

## MONTHLY BULLETIN of REGIONAL and TELESEISMIC EVENTS RECORDED with GRF- and GRSN-STATIONS in GERMANY

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(produced by SZGRF/BGR - ERLANGEN and partly by CLL - Observatory)

JANUARY 2004      UPDATED 12.NOVEMBER.2004

Please note that local events recorded in Germany are part of the "LOCAL BULLETIN".

(Format description at the end of the bulletin)

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/12/31	23:51:44.5	31.062S	68.119E	33.0N	4.9			SZGRF
South Indian Ocean								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:05:05.0	95.2	133.9	1.3	6	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:22:26.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	01:06:34.6	70.069N	11.398W	33.0N	3.8			SZGRF
2004/01/01	01:06:22.3	71.043N	13.723W	10G	4.2			NEIC
Jan Mayen Island region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:11:37.1	24.2	340.5	0.9	3	3.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	01:41:59.1	48.630N	152.800E	33.0N	5.4			SZGRF
2004/01/01	01:41:49.9	47.058N	154.006E	33N	5.1	4.5		NEIC
Kuril Islands, Russia								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	01:53:26.3	74.4	24.8	1.1	47	5.5		
RUE	e P	Z	01:53:28.4	74.8	26.8	1.0	58	5.7		
NRDL	e P	Z	01:53:34.1	75.8	24.5	1.3	38	5.4		
CLL	e P	Z	01:53:35.3	76.1	26.2	1.1	86	5.8		
BRG	e P	Z	01:53:36.2	76.2	26.8	1.1	32	5.2		
IBBN	e P	Z	01:53:38.5	76.5	22.9	1.3	62	5.5		
WERD	e P	Z	01:53:41.5	77.1	25.7	1.3	40	5.3		
MOX	e P	Z	01:53:41.4	77.1	25.3	1.1	33	5.3		
GUNZ	e P	Z	01:53:41.9	77.1	25.7	1.1	30	5.2		
UBBA	e P	Z	01:53:42.9	77.3	24.2	1.3	22	5.0		
BUG	e P	Z	01:53:43.5	77.4	22.5	1.3	50	5.4		
GRA1	e P	Z	01:53:47.4	78.0	24.9	1.2	90	5.7		
WET	e P	Z	01:53:47.5	78.1	25.9	1.2	47	5.4		
GEC2	e P	Z	01:53:47.1	78.1	26.4	1.0	14	4.9		
TNS	e P	Z	01:53:48.4	78.3	23.2	1.1	35	5.4		
WLF	e P	Z	01:53:54.5	79.4	21.6	1.1	29	5.3		
FUR	e P	Z	01:53:54.8	79.4	24.8	1.2	77	5.7		
STU	e P	Z	01:53:54.6	79.4	23.5	1.0	37	5.5		
BFO	e P	Z	01:53:58.0	80.1	23.0	1.5	56	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	02:08:34.9	46.426N	154.110E	33.0N	4.2			SZGRF

East of Kuril Islands, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	02:20:34.0	78.6	25.1	1.0	2	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	03:15:21.7	24.380N	121.910E	33.0N	5.5			SZGRF
2004/01/01	03:15:21.5	23.353N	121.609E	56	5.0	4.8		NEIC

Taiwan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	03:27:35.3	81.8	62.0	0.8	27	5.5		
BRG	e P	Z	03:27:38.9	82.4	61.9	1.8	54	5.5		
CLL	i P	+ Z	03:27:40.0	82.7	61.3	1.0	24	5.4		
	e		03:27:46.8							
	e L	Z	04:08:47.8			18.0	1150		5.3	
BSEG	e P	Z	03:27:40.9	82.9	59.6	5.4	997	6.3		
GEC2	e P	Z	03:27:44.5	83.5	61.5	0.9	21	5.4		
WERD	e P	Z	03:27:44.4	83.5	60.7	1.0	12	5.1		
GUNZ	e P	Z	03:27:44.7	83.6	60.7	1.0	28	5.4		
MOX	e P	Z	03:27:45.9	83.8	60.2	1.4	31	5.4		

WET	e P	Z	03:27:46.4	83.9	61.0	1.6	37	5.4
CLZ	e P	Z	03:27:46.7	83.9	59.4	1.1	30	5.4
GRA1	e P	Z	03:27:50.0	84.5	59.8	1.7	92	5.7
IBBN	e P	Z	03:27:52.0	85.0	57.4	1.1	46	5.5
FUR	e P	Z	03:27:53.6	85.3	59.7	1.3	72	5.6
BUG	e P	Z	03:27:55.4	85.7	57.0	1.0	12	5.0
WLF	e P	Z	03:28:03.5	87.3	56.1	1.1	40	5.7

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	04:39:12.1	21.553S	169.860E	10G	5.2	4.9		NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 04:58:56.0	147.2	38.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 05:41:08.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	05:58:59.1	47.140N	154.530E	33.0N	5.4			SZGRF
2004/01/01	05:58:59.7	47.041N	154.088E	33N	5.1			NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 06:10:36.5	74.5	24.7	0.9	17	5.1		
RUE	e P	Z 06:10:39.0	74.9	26.8	0.9	36	5.4		
NRDL	e P	Z 06:10:44.1	75.8	24.4	1.2	20	5.1		
CLL	i P	+ Z 06:10:45.7	76.1	26.2	0.7	54	5.8		
	e pP	Z 06:10:53.1							
	e sP	Z 06:10:57.4							
	e LQ	T 06:36:48.3							
	e LR	Z 06:39:12.1							
	e L	Z 06:46:57.7			18.0	952		5.2	
BRG	e P	Z 06:10:46.8	76.3	26.7	1.2	22	5.2		
CLZ	e P	Z 06:10:47.3	76.3	24.5	1.0	40	5.5		
IBBN	e P	Z 06:10:48.7	76.6	22.9	0.8	40	5.6		
WERD	e P	Z 06:10:51.4	77.1	25.6	1.8	80	5.6		
MOX	e P	Z 06:10:51.7	77.1	25.2	1.3	50	5.5		
GUNZ	e P	Z 06:10:52.0	77.2	25.6	2.4	157	5.7		
UBBA	e P	Z 06:10:52.8	77.4	24.2	0.9	19	5.2		

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BUG	e P	Z	06:10:53.6	77.5	22.5	1.7	124	5.8
GRA1	e P	Z	06:10:57.6	78.1	24.9	0.7	72	5.9
WET	e P	Z	06:10:57.6	78.1	25.9	1.1	28	5.3
GEC2	e P	Z	06:10:57.2	78.1	26.4	1.5	26	5.1
TNS	e P	Z	06:10:58.4	78.3	23.1	0.7	36	5.5
STU	e P	Z	06:11:04.4	79.5	23.5	0.8	35	5.3
BFO	e P	Z	06:11:07.7	80.1	22.9	0.9	29	5.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	06:58:08.0	22.188S	169.459E	10G	5.1			NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 07:17:52.8	147.6	39.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	07:41: 9.2	48.465N	155.655E	33.0N	4.8			SZGRF

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:53:00.1	77.2	23.3	1.0	9	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	08:15:57.3	22.159S	169.309E	10G	5.1	4.5		NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:35:41.8	147.5	40.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	10:17:53.5	47.202N	151.879E	33.0N	5.3			SZGRF
2004/01/01	10:17:47.3	47.042N	154.045E	33N	4.9			NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 10:29:45.2	78.1	24.9	0.9	23	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	14:05:49.3	26.365N	80.082E	33.0N	4.2			SZGRF

Northern India

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:15:30.6	56.8	87.2	1.0	3	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	14:30:39.8	46.857N	155.084E	33.0N	4.9			SZGRF
2004/01/01	14:30:41.0	47.193N	154.057E	33N	4.5			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:42:38.2	77.9	24.8	0.9	13	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	18:07:12.4	23.663S	179.945E	508?	4.6			NEIC

South of the Fiji Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 18:26:10.3	152.5	22.8					
	e PKPab	Z 18:26:24.1							
	e pPKPbc	Z 18:28:17.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	19:07:19.3	47.612N	157.279E	33.0N	4.6			SZGRF
2004/01/01	19:07:17.8	47.055N	154.114E	33N	4.3			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:19:16.9	78.1	24.8	1.0	6	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/01	20:59:30.7	8.256S	115.791E	33N	5.7	5.4		NEIC

Bali, Indonesia, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PP	Z 21:17:58.6	105.7	84.2					
	e L	Z 22:07:55.4			22.0	1660		5.5	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2004/01/02 04:41:49.3 41.493N 144.230E 33.0N 4.9 SZGRF  
2004/01/02 04:41:51.3 42.392N 144.652E 33N 4.9 NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:53:55.4	79.3	33.1	1.0	14	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02	05:57:24.9	47.284N	152.614E	33.0N	5.2			SZGRF

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 06:09:17.4	77.4	25.7	0.9	17	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 07:54:17.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02	09:47:23.5	41.319N	143.458E	33.0N	4.3			SZGRF
2004/01/02	09:47:20.8	41.114N	143.203E	44D	4.6			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:59:28.9	79.9	34.7	1.2	5	4.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02	10:23:53.7	15.144S	178.993W	394D	5.0			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 10:42:44.2	144.5	17.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02	12:42:44.6	21.637S	169.869E	10G	5.3	5.0		NEIC

Southeast of Loyalty Islands

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Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:02:29.1	147.3	38.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:08:58.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:39:11.1							
	e pPKP	Z 13:39:25.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:58:31.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 16:09:44.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 18:35:14.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/02	20:07:21.5	4.564N	85.403W	33.0N	5.2	4.9		SZGRF
2004/01/02	20:07:14.3	2.792N	84.273W	10G	4.6			NEIC



Off coast of central America

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:20:21.7	91.4	276.0	2.1	27	5.2		
	e L	Z 20:55:03.8			21.8	451		4.9	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03	05:23:58.4	18.842N	72.544W	33.0N	4.7			SZGRF
2004/01/03	05:23:36.2	19.643N	77.890W	10G	4.4			NEIC

Haiti region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:35:18.1	74.6	282.4	1.5	10	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03	08:07:34.1	22.424S	169.762E	10G	5.6	6.0		NEIC

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:27:16.7	147.9	39.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03	08:09:03.1	22.358S	169.511E	10G	5.7			NEIC

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKP	Z 08:28:43.5	145.8	41.1	1.3	188			
	e L	Z 09:30:50.4			20.0	1842		5.9	
GRA1	e PKP	Z 08:28:47.5	147.8	39.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03	08:13:10.0	22.505S	169.715E	10G	5.7			NEIC

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:32:55.6	148.0	39.7					
	e pPKP	Z 08:33:05.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2004/01/03 08:21:48.1 22.395S 169.578E 10G 6.0 6.1 NEIC  
 Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKP	Z 08:41:26.7	145.9	41.0	1.0	168			
	e PP	Z 08:44:54.0							
	e SS	T 09:03:46.8							
	e PSPS	R 09:04:41.1							
	e SSS	T 09:09:21.6							
	e SSSS	T 09:13:07.4							
	e L	Z 09:49:21.4			22.0	5505		6.3	
GRA1	e PKP	Z 08:41:32.2	147.8	39.8					
	e L	Z 09:52:07.9			21.6	6057		6.3	

