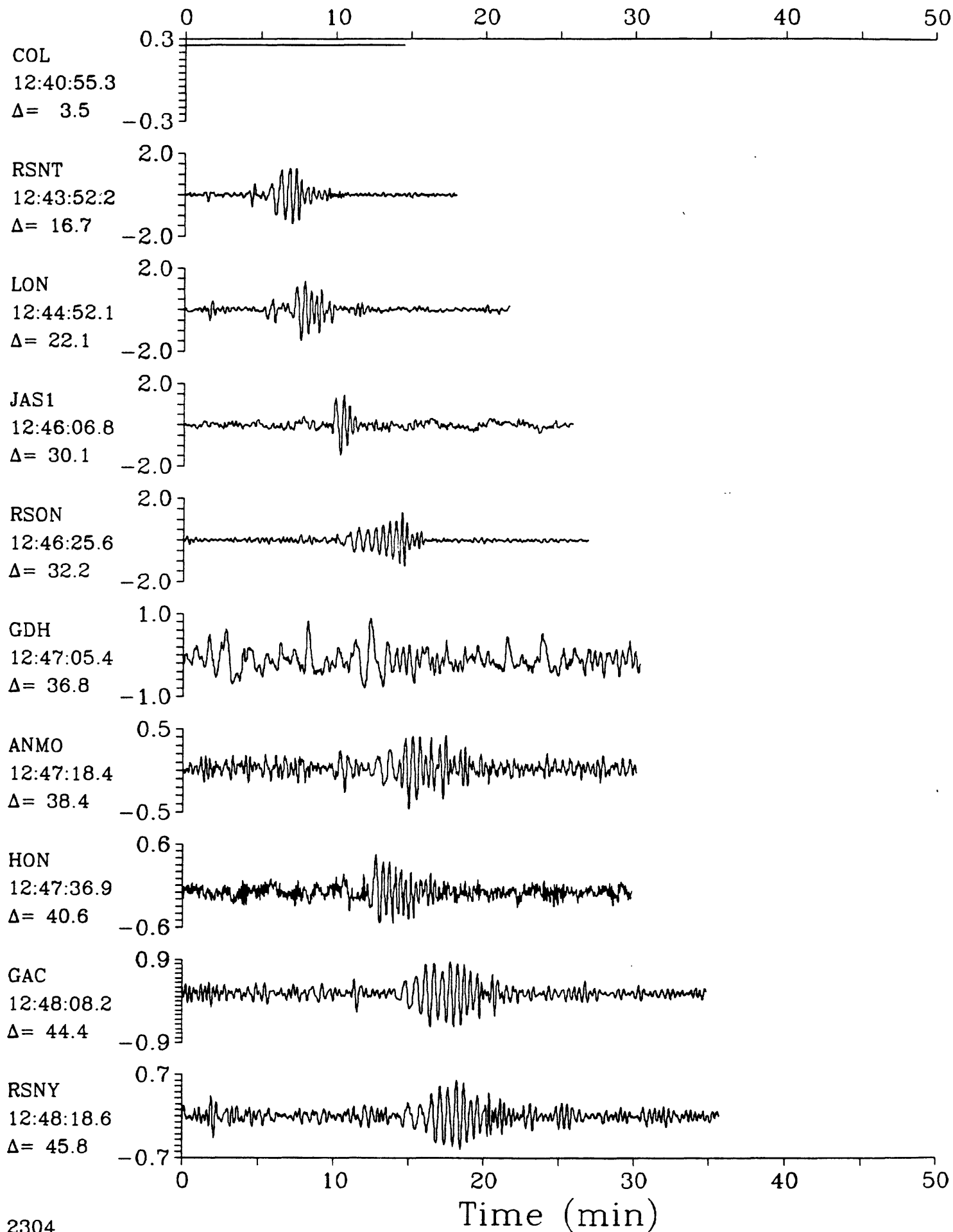
SPZ



LPZ

30 December 1985 12:41:03.01  
Southern Alaska  $h=61.6$   $m_b=5.5$ 

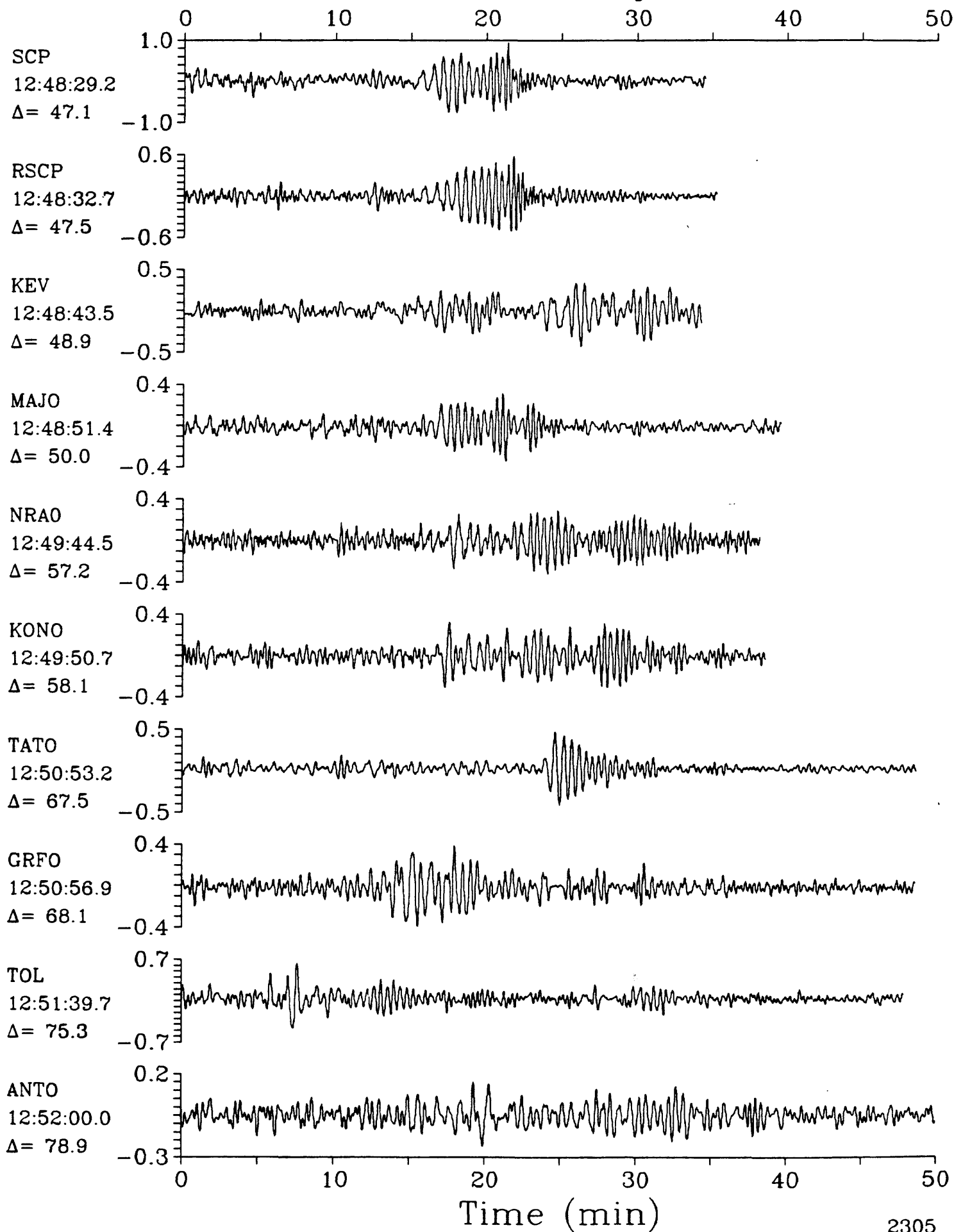
LPZ



LPZ

30 December 1985 12:41:03.01  