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:46:24.7							

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 09:12:13.4							
	e pPKP	Z 09:12:23.3							

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 09:14:25.2							

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 09:34:51.9							

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Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e PKP Z 09:58:22.7

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03 09:45:19.3 22.357S 169.486E 10G 5.4 5.5  
Southeast of Loyalty Islands NEIC

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e PKP Z 10:05:01.5 147.8 39.9

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e PKP Z 10:42:35.5  
e pPKP Z 10:42:44.3

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e PKP Z 10:44:37.2

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03 13:14: 2.9 24.706N 89.373E 33.0N 5.2  
2004/01/03 13:14:30.6 27.669N 85.969E 33N 4.9  
Bangladesh NEIC

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e P Z 13:24:33.1 59.7 81.8 1.7 27 5.2

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/03 16:23:18.8 22.231S 169.636E 10G 6.5 7.1  
Southeast of Loyalty Islands NEIC

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML





GRA1 e PKP Z 18:06:22.0

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03 17:59:41.1 22.557S 169.869E 10G 5.2 NEIC  
 Southeast of Loyalty Islands

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
 GRA1 e PKP Z 18:19:27.8 148.1 39.5

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
 GRA1 e PKP Z 18:27:33.8

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
 GRA1 e PKP Z 19:04:12.1

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03 18:56:50.5 22.616S 169.715E 10G 5.1 5.4 NEIC  
 Southeast of Loyalty Islands

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
 GRA1 e PKP Z 19:16:36.8 148.1 39.8

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
 GRA1 e PKP Z 19:21:53.4

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/03

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 20:08:50.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 20:46:16.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 20:56:52.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 21:08:33.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 21:58:49.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/03	23:22:19.4	47.760N	154.199E	33.0N	5.8			SZGRF
2004/01/03	23:22:16.0	47.057N	153.940E	44D	5.1	4.7		NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 23:34:00.7	76.4	26.3	0.9	87	5.9		
	e PP	Z 23:36:45.7							
	e L	Z 00:10:31.9			18.0	909		5.1	
GRA1	e P	Z 23:34:11.9	78.0	25.0	1.0	76	5.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04	00:12:54.2	31.851N	33.502E	33.0N	4.5			SZGRF

Egypt

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:18:09.7	24.4	128.7	1.8	32	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 01:03:10.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 02:00:16.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 05:00:31.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04	05:01:11.8	10.670N	101.249W	33.0N	4.8			SZGRF

2004/01/04	05:01:39.0	16.973N	99.388W	33N	4.8	4.3		NEIC
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Off coast of Mexico

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:14:35.2	89.7	296.5	1.0	3	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 06:37:09.6							





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2004/01/04 19:51:58.6 51.662N 158.167W 33.0N 4.6 SZGRF  
2004/01/04 19:52:05.3 53.557N 163.195W 33N 4.6 NEIC

South of Alaska

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:03:55.5	76.6	356.6	0.9	6	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04	21:03:36.1	32.347N	126.764E	31.0	4.5	4.8		SZGRF

Northwest of Ryukyu Islands, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:15:43.3	80.1	50.7	1.1	6	4.5		
	e pP	Z 21:15:52.2							
	e L	Z 22:00:16.8			18.9	423		4.8	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/04	23:20:44.4	32.432N	72.486E	33.0N	5.4			SZGRF
2004/01/04	23:20:59.4	34.055N	70.726E	33N	4.9			NEIC

Pakistan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 23:29:19.1	45.7	86.7	1.1	38	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05	00:13:42.2	22.490S	171.290E	33.0N				SZGRF
2004/01/05	00:13:39.5	22.340S	169.630E	10G	5.2	4.6		NEIC

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 00:33:16.4	144.6	40.8					
BSEG	e PKPbc	Z 00:33:15.9	144.8	34.5					
BRG	e PKPbc	Z 00:33:19.4	145.8	42.6					
CLL	e PKPbc	Z 00:33:19.5	145.8	40.8					
CLZ	e PKPbc	Z 00:33:21.3	146.4	36.3					
WERD	e PKPbc	Z 00:33:22.8	146.8	40.6					
GUNZ	e PKPbc	Z 00:33:22.9	146.8	40.7					
MOX	e PKPbc	Z 00:33:22.6	146.9	39.4					
IBBN	e PKPbc	Z 00:33:23.0	147.0	31.9					
GEC2	e PKPbc	Z 00:33:24.2	147.3	44.4					
UBBA	e PKPbc	Z 00:33:23.7	147.4	36.7					
GRA1	e PKPbc	Z 00:33:25.6	147.8	39.7					
GRFO	e PKPbc	Z 00:33:25.4	147.8	39.7					

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BUG	e	PKPbc	Z	00:33:24.8	147.9	31.8
FUR	e	PKPbc	Z	00:33:28.5	148.9	41.4
STU	e	PKPbc	Z	00:33:29.3	149.3	37.4
WLF	e	PKPbc	Z	00:33:30.6	149.7	31.5
BFO	e	PKPbc	Z	00:33:30.7	150.0	36.4

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e	PKPbc	Z	07:01:23.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05	06:53:45.1	3.508S	151.051E	33N	5.3	5.2		NEIC
New Ireland region, Papua New Guinea								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e	PKP	Z	07:12:39.0	122.7	49.9			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e	PKP	Z	15:17:38.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05	21:24:48.4	22.700S	169.800E	33.0N				SZGRF
2004/01/05	21:24:43.9	22.793S	169.918E	10G	5.3	4.8		NEIC
Southeast of Loyalty Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e	PKPbc	Z	21:44:21.2	145.2	40.8			
BSEG	e	PKPbc	Z	21:44:21.5	145.3	34.3			
BRG	e	PKPbc	Z	21:44:24.6	146.3	42.6			
CLL	e	PKPbc	Z	21:44:24.1	146.4	40.7			
CLZ	e	PKPbc	Z	21:44:26.8	147.0	36.2			
WERD	e	PKPbc	Z	21:44:28.1	147.3	40.5			
GUNZ	e	PKPbc	Z	21:44:28.3	147.4	40.7			
IBBN	e	PKPbc	Z	21:44:28.6	147.5	31.7			
GEC2	e	PKPbc	Z	21:44:29.6	147.9	44.4			
UBBA	e	PKPbc	Z	21:44:29.9	147.9	36.6			

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GRA1	e	PKPbc	Z	21:44:30.8	148.3	39.6
BUG	e	PKPbc	Z	21:44:30.5	148.4	31.6
STU	e	PKPbc	Z	21:44:34.9	149.9	37.3
WLF	e	PKPbc	Z	21:44:36.4	150.3	31.3
BFO	e	PKPbc	Z	21:44:35.6	150.6	36.3

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05	22:46:51.8	41.432N	145.171E	33.0N	4.7			SZGRF
2004/01/05	22:47:00.3	42.242N	142.228E	33N	4.4			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:59:00.0	78.6	34.8	0.8	8	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/05	23:06:44.0	22.600S	169.220E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z 23:26:19.1	145.8	43.4					
CLL	e PKPbc	Z 23:26:19.1	145.9	41.6					
CLZ	e PKPbc	Z 23:26:21.3	146.5	37.2					
WERD	e PKPbc	Z 23:26:22.2	146.8	41.4					
GUNZ	e PKPbc	Z 23:26:22.7	146.9	41.6					
IBBN	e PKPbc	Z 23:26:22.9	147.1	32.7					
GEC2	e PKPbc	Z 23:26:24.0	147.4	45.2					
GRA1	e PKPbc	Z 23:26:25.3	147.9	40.6					
BUG	e PKPbc	Z 23:26:25.4	148.0	32.6					
FUR	e PKPbc	Z 23:26:28.3	149.0	42.3					
STU	e PKPbc	Z 23:26:29.3	149.4	38.3					
WLF	e PKPbc	Z 23:26:30.9	149.8	32.4					
BFO	e PKPbc	Z 23:26:30.7	150.1	37.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 01:07:47.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06	01:01:57.1	48.070N	152.740E	33.0N	5.7	5.0		SZGRF

2004/01/06 01:01:51.5 47.278N 154.116E 33N 5.4 4.9 NEIC  
Kuril Islands, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	01:13:27.0	74.2	24.6	1.3	78	5.6		
CLL	i P	+ Z	01:13:36.5	75.9	26.0	1.2	164	6.0		
	e		01:13:48.0							
	e S	Z	01:23:23.3							
	e PS	Z	01:23:58.5							
	e SS	Z	01:28:29.8							
	e LR	Z	01:39:19.5							
	e L	Z	01:49:56.9			18.0	1060		5.2	
BRG	e P	Z	01:13:36.9	76.0	26.6	1.2	64	5.5		
CLZ	e P	Z	01:13:38.3	76.1	24.4	1.2	117	5.8		
	e PcP	Z	01:13:50.1							
IBBN	e P	Z	01:13:39.1	76.4	22.8	1.3	120	5.9		
	e PcP	Z	01:13:51.3							
WERD	e P	Z	01:13:42.2	76.9	25.5	1.4	98	5.7		
	e PcP	Z	01:13:53.7							
MOX	e P	Z	01:13:42.2	76.9	25.1	1.3	86	5.7		
GUNZ	e P	Z	01:13:42.7	77.0	25.5	1.3	71	5.6		
UBBA	e P	Z	01:13:43.6	77.2	24.1	1.5	74	5.6		
BUG	e P	Z	01:13:44.3	77.3	22.4	1.4	99	5.8		
GRA1	e P	Z	01:13:48.1	77.9	24.7	1.2	175	6.0		
	e PcP	Z	01:14:00.2							
	e L	Z	01:51:06.3			19.5	792		5.0	
GEC2	e P	Z	01:13:48.0	77.9	26.2	1.2	35	5.4		
FUR	e P	Z	01:13:55.6	79.2	24.7	1.3	156	6.0		
STU	e P	Z	01:13:55.4	79.2	23.4	1.1	80	5.6		
BFO	e P	Z	01:13:58.8	79.9	22.8	1.2	66	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06	02:27:34.3	32.703N	48.444E	33.0N	5.3			SZGRF
2004/01/06	02:27:23.0	31.783N	49.442E	33N				NEIC

Western Iran

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	02:34:00.4	33.5	107.8	2.3	84	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06	05:50:52.5	34.024N	136.844E	33.0N	5.4			SZGRF
2004/01/06	05:50:52.7	34.168N	136.708E	33N	5.0			NEIC

Western Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1 e P Z 06:03:17.0 83.2 42.7 1.4 34 5.4

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06	06:31:11.6	31.516N	49.272E	33.0N	5.0			SZGRF
2004/01/06	06:31:08.8	31.862N	49.627E	10G	4.7			NEIC

Western Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 06:37:49.2	33.6	107.5	0.7	15	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06	10:39:17.3	38.420N	39.177E	33.0N	4.8			SZGRF
2004/01/06	10:39:11.6	38.341N	38.964E	6	4.6			NEIC

Turkey

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 10:43:58.3	21.0	110.6					
BRG	e P	Z 10:44:05.4	21.6	115.7	1.7	46	4.6		
FUR	e P	Z 10:44:12.3	22.3	105.9	1.1	60	4.9		
CLL	e P	Z 10:44:13.6	22.3	115.3					
GUNZ	e P	Z 10:44:12.9	22.3	112.3	1.5	48	4.7		
WERD	e P	Z 10:44:14.5	22.4	112.5					
GRA1	e P	Z 10:44:18.2	22.8	109.3	1.0	53	5.0		
STU	e P	Z 10:44:27.1	23.8	104.8	1.7	80	5.0		
UBBA	e P	Z 10:44:29.3	23.9	110.2	1.7	40	4.7		
CLZ	e P	Z 10:44:30.3	24.0	112.9					
BFO	e P	Z 10:44:31.3	24.2	102.9	2.0	61	4.8		
BSEG	e P	Z 10:44:38.7	25.0	117.0	1.8	70	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/06								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e Pn	Z 13:37:48.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	04:18:53.4	32.509N	49.009E	21.4	4.7			SZGRF
2004/01/07	04:18:43.0	31.819N	49.594E	10G	4.8			NEIC

Western Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1	e P	Z	04:25:23.7	33.6	107.6	1.0	9	4.7
	e pP	Z	04:25:29.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	07:51:42.8	42.632N	108.884W	33.0N	4.7	4.8		SZGRF
2004/01/07	07:51:37.5	43.572N	110.381W	5G	4.7			NEIC

Wyoming, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 08:03:14.8	73.7	320.0	1.3	11	4.7		
	e L	Z 08:34:25.6			18.2	466		4.8	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	09:05:57.9	27.019N	131.908E	33.0N	4.6			SZGRF
2004/01/07	09:05:56.2	26.030N	128.680E	33N	4.6			NEIC

Southeast of Ryukyu Islands, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:18:40.3	86.2	53.0	0.8	4	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 10:35:05.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	10:43: 5.1	8.884N	79.078W	33.0N	4.6	5.2		SZGRF
2004/01/07	10:42:38.2	8.385N	82.743W	32	5.2	4.9		NEIC

Panama

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 10:55:29.6	86.2	278.4	1.1	7	4.6		
	e S	E 11:05:48.0							
	e L	Z 11:27:59.5			21.6	1278		5.2	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	16:47:38.2	10.408N	41.742W	33.0N	4.7			SZGRF
2004/01/07	16:47:39.5	10.749N	40.880W	10G	4.8			NEIC

## Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:57:32.2	57.8	246.3	0.9	7	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	16:41:37.1	22.210S	170.690E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 17:01:09.9	145.0	32.8					
BRG	e PKPbc	Z 17:01:13.0	146.1	40.9					
CLL	e PKPbc	Z 17:01:13.0	146.1	39.1					
NRDL	e PKPbc	Z 17:01:13.1	146.3	33.6					
CLZ	e PKPbc	Z 17:01:15.3	146.7	34.6					
WERD	e PKPbc	Z 17:01:16.3	147.1	38.9					
GUNZ	e PKPbc	Z 17:01:16.7	147.1	39.0					
IBBN	e PKPbc	Z 17:01:16.4	147.2	30.1					
MOX	e PKPbc	Z 17:01:16.2	147.2	37.6					
UBBA	e PKPbc	Z 17:01:17.6	147.7	34.9					
GEC2	e PKPbc	Z 17:01:18.1	147.7	42.7					
WET	e PKPbc	Z 17:01:18.7	147.9	41.1					
BUG	e PKPbc	Z 17:01:19.1	148.1	30.0					
GRA1	e PKPbc	Z 17:01:19.4	148.1	37.9					
FUR	e PKPbc	Z 17:01:22.3	149.3	39.6					
STU	e PKPbc	Z 17:01:23.4	149.6	35.5					
WLF	e PKPbc	Z 17:01:24.8	150.0	29.5					
BFO	e PKPbc	Z 17:01:24.6	150.3	34.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/07	18:45:44.6	20.872N	121.933E	33.0N	5.0	5.3		SZGRF
2004/01/07	18:45:39.9	20.031N	122.145E	33N	5.5	5.1		NEIC

Philippine Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 18:58:16.6	85.9	62.9	1.4	56	5.5		
	e	18:58:28.8							
	e PP	Z 19:01:25.3							
	e SKSac	R 19:08:37.5							
	e SP	Z 19:09:45.9							
	e SS	T 19:14:31.8							
	e SSSS	T 19:20:54.6							
	e LQ	T 19:28:19.1							
	e L	Z 19:41:51.4			18.0	2080		5.6	
GRA1	e P	Z 18:58:25.4	87.5	61.5	1.1	14	5.0		





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KBA	e Pn	Z	09:36:26.2	2.3	143.9							2.7
GEC2	e Pn	Z	09:36:46.9	3.8	163.1							3.0
	e Sn	N	09:37:29.3									
WET	e Pn	Z	09:36:52.9	4.3	156.7							
	e Sn	N	09:37:40.6									
MOX	e Pn	Z	09:37:15.5	6.0	154.4							
	e Sn	N	09:38:21.0									

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/08	12:32:47.5	22.587S	169.993E	10G	5.1	4.9		NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 12:52:29.8	148.2	39.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/08								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:03:04.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/08								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 22:04:20.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/09	04:39:21.9	47.432N	154.567E	33.0N	5.4	4.7		SZGRF
2004/01/09	04:39:16.5	46.575N	154.537E	33N	5.0	4.8		NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:51:16.6	78.6	24.8	1.1	36	5.4		
	e L	Z 05:28:58.8			18.2	349		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/09	19:38:25.7	56.846N	33.976W	10G	4.8	4.4		NEIC

Reykjanes Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:44:13.9	27.4	302.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/09	19:50:16.3	56.998N	39.183W	33.0N	5.3	4.7		SZGRF
2004/01/09	19:50:35.8	56.841N	34.140W	10G	4.9	5.0		NEIC

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:56:24.3	27.5	302.6	1.6	75	5.3		
	e L	Z 20:06:38.4			18.0	1589		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/09	22:35:28.5	6.029S	149.426E	33N	5.4	6.2		NEIC

New Britain, Papua New Guinea, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e Pdiff	Z 22:50:55.0	122.2	54.1					
	e PKPdf	Z 22:54:20.0			1.0	8			
	e PP	Z 22:56:05.1							
	e PPP	Z 22:58:43.4							
	e (PKKP)	Z 23:04:28.5							
	e PS	E 23:06:03.0							
	e PPS	Z 23:07:20.7							
	e SS	T 23:12:28.2							
	e SSS	T 23:17:18.6							
	e LQ	T 23:29:03.3							
	e LR	Z 23:34:35.1							
	e L	Z 23:48:29.0			22.0	8546		6.4	
GRA1	e PKPdf	Z 22:54:23.7	124.0	53.1					
	e L	Z 23:50:14.3			20.5	4686		6.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 00:53:45.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	05:30:23.6	22.109S	169.511E	10G	5.0			NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 05:50:08.8	147.5	39.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	06:53:48.1	19.770S	177.150W	33.0N				SZGRF
2004/01/10	06:54:59.1	18.079S	177.692W	638D	4.9			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 07:13:21.9	143.6	12.9					
HLG	e PKPbc	Z 07:13:22.4	143.6	9.0					
RUE	e PKPbc	Z 07:13:24.7	144.4	19.0					
NRDL	e PKPbc	Z 07:13:26.4	145.0	13.0					
IBBN	e PKPbc	Z 07:13:27.8	145.5	9.2					
CLZ	e PKPdf	Z 07:13:26.8	145.6	13.7					
	e PKPbc	Z 07:13:28.5							
CLL	e PKPbc	Z 07:13:28.5	145.7	18.2					
BRG	e PKPbc	Z 07:13:29.2	145.9	20.0					
	e PKPab	Z 07:13:31.4							
BUG	e PKPbc	Z 07:13:30.1	146.4	8.5					
MOX	e PKPdf	Z 07:13:28.2	146.6	16.2					
	e PKPbc	Z 07:13:30.8							
	e PKPab	Z 07:13:33.6							
WERD	e PKPdf	Z 07:13:27.8	146.7	17.5					
	e PKPbc	Z 07:13:31.2							
	e PKPab	Z 07:13:34.3							
UBBA	e PKPbc	Z 07:13:30.7	146.7	13.4					
	e PKPab	Z 07:13:34.5							
GUNZ	e PKPdf	Z 07:13:28.6	146.7	17.6					
	e PKPbc	Z 07:13:31.5							
	e PKPab	Z 07:13:34.7							
GRA1	e PKPbc	Z 07:13:33.8	147.6	15.9					
	e PKPab	Z 07:13:38.2							
GEC2	e PKPbc	Z 07:13:34.4	147.9	20.7					
WLF	e PKPbc	Z 07:13:35.7	148.3	7.0					
	e PKPab	Z 07:13:40.7							
STU	e PKPdf	Z 07:13:31.8	148.8	12.7					
	e PKPbc	Z 07:13:36.7							
	e PKPab	Z 07:13:43.0							
FUR	e PKPbc	Z 07:13:37.2	149.0	16.7					
	e PKPab	Z 07:13:44.3							
BFO	e PKPbc	Z 07:13:37.7	149.4	11.3					
	e PKPab	Z 07:13:45.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	07:25:42.1	30.830S	71.852W	33N	5.6	5.1		NEIC

Near the coast of Central Chile

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e SP	Z 07:54:11.6	110.4	246.1					
	e LR	Z 08:18:52.7							
	e L	Z 08:28:12.0			22.0	663		5.2	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	11:57:33.4	47.330N	155.729E	33.0N	5.7			SZGRF
2004/01/10	11:57:33.6	47.149N	153.949E	33N	5.0			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:09:30.3	77.9	24.9	0.7	57	5.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	15:34: 7.9	47.442N	156.130E	33.0N	4.8			SZGRF
2004/01/10	15:34:07.8	47.038N	153.908E	33N	4.6			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:46:04.7	78.0	25.0	0.9	9	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	17:46:32.5	2.010N	66.730E	33.0N	4.8			SZGRF

Carlsberg Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:57:21.6	66.9	116.4	1.1	7	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/10	18:37:57.0	35.690N	3.833E	33.0N	4.2	3.7		SZGRF
2004/01/10	18:38:14.6	36.858N	3.465E	10G	4.5	4.4		NEIC

Northern Algeria

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 18:41:32.2	14.0	206.5	1.4	16			
	e L	Z 18:46:20.3			18.1	502		3.7	

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CLL e P Z 18:42:00.6 16.0 208.8 1.3 24 4.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/11	04:32:49.5	36.740S	54.290E	33.0N	6.4	5.9		SZGRF
2004/01/11	04:32:48.5	36.658S	53.343E	10G	6.1	6.1		NEIC