Southern Alaska  $h=61.6$   $m_b=5.5$ 

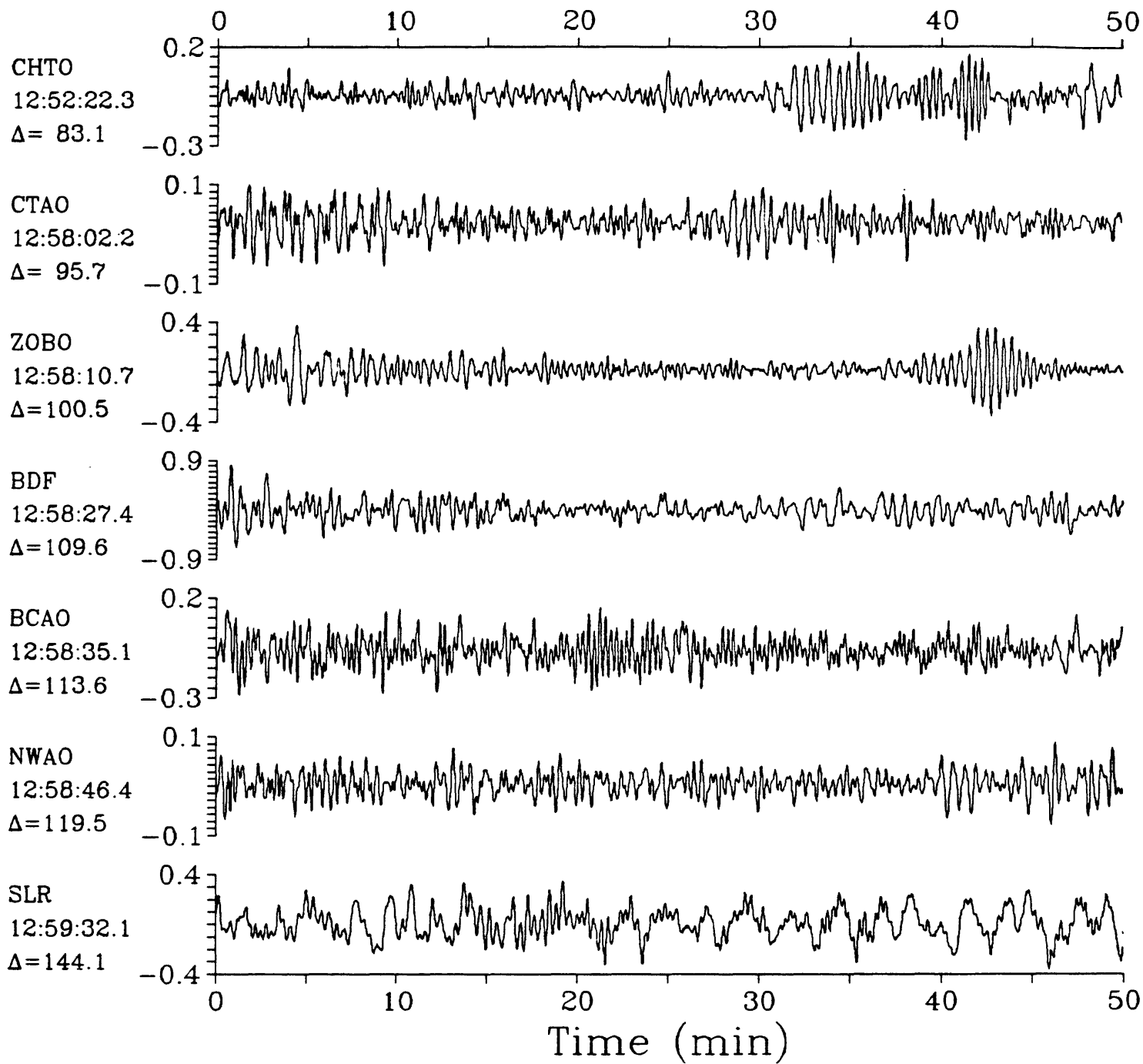
LPZ



LPZ