South Indian Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 04:45:57.2	92.5	149.2	1.3	138	6.2		
FUR	e P	Z 04:45:59.5	92.7	147.4	1.3	720	7.0		
BFO	e P	Z 04:46:04.9	94.0	145.3	1.6	167	6.1		
STU	e P	Z 04:46:05.0	94.0	145.9	1.4	209	6.3		
GRA1	e P	Z 04:46:05.2	94.0	147.4	1.3	408	6.6		
	e S	E 04:57:16.4							
	e L	Z 05:28:33.5			22.0	4588		5.9	
BRG	e P	Z 04:46:05.5	94.1	149.3	1.3	190	6.3		
GUNZ	e P	Z 04:46:06.2	94.2	148.1	1.3	250	6.4		
WERD	e P	Z 04:46:06.5	94.3	148.1	1.4	213	6.3		
CLL	e P	Z 04:46:08.8	94.8	148.6	1.4	231	6.3		
	e PP	Z 04:50:00.6							
	e PPP	Z 04:51:51.5							
	e SKSac	R 04:56:46.0							
	e S	T 04:57:23.9							
	e PS	R 04:58:36.7							
	e PPS	N 04:59:27.2							
	e SS	R 05:03:53.3							
	e SSS	R 05:07:37.4							
	e LR	Z 05:19:13.5							
	e L	Z 05:30:22.8			20.0	6424		6.1	
	e R2	Z 06:38:20.6							
UBBA	e P	Z 04:46:10.9	95.4	146.4	1.7	92	5.9		
RUE	e P	Z 04:46:11.7	95.6	149.1	1.5	199	6.4		
CLZ	e P	Z 04:46:14.5	96.1	146.6	1.4	120	6.2		
NRDL	e P	Z 04:46:17.0	96.8	146.4	1.3	66	6.1		
BUG	e P	Z 04:46:17.6	96.9	144.4	1.9	141	6.3		
IBBN	e P	Z 04:46:20.4	97.4	144.7	2.3	273	6.6		
BSEG	e P	Z 04:46:22.2	97.9	146.5	1.6	147	6.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/11	08:07: 6.5	16.400S	176.680W	374.5				SZGRF
2004/01/11	08:07:05.1	16.204S	176.195W	367D	5.3			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKP	Z 08:25:50.7	141.9	10.2					

RUE	e	PKP	Z	08:25:52.2	142.9	16.0		
NRDL	e	PKPbc	Z	08:25:54.1	143.4	10.2		
IBBN	e	PKPbc	Z	08:25:55.7	143.8	6.4		
CLZ	e	PKPbc	Z	08:25:56.3	144.0	10.8		
CLL	i	PKPbc	- Z	08:25:56.1	144.1	15.2	0.9	106
	e			08:26:04.0				
	e	pPKPbc	Z	08:27:26.1				
	e	SKPbc	Z	08:29:03.9				
BRG	e	PKPbc	Z	08:25:57.5	144.4	16.9		
BUG	e	PKPbc	Z	08:25:58.3	144.7	5.8		
UBBA	e	PKPbc	Z	08:25:59.1	145.0	10.4		
WERD	e	PKPbc	Z	08:25:59.9	145.1	14.4		
	e	pPKPbc	Z	08:27:30.5				
GUNZ	e	PKPbc	Z	08:26:00.6	145.2	14.4		
	e	pPKPbc	Z	08:27:30.3				
GRA1	e	PKPbc	Z	08:26:03.1	146.0	12.8		
	e	pPKPbc	Z	08:27:33.2				
GEC2	e	PKPbc	Z	08:26:03.8	146.4	17.3		
	e	pPKPbc	Z	08:27:34.4				
WLF	e	PKPbc	Z	08:26:04.6	146.5	4.1		
	e	pPKPbc	Z	08:27:35.2				
STU	e	PKPbc	Z	08:26:06.0	147.1	9.6		
	e	pPKPbc	Z	08:27:37.3				
FUR	e	PKPbc	Z	08:26:07.0	147.5	13.4		
	e	pPKPbc	Z	08:27:37.6				
BFO	e	PKPbc	Z	08:26:07.3	147.7	8.1		
	e	pPKPbc	Z	08:27:37.5				

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/11	09:29: 1.8	20.770S	178.440W	600.0G				SZGRF
2004/01/11	09:29:10.2	20.082S	179.198W	672D	5.3			NEIC

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e	PKPbc	Z 09:47:35.7	145.4	15.9					
RUE	e	PKPdf	Z 09:47:35.0	146.1	22.2					
	e	PKPbc	Z 09:47:38.1							
NRDL	e	PKPdf	Z 09:47:36.5	146.8	16.1					
	e	PKPbc	Z 09:47:39.6							
IBBN	e	PKPdf	Z 09:47:37.8	147.3	12.2					
	e	PKPbc	Z 09:47:41.6							
CLL	e	PKPdf	Z 09:47:36.9	147.3	21.6	1.4	48			
	e	PKPbc	Z 09:47:41.1			1.1	245			
	e	PKPab	Z 09:47:46.1			1.2	108			
	e	pPKPbc	Z 09:50:13.1							
	e	PP	Z 09:51:20.0							
	e	PPP	Z 09:54:37.4							

CLZ	e	PKPdf	Z	09:47:37.2	147.4	16.8
	e	PKPbc	Z	09:47:41.9		
BRG	e	PKPbc	Z	09:47:41.6	147.5	23.4
	e	PKPab	Z	09:47:47.0		
BUG	e	PKPdf	Z	09:47:39.0	148.2	11.6
	e	PKPbc	Z	09:47:42.9		
	e	PKPab	Z	09:47:49.9		
WERD	e	PKPdf	Z	09:47:39.1	148.3	20.9
	e	PKPbc	Z	09:47:43.5		
	e	PKPab	Z	09:47:50.3		
GUNZ	e	PKPdf	Z	09:47:38.7	148.4	21.0
	e	PKPbc	Z	09:47:44.0		
	e	PKPab	Z	09:47:50.1		
UBBA	e	PKPdf	Z	09:47:39.4	148.4	16.7
	e	PKPbc	Z	09:47:43.5		
GRA1	e	PKPdf	Z	09:47:41.1	149.2	19.4
	e	PKPbc	Z	09:47:45.9		
	e	PKPab	Z	09:47:53.5		
GEC2	e	PKPdf	Z	09:47:40.8	149.4	24.3
	e	PKPbc	Z	09:47:46.0		
	e	PKPab	Z	09:47:55.7		
WLF	e	PKPdf	Z	09:47:42.6	150.1	10.1
	e	PKPbc	Z	09:47:48.0		
	e	PKPab	Z	09:47:58.3		
STU	e	PKPdf	Z	09:47:42.9	150.5	16.2
	e	PKPbc	Z	09:47:48.6		
	e	PKPab	Z	09:47:59.0		
FUR	e	PKPdf	Z	09:47:43.2	150.7	20.4
	e	PKPbc	Z	09:47:49.0		
	e	PKPab	Z	09:48:00.2		
BFO	e	PKPdf	Z	09:47:43.8	151.1	14.8
	e	PKPbc	Z	09:47:49.4		
	e	PKPab	Z	09:48:01.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/11	19:31:32.6	54.965N	165.784E	33.0N	5.7	4.8		SZGRF
2004/01/11	19:31:31.0	55.612N	165.651E	10G	5.4	4.9		NEIC

Komandorsky Islands, Russia, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i	P	+ Z 19:42:48.2	71.1	16.0	1.1	64	5.7		
	e	S	Z 19:52:05.3							
	e	LR	Z 20:05:24.9							
	e	L	Z 20:16:43.8			21.1	434		4.7	
GRA1	e	P	Z 19:42:59.9	72.6	14.8	1.1	85	5.7		
	e	pP	Z 19:43:10.0							
	e	L	Z 20:17:06.2			21.3	577		4.8	



Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	07:11:40.2	18.255S	178.223W	600G	4.6			NEIC
Fiji Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 07:30:20.3	147.7	16.9					
	e	07:30:24.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	12:13:15.6	19.727S	179.908W	600.0G				SZGRF
2004/01/12	12:14:23.6	20.190S	179.139W	669D	4.6			NEIC
Fiji Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 12:32:49.2	145.5	15.8					
RUE	e PKPbc	Z 12:32:51.1	146.2	22.2					
NRDL	e PKPbc	Z 12:32:53.2	146.9	16.0					
IBBN	e PKPbc	Z 12:32:55.3	147.4	12.1					
CLL	e PKPdf	Z 12:32:51.8	147.5	21.5	0.8	4			
	e PKPbc	Z 12:32:54.2			0.7	79			
	e PKPab	Z 12:32:59.0			0.8	34			
	e pPKPbc	Z 12:35:31.1							
CLZ	e PKPbc	Z 12:32:54.8	147.5	16.8					
BRG	e PKPbc	Z 12:32:55.2	147.6	23.4					
	e PKPab	Z 12:32:59.8							
BUG	e PKPbc	Z 12:32:57.5	148.3	11.5					
MOX	e PKPbc	Z 12:32:57.2	148.4	19.5					
WERD	e PKPbc	Z 12:32:57.1	148.4	20.8					
GUNZ	e PKPbc	Z 12:32:57.5	148.5	20.9					
	e PKPab	Z 12:33:03.7							
GRA1	e PKPbc	Z 12:33:00.8	149.4	19.3					
	e PKPab	Z 12:33:07.4							
GEC2	e PKPbc	Z 12:32:59.7	149.6	24.3					
FUR	e PKPbc	Z 12:33:03.7	150.8	20.3					
	e PKPab	Z 12:33:13.7							
BFO	e PKPbc	Z 12:33:04.5	151.2	14.7					
	e PKPab	Z 12:33:14.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	14:14:38.1	5.969N	77.633W	33.0N	5.0			SZGRF
2004/01/12	14:14:31.5	5.579N	79.117W	33N	5.2			NEIC
Near west coast of Colombia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:27:09.2	86.0	273.9	1.4	15	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	17:17: 8.8	21.254S	169.900E	33.0N		5.6		SZGRF
2004/01/12	17:17:00.5	22.027S	170.299E	10G	5.3	5.5		NEIC

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 17:36:36.4	144.6	39.6					
BSEG	e PKPbc	Z 17:36:36.1	144.7	33.3					
BRG	e PKPbc	Z 17:36:39.9	145.8	41.4					
CLL	e PKPdf	Z 17:36:39.8	145.8	39.6	1.0	74			
	e PKPbc	Z 17:36:42.3							
	e PP	Z 17:40:03.2							
	e L	Z 18:42:32.0			22.0	958		5.5	
NRDL	e PKPbc	Z 17:36:40.1	145.9	34.1					
CLZ	e PKPbc	Z 17:36:41.9	146.4	35.1					
WERD	e PKPbc	Z 17:36:42.8	146.8	39.3					
GUNZ	e PKPbc	Z 17:36:43.2	146.8	39.5					
IBBN	e PKPbc	Z 17:36:42.9	146.9	30.6					
MOX	e PKPbc	Z 17:36:42.9	146.9	38.1					
UBBA	e PKPbc	Z 17:36:44.0	147.4	35.4					
GEC2	e PKPbc	Z 17:36:43.7	147.4	43.1					
BUG	e PKPbc	Z 17:36:47.1	147.8	30.5					
GRA1	e PKPbc	Z 17:36:47.4	147.8	38.4					
	e L	Z 18:50:43.0			19.5	954		5.6	
TNS	e PKPbc	Z 17:36:47.8	148.4	33.5					
FUR	e PKPbc	Z 17:36:50.9	149.0	40.1					
STU	e PKPbc	Z 17:36:51.8	149.3	36.0					
WLF	e PKPbc	Z 17:36:51.3	149.7	30.1					
BFO	e PKPbc	Z 17:36:53.2	150.0	35.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	19:59:19.4	59.122N	28.288W	33.0N	4.8			SZGRF
2004/01/12	19:59:05.7	59.198N	30.343W	10G	4.9	4.6		NEIC

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:04:35.2	25.5	307.8	1.5	30	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2004/01/12 20:01:56.6 58.430N 27.473W 33.0N 4.4 SZGRF  
North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:07:08.3	23.9	306.2	1.0	14	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	20:03:13.7	59.398N	29.847W	33.0N	4.6			SZGRF

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:08:37.0	25.2	308.3	1.0	11	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	20:15:16.5	59.900N	33.814W	33.0N	4.5			SZGRF

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:20:58.1	27.3	309.2	1.2	13	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/12	20:12:4.6	42.041N	147.876E	33.0N	5.0			SZGRF
2004/01/12	20:12:14.3	42.227N	143.255E	46	5.1			NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:24:14.9	78.9	34.1	1.0	16	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/13	01:12:36.2	21.380S	178.113W	600.0G				SZGRF
2004/01/13	01:13:44.2	20.769S	178.741W	650G	4.4			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 01:32:15.1	146.1	15.3					
RUE	e PKPbc	Z 01:32:17.0	146.8	21.8					
NRDL	e PKPbc	Z 01:32:18.6	147.5	15.5					
CLL	e PKPbc	Z 01:32:20.3	148.1	21.1					
	e PKPab	Z 01:32:25.1							
CLZ	e PKPbc	Z 01:32:20.4	148.1	16.3					
	e PKPab	Z 01:32:25.6							

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BRG	e	PKPbc	Z	01:32:21.0	148.3	23.0
	e	PKPab	Z	01:32:26.3		
MOX	e	PKPbc	Z	01:32:22.6	149.0	19.1
	e	PKPab	Z	01:32:29.1		
WERD	e	PKPbc	Z	01:32:22.6	149.1	20.4
	e	PKPab	Z	01:32:29.4		
GUNZ	e	PKPbc	Z	01:32:23.1	149.1	20.5
	e	PKPab	Z	01:32:29.9		
UBBA	e	PKPbc	Z	01:32:22.6	149.2	16.1
TNS	e	PKPbc	Z	01:32:25.0	150.0	13.5
	e	PKPab	Z	01:32:33.1		
GRA1	e	PKPbc	Z	01:32:24.9	150.0	18.9
	e	PKPab	Z	01:32:33.9		
GEC2	e	PKPbc	Z	01:32:25.3	150.2	23.9
FUR	e	PKPbc	Z	01:32:28.1	151.4	19.9
	e	PKPab	Z	01:32:39.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/13	09:39:25.5	22.608S	179.187W	33.0G				SZGRF

South of Fiji Islands

Sta	Phase		Time	Dist	Baz	T[s]	A[nm]	mb	MS	ML
BSEG	e	PKPbc	Z	09:59:07.8	147.9	16.6				
RUE	e	PKPbc	Z	09:59:09.8	148.5	23.4				
NRDL	e	PKPbc	Z	09:59:11.3	149.3	17.0				
CLL	i	PKPbc	- Z	09:59:12.5	149.8	22.8	0.9	66		
	e	PKPab	Z	09:59:19.3			0.7	24		
IBBN	e	PKPbc	Z	09:59:12.6	149.8	12.8				
CLZ	e	PKPbc	Z	09:59:13.1	149.9	17.8				
BRG	e	PKPbc	Z	09:59:13.1	149.9	24.8				
MOX	e	PKPbc	Z	09:59:14.8	150.7	20.7				
BUG	e	PKPbc	Z	09:59:14.6	150.7	12.3				
WERD	e	PKPbc	Z	09:59:15.1	150.7	22.1				
GUNZ	e	PKPbc	Z	09:59:15.2	150.8	22.2				
UBBA	e	PKPbc	Z	09:59:15.8	150.9	17.6				
GRA1	e	PKPbc	Z	09:59:16.7	151.7	20.6				
TNS	e	PKPbc	Z	09:59:17.5	151.7	15.0				
GEC2	e	PKPbc	Z	09:59:17.2	151.8	25.9				
STU	e	PKPbc	Z	09:59:20.2	153.0	17.2				

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/13	21:28:45.4	14.340N	98.130W	10.0G	5.3			SZGRF
2004/01/13	21:28:58.8	16.161N	96.885W	33N	5.5	5.1		NEIC

Off coast of Guerrero, Mexico

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 21:41:40.8	86.7	293.2					
NRDL	e P	Z 21:41:42.7	87.1	293.1	0.9	17	5.3		
GRA1	e P	Z 21:41:51.3	88.9	294.1	1.2	17	5.3		
GUNZ	e P	Z 21:41:52.8	89.3	294.9	1.4	24	5.3		
BRG	e P	Z 21:41:56.0	90.0	296.1	1.3	24	5.4		
GEC2	e P	Z 21:41:59.5	90.7	295.9	1.3	13	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/13	21:53:40.3	21.131S	61.479W	33.0N	5.6			SZGRF
2004/01/13	21:54:24.2	22.663S	63.484W	536D	5.2			NEIC

Paraguay

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:07:02.0	97.8	244.0	1.1	28	5.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/14	11:26:29.2	33.011S	56.672E	33.0N	5.4			SZGRF
2004/01/14	11:26:18.6	36.622S	53.404E	10G	5.2	4.4		NEIC

Southwest Indian Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:39:35.0	94.0	147.3	1.6	34	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/14	11:45:35.1	17.204S	174.360W	33N	4.5			NEIC

Tonga

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 12:05:14.5	147.2	9.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/14								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:45:43.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/14	16:58:55.2	28.855N	52.867E	33.0N	5.3	4.1		SZGRF

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2004/01/14 16:58:48.0  
Southern Iran

27.687N 52.379E 12D 5.4 4.9 NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 17:05:52.2	36.4	111.2	0.9	14	4.8		
BRG	e P	Z 17:05:57.8	37.0	114.0	0.9	28	5.0		
FUR	e P	Z 17:06:03.4	37.7	107.8	0.9	243	5.9		
CLL	e P	Z 17:06:04.0	37.8	113.5	1.1	49	5.2		
RUE	e P	Z 17:06:04.2	37.8	115.7	1.5	153	5.5		
GRA1	e P	Z 17:06:07.7	38.2	109.6	0.9	88	5.5		
	e PcP	Z 17:08:22.3							
	e L	Z 17:23:15.5			22.0	345		4.1	
MOX	e P	Z 17:06:08.7	38.3	111.2	1.2	28	4.9		
RGN	e P	Z 17:06:15.1	39.0	117.5	0.8	280	6.0		
UBBA	e P	Z 17:06:17.0	39.3	109.7	1.6	45	4.9		
CLZ	e P	Z 17:06:19.0	39.5	111.2	0.9	99	5.4		
NRDL	e P	Z 17:06:22.7	39.9	111.7	1.1	116	5.4		
TNS	e P	Z 17:06:23.6	40.1	107.4	1.1	44	5.0		
BSEG	e P	Z 17:06:25.7	40.3	113.5	1.1	68	5.2		
IBBN	e P	Z 17:06:33.2	41.1	109.0	1.1	98	5.4		
BUG	e P	Z 17:06:33.1	41.2	107.6	1.2	61	5.2		
WLF	e P	Z 17:06:33.7	41.3	104.6	0.9	58	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/15	00:10:19.7	43.441N	146.596E	33.0N	5.5			SZGRF
2004/01/15	00:10:30.2	44.048N	145.915E	101D	5.0			NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	- Z 00:22:09.3	76.6	32.9	1.2	58	5.6		
	e pP	Z 00:22:36.2							
	e sP	Z 00:22:47.2							
GRA1	e P	Z 00:22:21.0	78.3	31.5	0.9	39	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/15	00:24:52.7	4.713N	75.949W	33.0N	5.1			SZGRF
2004/01/15	00:25:05.0	4.177N	76.038W	154D	4.7			NEIC

Colombia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 00:37:07.2	81.8	266.7	0.8	19	5.2		
TNS	e P	Z 00:37:14.9	83.3	268.4	0.8	10	5.1		
NRDL	e P	Z 00:37:20.6	84.3	269.5	1.0	13	5.1		
BSEG	e P	Z 00:37:21.3	84.5	269.5	1.3	27	5.3		
CLZ	e P	Z 00:37:21.5	84.5	269.8	0.8	10	5.1		

GRA1	e P	Z	00:37:23.1	85.0	270.6	2.4	80	5.5
MOX	e P	Z	00:37:24.8	85.3	270.8	1.2	8	4.8
WERD	e P	Z	00:37:27.4	85.7	271.4	0.9	7	4.9
CLL	e P	Z	00:37:29.6	86.1	271.9	1.0	15	5.1
RGN	e P	Z	00:37:30.4	86.2	271.9	1.1	87	5.8
RUE	e P	Z	00:37:31.7	86.6	272.4	0.9	13	5.1
GEC2	e P	Z	00:37:32.1	86.7	272.6	1.0	10	4.9
BRG	e P	Z	00:37:32.5	86.7	272.6	0.9	10	4.9

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/15	07:26:56.7	3.482S	150.973E	33N	5.7	6.1		NEIC
New Ireland, Papua New Guinea, region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z 07:45:50.8	120.8	51.1	0.8	10			
	e PP	Z 07:47:24.6							
	e PS	R 07:57:07.0							
	e SS	R 08:03:59.9							
	e SSS	R 08:08:18.1							
	e LR	Z 08:25:04.7							
	e L	Z 08:37:53.1			22.0	6848		6.2	
GRA1	e PKPdf	Z 07:45:53.7	122.6	50.0					
	e PP	Z 07:47:27.4							
	e SS	E 08:04:35.9							
	e L	Z 08:41:05.6			20.0	5665		6.2	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/15	19:49:36.4	53.124N	153.953E	33.0N				SZGRF
2004/01/15	19:50:22.0	53.158N	153.480E	481D	5.0			NEIC
Sea of Okhotsk								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 20:00:30.3	67.4	24.6	0.8	90			
BSEG	e P	Z 20:00:37.9	68.6	22.7	0.9	31			
RUE	e P	Z 20:00:40.8	69.1	24.5	1.0	78			
NRDL	e P	Z 20:00:45.8	70.0	22.4	0.9	24			
CLL	e P	Z 20:00:47.9	70.4	23.9	1.2	82			
CLZ	e P	Z 20:00:49.7	70.5	22.4	1.1	61			
BRG	e P	Z 20:00:48.9	70.6	24.4	1.3	30			
MOX	e P	Z 20:00:53.9	71.4	23.0	0.8	28			
WERD	e P	Z 20:00:54.0	71.4	23.4	1.2	36			
GUNZ	e P	Z 20:00:54.4	71.4	23.4	0.9	26			
UBBA	e P	Z 20:00:54.9	71.6	22.1	6.3	2158			
BUG	e P	Z 20:00:55.7	71.6	20.6	1.0	22			
GRA1	e P	Z 20:01:00.2	72.3	22.7	1.0	77			