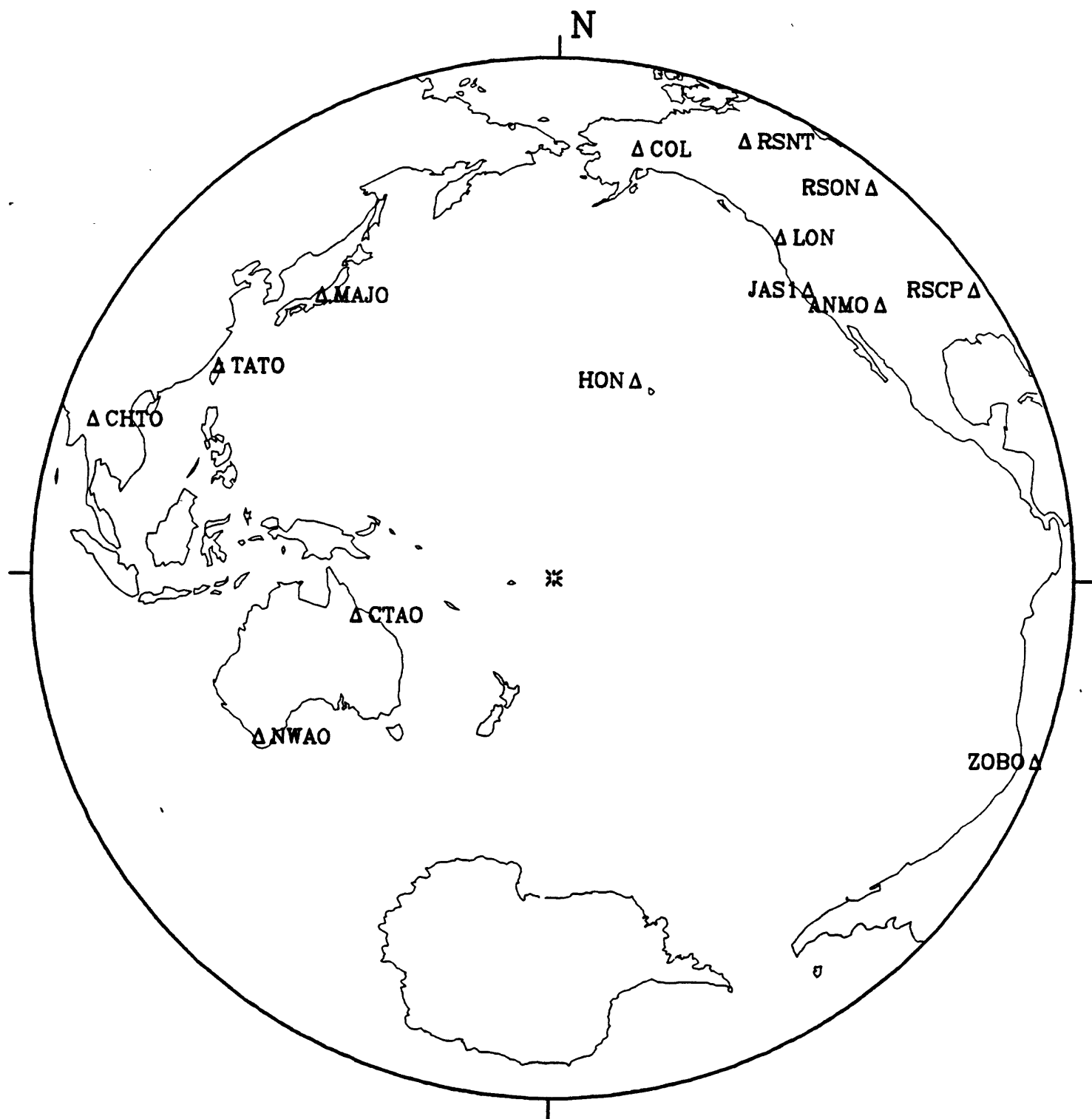
30 December 1985 12:41:03.01  
Southern Alaska  $h=61.6$   $m_b=5.5$ 