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GEC2	e P	Z	20:01:00.5	72.5	24.0	0.7	21
TNS	e P	Z	20:01:00.7	72.5	21.1	0.9	35
STU	e P	Z	20:01:07.3	73.7	21.4	1.2	55
FUR	e P	Z	20:01:07.9	73.7	22.5	0.9	59
BFO	e P	Z	20:01:10.7	74.3	20.8	0.9	30

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/16								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 01:20:30.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/16	09:06:1.7	42.116N	79.424E	33.0N	5.0			SZGRF
2004/01/16	09:06:21.8	42.637N	75.351E	33N	4.9			NEIC

Lake Issyk-Kul, Kyrgyzstan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:14:25.4	43.6	73.7	1.1	14	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/16	11:59:45.3	16.240S	174.801E	615.0N				SZGRF
2004/01/16	11:59:33.7	17.796S	178.925W	646?	4.5			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 12:18:07.8	147.1	18.0					
	e PKPab	Z 12:18:11.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/16	17:23:54.2	41.926N	142.092E	33.0N	5.1			SZGRF
2004/01/16	17:23:48.5	41.805N	143.670E	33N	4.8			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:35:54.0	79.5	34.0	0.9	16	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/16	18:07:54.0	6.700N	37.520W	33.0N	5.9	6.0		SZGRF



2004/01/16 18:07:55.7 7.688N 37.671W 10G 5.9 6.1 NEIC  
 Central Mid-Atlantic Ridge

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z	18:17:32.5	55.6	236.3	1.5	149	5.8		
	e S	R	18:25:19.4							
BFO	e P	Z	18:17:35.3	56.1	239.2	1.4	239	6.0		
	e S	R	18:25:26.2							
STU	e P	Z	18:17:40.3	56.8	239.8	1.4	142	5.8		
	e S	R	18:25:36.7							
BUG	e P	Z	18:17:43.0	57.2	236.4	1.3	169	5.9		
FUR	e P	Z	18:17:47.0	57.7	242.1	1.5	394	6.2		
	e S	R	18:25:47.3							
IBBN	e P	Z	18:17:48.3	57.9	236.4	1.2	206	6.0		
UBBA	e P	Z	18:17:50.8	58.3	239.4	1.8	172	5.8		
GRA1	e P	Z	18:17:51.2	58.4	241.2	1.3	211	5.8		
	e S	R	18:25:57.5							
	e L	Z	18:42:11.7			18.1	11072		6.0	
CLZ	e P	Z	18:17:55.7	59.0	239.3	1.9	138	5.5		
MOX	e P	Z	18:17:56.7	59.1	241.1	1.9	254	5.7		
	e S	R	18:26:06.6							
GUNZ	e P	Z	18:17:58.5	59.4	241.9	1.6	195	5.7		
WERD	e P	Z	18:17:58.3	59.4	241.8	1.5	131	5.5		
TANN	e S	R	18:26:12.4	59.5	242.0					
GEC2	e P	Z	18:17:58.6	59.5	244.0	2.1	236	6.1		
	e S	R	18:26:10.4							
BSEG	e P	Z	18:18:03.1	60.1	238.2	1.6	457	6.5		
CLL	i P	- Z	18:18:03.6	60.2	242.1	2.1	253	5.9		
	e S	R	18:26:20.4							
	e SSS	T	18:33:01.8							
	e LR	Z	18:35:45.5							
	e L	Z	18:39:12.9			22.0	16738		6.1	
BRG	e P	Z	18:18:06.1	60.5	243.2	2.0	273	6.0		
	e S	R	18:26:25.5							
RUE	e P	Z	18:18:09.9	61.2	242.2	1.2	222	6.2		

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/17

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	10:07:39.5							

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/17 13:54:03.4 5.373S 151.382E 33N 5.1 NEIC  
 New Britain region, Papua New Guinea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 14:12:59.3	124.5	50.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/17	21:13:22.6	18.466N	96.104W	33.0N	5.6			SZGRF
2004/01/17	21:13:09.5	17.815N	95.395W	106D	5.1			NEIC

Veracruz, Mexico

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:25:43.3	86.7	294.0	1.9	102	5.6		
	e pP	Z 21:26:12.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/18	06:28: 4.2	15.116N	30.732E	33.0N	4.2			SZGRF

Sudan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 06:35:19.8	38.0	148.5	1.2	6	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/18								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKP	Z 12:53:19.0							
CLL	e PKP	Z 12:53:18.5							
TANN	e PKP	Z 12:53:20.9							
WERD	e PKP	Z 12:53:21.0							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/18	18:16:24.6	43.280N	145.460E	43.1	5.1			SZGRF
2004/01/18	18:16:23.5	42.833N	144.943E	42D	5.0	4.5		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 18:28:06.7	75.7	32.6	0.8	21	5.3		
RUE	e P	Z 18:28:07.1	75.8	34.7	1.0	30	5.4		
	e pP	Z 18:28:19.4							
NRDL	e P	Z 18:28:13.6	77.0	32.3	1.0	14	5.0		
CLL	e P	Z 18:28:13.7	77.0	34.0	0.9	30	5.4		
	e pP	Z 18:28:26.0							

BRG	e P	Z	18:28:14.0	77.1	34.6	0.9	8	4.9
CLZ	e P	Z	18:28:16.9	77.5	32.4	0.8	19	5.3
IBBN	e P	Z	18:28:18.8	77.9	30.6	0.9	27	5.4
	e pP	Z	18:28:31.2					
WERD	e P	Z	18:28:19.3	78.0	33.5	0.9	6	4.7
GUNZ	e P	Z	18:28:19.8	78.1	33.5	0.9	9	4.9
MOX	e P	Z	18:28:19.7	78.1	33.0	0.9	10	4.9
GEC2	e P	Z	18:28:23.9	78.8	34.2	0.9	7	4.7
BUG	e P	Z	18:28:23.6	78.8	30.2	1.0	17	5.1
GRA1	e P	Z	18:28:25.0	79.0	32.7	0.9	25	5.2
FUR	e P	Z	18:28:32.2	80.3	32.6	1.0	29	5.2
	e pP	Z	18:28:44.6					
STU	e P	Z	18:28:33.0	80.5	31.3	0.8	13	5.0
BFO	e P	Z	18:28:36.5	81.2	30.6	1.1	13	4.9

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/18 20:36:40.1 31.960S 178.826W 84\* 5.3 NEIC  
 South of Kermadec Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 20:57:13.4	160.7	26.7					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/19 07:23: 2.1 84.130N 96.560E 33.0N 5.5 4.9 SZGRF  
 2004/01/19 07:22:53.0 84.494N 105.122E 10G 5.6 5.2 NEIC  
 North of Severnaya Zemlya

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 07:30:03.2	36.9	9.2	2.2	461	5.9		
NRDL	e P	Z 07:30:15.3	38.3	8.9	1.4	112	5.4		
IBBN	e P	Z 07:30:18.7	38.7	8.7	2.3	415	5.7		
CLZ	e P	Z 07:30:21.0	38.9	8.8	1.2	113	5.5		
CLL	i P	+ Z 07:30:22.2	39.2	8.7	1.5	98	5.2		
	e PP	Z 07:31:54.3							
	e PcP	Z 07:32:29.2							
	e S	Z 07:36:27.0							
	e LR	Z 07:41:45.8							
	e L	Z 07:45:29.3			21.4	1247		4.7	
BRG	e P	Z 07:30:25.0	39.6	8.7	2.2	298	5.5		
BUG	e P	Z 07:30:26.4	39.6	8.6	1.1	108	5.4		
MOX	e P	Z 07:30:29.4	40.0	8.6	1.2	104	5.3		
WERD	e P	Z 07:30:30.3	40.1	8.5	1.9	226	5.5		
GUNZ	e P	Z 07:30:31.1	40.2	8.5	2.3	520	5.8		
TNS	e P	Z 07:30:35.4	40.7	8.4	1.2	59	5.1		
GRA1	e P	Z 07:30:37.6	41.0	8.4	1.1	110	5.4		



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Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 20:20:41.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/21								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:34:11.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/21	01:23:3.1	44.300N	157.479E	33.0N	4.5			SZGRF
North Pacific Ocean								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:35:17.6	81.5	23.7	0.8	3	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/21	04:58:06.6	15.314S	173.140W	33N	4.8			NEIC
Tonga								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 05:17:40.3	145.4	7.4					
	e (pPKP)	Z 05:17:52.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/21	12:24:14.5	9.736S	159.632E	113?	5.2			NEIC
Solomon Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 12:43:16.3	132.2	44.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/22	04:15:42.8	17.232S	176.966W	33N	5.0	5.0		NEIC
Fiji region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 04:35:22.5	146.9	14.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/22	05:30:0.2	34.848N	8.279E	33.0N				SZGRF
2004/01/22	05:30:12.0	36.615N	8.213E	10G	4.3			NEIC

Tunisia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:33:35.4	13.3	190.6	1.0	10			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/22	11:34:00.6	7.853N	126.455E	66D	5.2			NEIC

Samar, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:47:39.3	99.7	65.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/22								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 15:26:28.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/22	21:19:17.4	29.506N	53.912E	33.0N	4.3			SZGRF
2004/01/22	21:19:32.0	29.620N	51.220E	33N	4.6			NEIC

Southern Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:26:31.5	36.1	108.6	1.0	6	4.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	00:49:12.4	17.494S	167.252E	33N	5.2	4.7		NEIC

Vanuatu Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
FUR	e PKP	Z 01:08:42.8	143.6	40.9					
WLF	e PKP	Z 01:08:44.9	144.4	32.1					
BFO	e PKP	Z 01:08:45.3	144.7	36.4					

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	03:39:12.7	18.811N	146.901E	60*	5.0			NEIC

Pagan region, N. Mariana Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PP	Z 03:56:51.3	101.3	42.5					
	e PS	Z 04:06:00.7							
	e SS	T 04:11:17.9							
	e LR	Z 04:29:04.3							
	e L	Z 04:40:48.1			20.0	799		5.2	
GRA1	e PP	Z 03:57:10.1	99.4	43.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	05:01:26.8	15.659S	63.923W	33.0N	5.4			SZGRF
2004/01/23	05:00:30.8	22.991S	69.864W	71D	5.5			NEIC

Central Bolivia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e pPdiff	Z 05:14:35.6	101.9	248.3	1.4	31	5.4		
	e sPdiff	05:14:43.5							
CLL	e pPdiff	Z 05:14:43.7	103.3	250.0					
	e sPdiff	Z 05:14:53.0							
	e SP	Z 05:27:36.2							
	e LR	Z 05:50:11.0							
	e L	Z 05:59:28.3			21.2	272		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	06:49:56.3	58.790S	141.120W	33.0N		5.4		SZGRF
2004/01/23	06:49:56.3	58.389S	139.719W	10G				NEIC