LPZ



31 December 1985 14:04:43.64

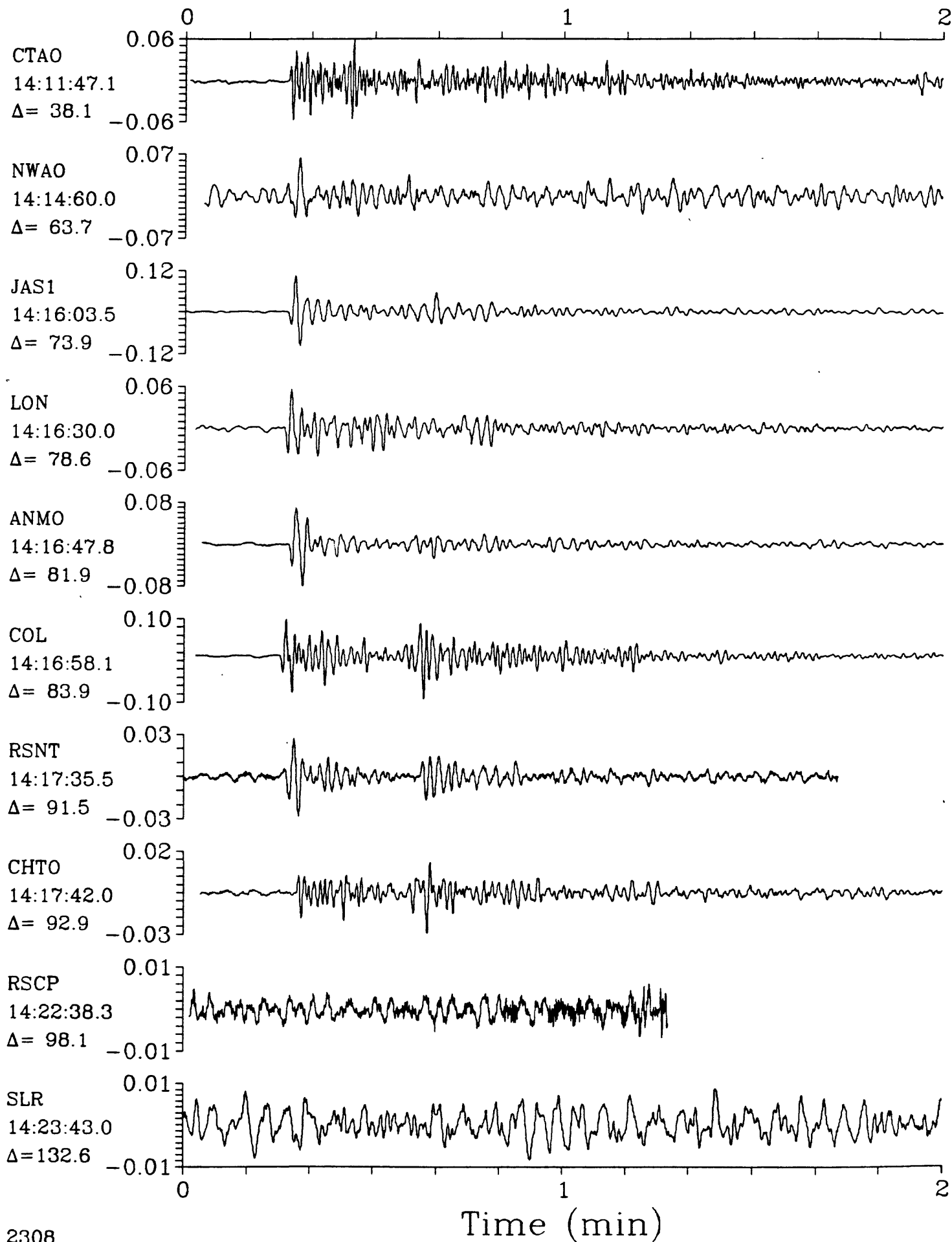
## Tonga Islands



SPZ

31 December 1985 14:04:43.64  
Tonga Islands  $h=16.4$   $m_b=5.7$   $M_{SZ}=4.9$ 