Pacific-Antarctic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e PKPdf	Z 07:09:53.5	158.4	233.1					
	e PKPab	Z 07:10:27.5							
BFO	e PKPdf	Z 07:09:53.0	158.7	229.9					
STU	e PKPdf	Z 07:09:54.0	159.4	230.4					
	e PKPab	Z 07:10:31.7							
TNS	e PKPdf	Z 07:09:55.0	160.0	233.8					
	e PKPab	Z 07:10:34.2							
BUG	e PKPdf	Z 07:09:55.0	160.0	236.8					
	e PP	Z 07:14:16.4							
FUR	e PKPdf	Z 07:09:55.2	160.1	228.3					
	e PKPab	Z 07:10:34.5							
IBBN	e PKPdf	Z 07:09:55.5	160.8	238.8					
	e PKPab	Z 07:10:37.4							

	e PP	Z	07:14:20.5								
GRA1	e PKPdf	Z	07:09:55.6	161.1	231.6						
	e PP	Z	07:14:22.5								
	e L	Z	08:29:31.7			20.5		511		5.4	
UBBA	e PKPdf	Z	07:09:54.3	161.1	234.7						
GEC2	e PKPdf	Z	07:09:56.0	161.8	228.5						
	e PKPab	Z	07:10:41.5								
MOX	e PKPdf	Z	07:09:55.4	161.8	233.7						
CLZ	e PKPdf	Z	07:09:56.6	161.9	237.1						
GUNZ	e PKPdf	Z	07:09:56.4	162.0	232.8						
	e PKPab	Z	07:10:43.0								
NRDL	e PKPdf	Z	07:09:55.2	162.1	238.9						
	e PKPab	Z	07:10:43.5								
	e PP	Z	07:14:28.1								
CLL	e PKPdf	Z	07:09:57.3	162.9	234.9	1.4		31			
	e PKPab	Z	07:10:47.7			1.2		40			
	e PP	Z	07:14:33.5								
	e SS	Z	07:35:24.3								
	e SSS	R	07:41:27.6								
	e LR	Z	08:07:14.5								
	e L	Z	08:24:27.5			20.0		530		5.4	
BRG	e PKPdf	Z	07:09:57.0	163.2	233.4						
RUE	e PKPdf	Z	07:09:57.8	164.0	237.9						
	e PKPab	Z	07:10:51.7								

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	09:01:18.1	35.978N	145.565E	60.6	5.3			SZGRF
2004/01/23	09:01:31.0	37.214N	140.935E	65D	5.2			NEIC

Off east coast of Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA3	e pP	Z 09:14:04.9	82.3	38.2					
GRA1	e P	Z 09:13:48.4	82.4	38.2	1.1	31	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23	17:03:11.3	48.725N	156.609E	33.0N	5.3			SZGRF
2004/01/23	17:03:17.1	49.555N	155.744E	48D	5.0	4.7		NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:15:02.3	76.2	22.8	1.1	26	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2004/01/23	22:11:14.9	36.754N	69.618E	33.0N					SZGRF
2004/01/23	22:11:18.2	36.800N	68.644E	33N	4.8				NEIC

Hindu Kush, Afghanistan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:19:13.7	42.6	85.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/23								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e (P)	Z 22:41:56.2							
	e	22:42:04.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:46:23.0							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24	13:01:45.5	51.950N	30.560W	33.0N	5.8	5.4		SZGRF
2004/01/24	13:01:45.7	52.093N	30.190W	10G	5.7	5.5		NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 13:06:48.5	22.8	290.1					
	e S	N 13:10:57.5							
BUG	e P	Z 13:06:49.3	22.9	286.5	1.9	1189	6.1		
	e S	N 13:11:00.5							
IBBN	e P	Z 13:06:50.5	23.0	284.7					
	e S	N 13:11:02.0							
TNS	e P	Z 13:07:01.5	24.0	289.5	1.4	498	5.8		
	e S	N 13:11:21.5							
BSEG	e P	Z 13:07:01.6	24.1	282.3	2.2	1330	6.1		
BFO	e P	Z 13:07:06.6	24.6	293.4	1.2	190	5.7		
	e S	N 13:11:28.9							
CLZ	e P	Z 13:07:07.5	24.7	286.8	1.3	291	5.9		
	e S	N 13:11:31.5							
STU	e P	Z 13:07:09.8	25.0	292.7	1.1	181	5.7		
MOX	e P	Z 13:07:17.2	25.8	289.6	1.1	170	5.6		
GRA1	e P	Z 13:07:18.5	25.9	291.4	1.5	471	5.9		
	e L	Z 13:16:28.4			19.4	10414		5.4	

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WERD	e P	Z	13:07:21.2	26.3	290.3					
GUNZ	e P	Z	13:07:22.0	26.3	290.4	1.3	180	5.6		
CLL	e P	Z	13:07:22.6	26.4	288.9	1.1	288	5.9		
	e L	Z	13:16:50.6			18.7	10276		5.4	
RUE	e P	Z	13:07:23.4	26.5	286.9					
FUR	e P	Z	13:07:23.9	26.5	294.3	2.0	1074	6.2		
BRG	e P	Z	13:07:28.9	27.1	290.0	1.1	148	5.6		
GEC2	e P	Z	13:07:34.8	27.7	293.6	1.5	187	5.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24	16:40:38.1	50.310N	86.790E	33.0N	5.2			SZGRF
2004/01/24	16:40:32.1	50.207N	87.235E	10G	5.0			NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 16:48:41.0	43.9	62.2					
BRG	e P	Z 16:48:46.2	44.6	60.8	0.8	11	4.7		
CLL	i P	Z 16:48:48.8	44.9	60.8	0.6	38	5.5		
	e PP	Z 16:50:30.9							
BSEG	e P	Z 16:48:50.3	45.1	61.7	0.7	28	5.3		
WERD	e P	Z 16:48:55.4	45.7	59.7					
GUNZ	e P	Z 16:48:55.8	45.7	59.7					
GEC2	e P	Z 16:48:55.7	45.7	59.0	1.6	29	5.1		
MOX	e P	Z 16:48:57.6	46.0	59.6	0.8	15	5.1		
CLZ	e P	Z 16:48:58.3	46.0	60.0	0.6	10	5.0		
GRA1	e P	Z 16:49:03.4	46.7	58.6	1.4	50	5.5		
IBBN	e P	Z 16:49:07.0	47.2	59.1					
FUR	e P	Z 16:49:09.1	47.5	57.4	0.8	39	5.6		
BUG	e P	Z 16:49:13.1	47.9	58.1					
TNS	e P	Z 16:49:13.0	47.9	57.8	0.9	15	5.1		
STU	e P	Z 16:49:15.8	48.3	57.0	1.3	47	5.5		
BFO	e P	Z 16:49:20.9	49.0	56.3	1.5	27	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24	20:50:54.3	1.291S	94.720E	37.9	4.9			SZGRF

Southwest of Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:03:35.7	86.8	95.8	0.8	7	4.9		
	e pP	Z 21:03:46.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24	21:46: 5.9	23.180S	168.660E	33.0N				SZGRF

New Caledonia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z	22:05:38.7	145.0	42.9					
BSEG	e PKPbc	Z	22:05:38.6	145.2	36.5					
BRG	e PKPbc	Z	22:05:42.1	146.1	44.7					
CLL	e PKPbc	Z	22:05:41.5	146.2	42.9					
CLZ	e PKPbc	Z	22:05:43.3	146.8	38.4					
WERD	e PKPbc	Z	22:05:45.2	147.1	42.8					
GUNZ	e PKPbc	Z	22:05:46.1	147.2	42.9					
MOX	e PKPbc	Z	22:05:45.8	147.3	41.5					
IBBN	e PKPbc	Z	22:05:46.1	147.4	34.0					
GEC2	e PKPbc	Z	22:05:46.6	147.6	46.6					
GRA1	e PKPbc	Z	22:05:48.3	148.1	41.9					
TNS	e PKPbc	Z	22:05:50.6	148.9	37.0					
FUR	e PKPbc	Z	22:05:50.6	149.2	43.7					
STU	e PKPbc	Z	22:05:52.0	149.7	39.7					
WLF	e PKPbc	Z	22:05:54.6	150.2	33.7					
BFO	e PKPbc	Z	22:05:53.4	150.4	38.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/24								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	23:39:39.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/25	11:43:10.3	18.590S	175.050W	140.2				SZGRF
2004/01/25	11:43:11.8	16.840S	174.168W	130D	6.5			NEIC

Tonga Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
HLG	e pPKPbc	Z	12:03:07.3	142.6	3.2					
IBBN	e PKPbc	Z	12:02:32.4	144.5	3.2					
	e pPKPbc	Z	12:03:09.4							
CLZ	e PKPbc	Z	12:02:33.7	144.8	7.6					
	e pPKPbc	Z	12:03:10.4							
CLL	i PKPdf	Z	12:02:33.0	145.1	12.0					
	i PKPbc	Z	12:02:33.8			1.2	1438			
	e pPKPbc	Z	12:03:11.3							
	e PP	Z	12:05:51.0							
	e SKKSac	N	12:12:32.7							
	e SKKPbc	Z	12:14:06.6							
	e PPS	N	12:18:25.3							
	e SS	T	12:24:31.5							

	e sSS	T	12:25:25.2									
	e SSS	T	12:30:06.8									
	e sSSS	T	12:31:10.8									
	e SSSS	N	12:34:01.7									
	e LQ	T	12:43:44.8									
	e LR	Z	12:51:55.7									
	e L	Z	13:06:47.6			22.0		4771		6.2		
BRG	e PKPbc	Z	12:02:35.1	145.4	13.7							
BUG	e PKPbc	Z	12:02:35.1	145.4	2.4							
UBBA	e pPKPbc	Z	12:03:12.6	145.9	7.1							
MOX	e PKPbc	Z	12:02:36.9	145.9	9.9							
WERD	e PKPdf	Z	12:02:35.8	146.0	11.1							
	e PKPbc	Z	12:02:37.4									
	e pPKPbc	Z	12:03:13.6									
GUNZ	e PKPdf	Z	12:02:36.1	146.1	11.2							
	e PKPbc	Z	12:02:37.7									
TNS	e PKPdf	Z	12:02:36.7	146.6	4.5							
	e PKPbc	Z	12:02:39.0									
GRA1	e PKPdf	Z	12:02:37.2	146.9	9.5							
	e PKPbc	Z	12:02:40.2									
	e pPKPbc	Z	12:03:16.3									
GRFO	e PKPdf	Z	12:02:37.7	146.9	9.5							
	e PKPbc	Z	12:02:40.3									
WLF	e PKPdf	Z	12:02:38.2	147.2	0.6							
	e PKPbc	Z	12:02:41.3									
	e pPKPbc	Z	12:03:18.2									
GEC2	e PKPdf	Z	12:02:38.2	147.4	14.1							
STU	e PKPdf	Z	12:02:39.1	148.0	6.1							
	e PKPbc	Z	12:02:43.1									
	e pPKPbc	Z	12:03:20.6									
FUR	e PKPdf	Z	12:02:39.6	148.4	10.0							
	e PKPbc	Z	12:02:44.3									
	e pPKPbc	Z	12:03:21.4									
BFO	e PKPdf	Z	12:02:39.7	148.4	4.6							
	e PKPbc	Z	12:02:44.1									

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/25 15:12:27.9 49.419N 127.519W 10G 5.3 4.7  
 Vancouver Isl., Canada region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:24:10.4	75.1	333.5					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2004/01/25 21:20:47.5 48.512N 155.306E 33.0N 5.1  
 SZGRF