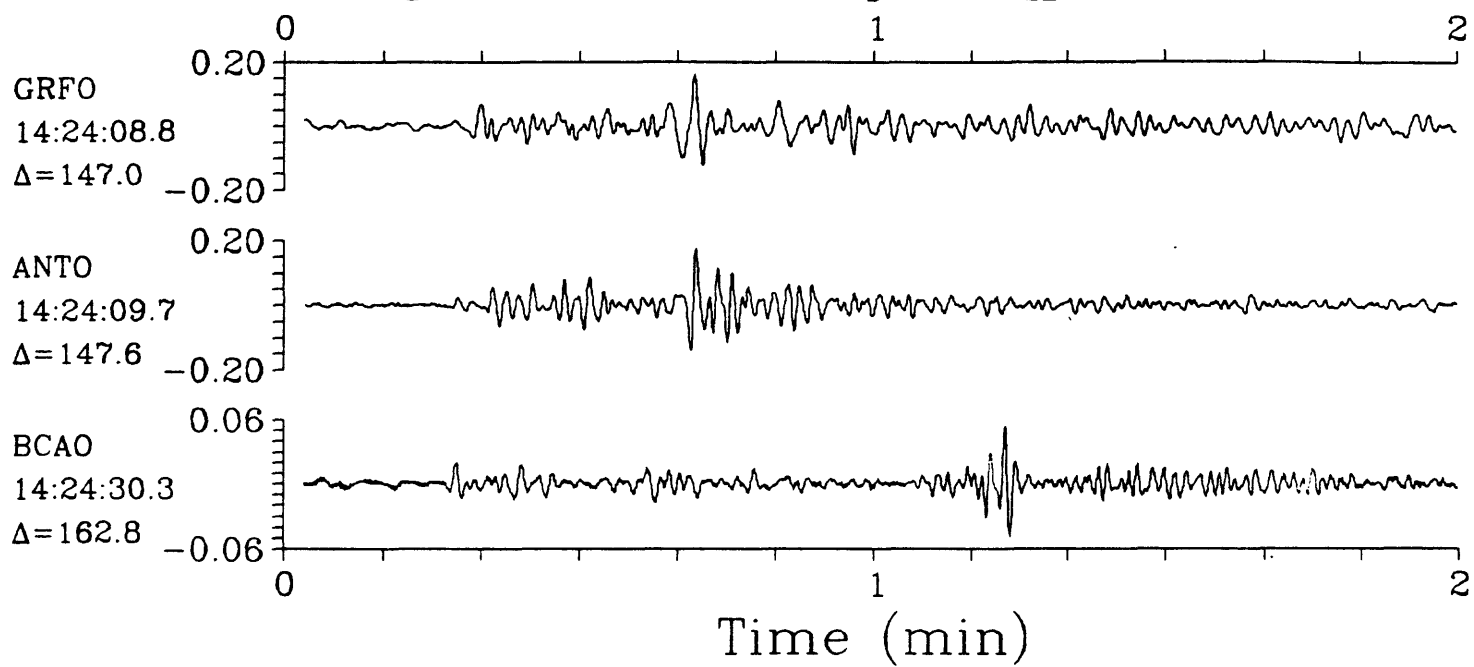
SPZ



SPZ

31 December 1985 14:04:43.64  
Tonga Islands  $h=16.4$   $m_b=5.7$   $M_{SZ}=4.9$

SPZ

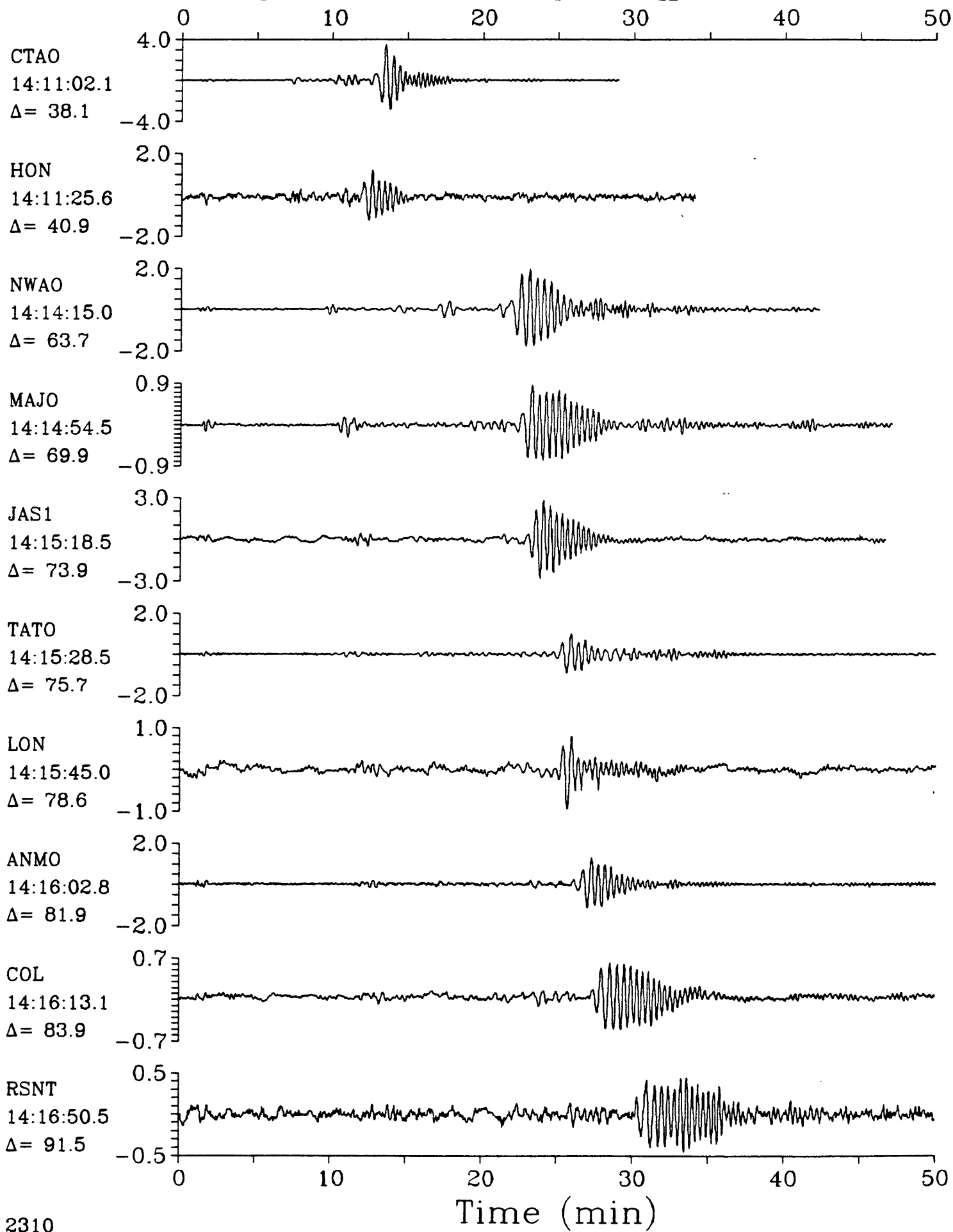




LPZ

31 December 1985 14:04:43.64  
Tonga Islands  $h=16.4$   $m_b=5.7$   $M_{sz}=4.9$ 

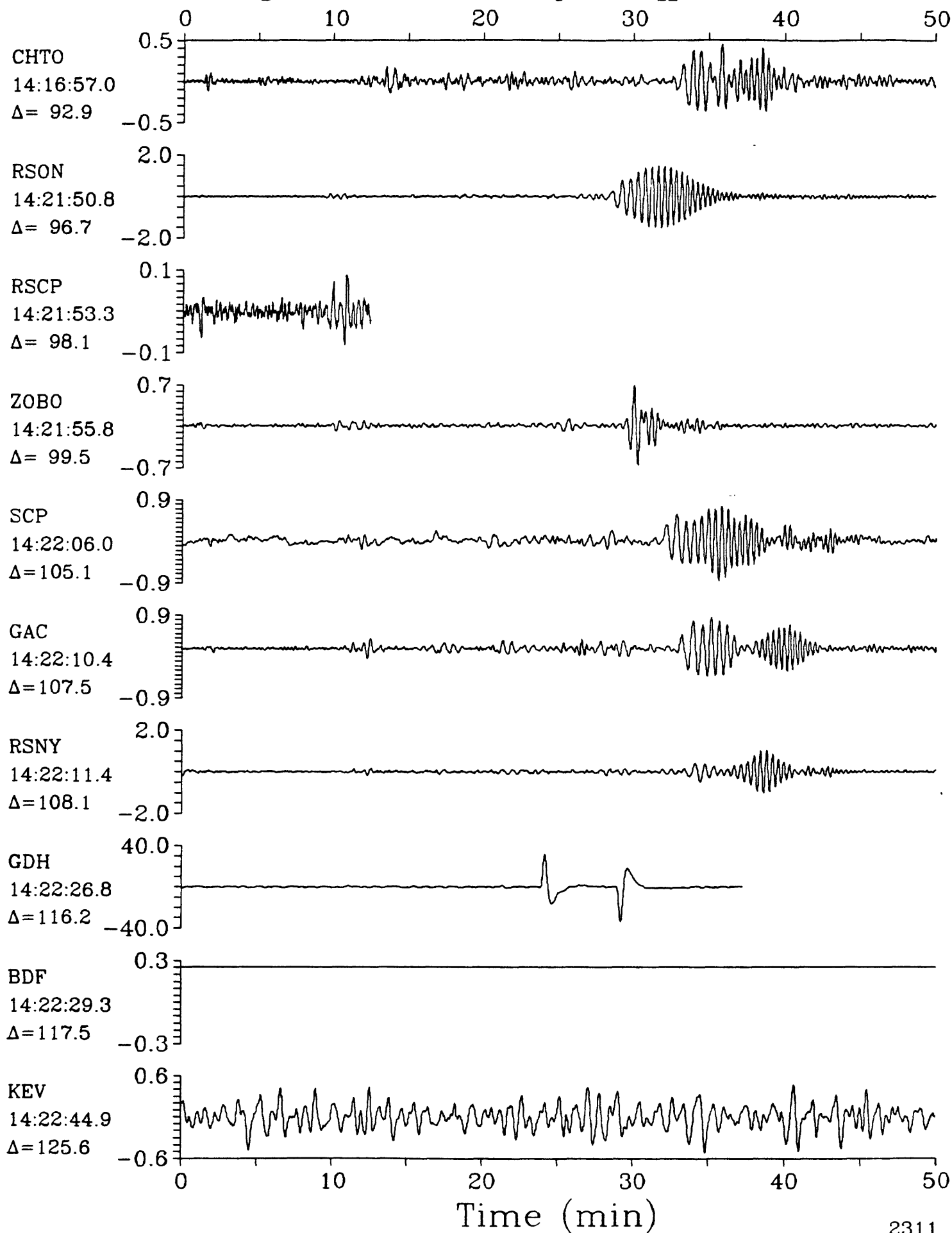
LPZ



LPZ

31 December 1985 14:04:43.64  
Tonga Islands  $h=16.4$   $m_b=5.7$   $M_{SZ}=4.9$ 

LPZ



LPZ

31 December 1985 14:04:43.64

LPZ

Tonga Islands  $h=16.4$   $m_b=5.7$   $M_{sz}=4.9$ 