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2004/01/25 21:20:52.1 49.506N 155.718E 48D 4.9 NEIC  
Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:32:37.7	76.2	22.8	1.0	16	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/26	08:11:09.3	22.230S	169.483E	33N	5.1			NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:30:50.5	147.6	39.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/26	10:27: 8.1	51.220N	176.030E	33.0N	5.5			SZGRF
2004/01/26	10:27:07.0	51.207N	178.050E	33N	5.3	5.0		NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 10:38:44.1	74.4	7.9	1.2	89	5.7		
RUE	e P	Z 10:38:50.0	75.5	10.1					
NRDL	e P	Z 10:38:52.6	75.8	7.8	1.2	36	5.4		
IBBN	e P	Z 10:38:54.4	76.2	6.2					
CLZ	e P	Z 10:38:55.7	76.4	7.9	1.2	73	5.7		
CLL	e P	Z 10:38:56.8	76.7	9.6	1.4	35	5.3		
BRG	e P	Z 10:38:58.5	77.0	10.1	1.9	68	5.5		
MOX	e P	Z 10:39:01.6	77.5	8.7	1.3	38	5.4		
WERD	e P	Z 10:39:02.2	77.6	9.1	1.6	50	5.4		
GUNZ	e P	Z 10:39:03.0	77.7	9.1					
TNS	e P	Z 10:39:05.8	78.2	6.6	1.7	78	5.6		
GRA1	e P	Z 10:39:07.4	78.5	8.4	1.4	111	5.7		
GEC2	e P	Z 10:39:10.5	79.1	9.9	1.6	61	5.4		
STU	e P	Z 10:39:13.2	79.6	7.1	1.2	47	5.3		
FUR	e P	Z 10:39:15.4	80.0	8.4	1.4	93	5.5		
BFO	e P	Z 10:39:15.7	80.1	6.5	1.8	60	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/26	22:59:16.2	20.550S	174.500W	33.0N				SZGRF

Tonga Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 23:18:53.4	146.4	8.2					
RUE	e PKPbc	Z 23:18:56.5	147.4	14.5					

IBBN	e	PKPbc	Z	23:18:58.3	148.2	4.0
CLL	e	PKPbc	Z	23:18:59.7	148.7	13.6
BRG	e	PKPbc	Z	23:19:00.9	149.0	15.5
MOX	e	PKPbc	Z	23:19:02.2	149.5	11.3
WERD	e	PKPbc	Z	23:19:02.2	149.6	12.7
GUNZ	e	PKPbc	Z	23:19:02.8	149.7	12.8
TNS	e	PKPbc	Z	23:19:03.7	150.2	5.6
GRA1	e	PKPbc	Z	23:19:04.6	150.5	10.9
WLF	e	PKPbc	Z	23:19:05.8	150.9	1.3
GEC2	e	PKPbc	Z	23:19:05.5	151.0	16.0
FUR	e	PKPbc	Z	23:19:08.0	152.0	11.6
BFO	e	PKPbc	Z	23:19:08.7	152.1	5.7

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/27	04:20:14.6	35.040N	139.080E	79.8	5.1			SZGRF
2004/01/27	04:20:01.1	32.577N	140.298E	80D	5.3			NEIC

Near south coast of eastern Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	04:32:20.6	83.3	40.6					
BRG	e P	Z	04:32:24.8	84.1	43.0					
CLL	i P	- Z	04:32:25.0	84.2	42.4	1.0	39	5.6		
	e pP	Z	04:32:46.1							
	e PP	Z	04:35:40.2							
	e S	T	04:42:45.6							
	e L	Z	05:10:40.6			21.0	107		4.2	
NRDL	e P	Z	04:32:26.6	84.5	40.3					
CLZ	e P	Z	04:32:28.7	84.9	40.5	1.1	22	5.1		
WERD	e P	Z	04:32:29.9	85.1	41.8					
GUNZ	e P	Z	04:32:30.2	85.2	41.8					
MOX	e P	Z	04:32:30.4	85.3	41.3					
IBBN	e P	Z	04:32:31.8	85.5	38.5					
GEC2	e P	Z	04:32:32.7	85.7	42.7	1.2	16	5.0		
GRA1	e P	Z	04:32:35.4	86.2	41.0	1.3	35	5.3		
	e pP	Z	04:32:56.7							
TNS	e P	Z	04:32:38.7	86.9	38.9	1.5	15	5.0		
FUR	e P	Z	04:32:41.5	87.3	40.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/27	06:10:46.4	37.140N	142.096E	33.0N	4.9			SZGRF
2004/01/27	06:10:55.5	37.034N	141.002E	107	4.8			NEIC

Off east coast of Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	06:23:08.4	82.6	38.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/27	09:50:40.4	56.000N	158.590W	33.0N	5.7			SZGRF
2004/01/27	09:50:52.0	56.885N	156.783W	76D	5.3			NEIC

Alaska Peninsula, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
HLG	e P	Z 10:01:47.5	68.2	351.1	0.9	100	6.1		
RGN	e P	Z 10:01:47.6	68.3	354.2	0.8	82	6.0		
BSEG	e P	Z 10:01:50.1	68.7	352.5	1.0	52	5.7		
IBBN	e P	Z 10:01:58.7	70.1	351.1	0.8	68	5.8		
NRDL	e P	Z 10:01:58.6	70.1	352.4	0.9	51	5.7		
RUE	e P	Z 10:02:00.2	70.4	354.5	0.8	59	5.7		
CLZ	e P	Z 10:02:03.0	70.8	352.6	0.9	53	5.7		
CLL	e P	Z 10:02:06.5	71.5	354.1	0.8	34	5.5		
BRG	e P	Z 10:02:09.7	72.0	354.7	1.0	37	5.5		
MOX	e P	Z 10:02:10.3	72.0	353.4	0.8	58	5.8		
TNS	e P	Z 10:02:11.4	72.2	351.6	0.8	53	5.7		
WERD	e P	Z 10:02:11.7	72.3	353.8	0.9	22	5.3		
GUNZ	e P	Z 10:02:12.3	72.4	353.8	0.9	30	5.4		
WLF	e P	Z 10:02:13.6	72.5	350.3	0.8	56	5.8		
GRA1	e P	Z 10:02:16.0	73.0	353.2	0.7	57	5.8		
STU	e P	Z 10:02:20.0	73.7	352.1	0.7	50	5.6		
GEC2	e P	Z 10:02:21.6	74.0	354.6	0.7	44	5.6		
BFO	e P	Z 10:02:22.0	74.1	351.6	0.7	31	5.4		
FUR	e P	Z 10:02:24.6	74.5	353.3	0.6	96	6.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/27	16:00:37.8	17.790S	71.013W	57D	5.3			NEIC

Near the coast of Peru

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e Pdiff	Z 16:14:16.8	100.0	254.2					
	e pPdiff	Z 16:14:32.7							
	e PP	Z 16:18:24.8							
	e SKSac	R 16:24:56.0							
	e SP	Z 16:27:17.3							
	e SS	R 16:32:57.1							
	e LR	Z 16:48:31.9							
	e L	Z 16:55:06.0			22.0	1691		5.5	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/27	17:02:45.4	43.800N	149.539E	33.0N	5.5			SZGRF

2004/01/27 17:02:48.1 44.492N 148.989E 33N 5.3 4.6 NEIC  
East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 17:14:30.4	75.5	29.1	0.9	41	5.5		
RUE	e P	Z 17:14:31.6	75.7	31.2					
NRDL	e P	Z 17:14:37.8	76.8	28.8					
CLL	e P	Z 17:14:38.2	76.9	30.6					
BRG	e P	Z 17:14:38.9	77.0	31.2					
CLZ	e P	Z 17:14:41.1	77.3	28.9	1.0	77	5.8		
IBBN	e P	Z 17:14:42.5	77.6	27.2					
WERD	e P	Z 17:14:44.1	77.9	30.0					
MOX	e P	Z 17:14:44.3	77.9	29.6					
GUNZ	e P	Z 17:14:44.5	78.0	30.0					
UBBA	e P	Z 17:14:45.0	78.3	28.6					
GEC2	e P	Z 17:14:49.1	78.8	30.8	0.8	23	5.1		
GRA1	e P	Z 17:14:50.1	78.9	29.3	1.0	105	5.7		
TNS	e P	Z 17:14:51.7	79.3	27.5	1.0	34	5.2		
FUR	e P	Z 17:14:56.8	80.2	29.1	1.1	87	5.7		
STU	e P	Z 17:14:57.5	80.3	27.8	0.9	49	5.5		
WLF	e P	Z 17:14:58.8	80.4	25.9					
BFO	e P	Z 17:15:00.9	81.0	27.2	1.0	27	5.3		

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/27

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 18:42:37.1							
	e	18:44:18.9							

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/28 01:15:49.7 14.987N 99.164E 33.0N 4.7 SZGRF  
2004/01/28 01:16:17.9 17.350N 94.360E 35D 5.0 NEIC  
Myanmar

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:27:41.4	72.5	83.6					

Date Origin Time Lat Long Depth mb Ms ML Source  
2004/01/28 02:50:39.6 18.290N 120.330E 33.0N 5.0 SZGRF  
2004/01/28 02:49:53.6 9.836N 126.046E 33N 5.2 NEIC  
Luzon, Philippine Islands



Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	03:03:14.5	95.3	66.3					
BRG	e P	Z	03:03:16.8	95.8	66.6	1.1	8	4.8		
CLL	e P	Z	03:03:18.1	96.2	65.8	1.3	10	4.8		
BSEG	e P	Z	03:03:20.0	96.5	63.3	1.1	20	5.2		
GEC2	e P	Z	03:03:21.3	96.8	66.6	0.9	12	5.0		
GUNZ	e P	Z	03:03:22.2	97.0	65.3					
MOX	e P	Z	03:03:23.4	97.3	64.7					
NRDL	e P	Z	03:03:23.8	97.3	63.3					
CLZ	e P	Z	03:03:24.6	97.4	63.6	1.0	16	5.3		
GRA1	e P	Z	03:03:27.2	97.9	64.5					
IBBN	e P	Z	03:03:30.2	98.6	61.4					
TNS	e P	Z	03:03:33.0	99.3	62.2					
WLF	e P	Z	03:03:40.6	100.8	60.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28	09:06:51.1	26.400N	56.590E	33.0N	5.1	4.5		SZGRF
2004/01/28	09:06:49.1	26.887N	57.525E	26D	5.2	5.0		NEIC

Southern Iran

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z	09:14:23.4	40.2	106.8	1.6	84	5.1		
	e PcP	Z	09:16:27.5							
BRG	e P	Z	09:14:27.2	40.7	109.3	1.0	18	4.8		
	e PcP	Z	09:16:29.2							
CLL	i P	+ Z	09:14:33.6	41.4	108.9	1.5	82	5.3		
	e pP	Z	09:14:41.2							
	e PP	Z	09:16:09.4							
	e PcP	Z	09:16:31.5							
	e S	T	09:20:46.7							
	e SS	Z	09:23:51.7							
	e LQ	T	09:27:07.6							
	e LR	Z	09:30:31.1							
	e L	Z	09:36:10.1			20.0	576		4.4	
FUR	e P	Z	09:14:34.0	41.6	103.8	1.0	53	5.2		
GRA1	e P	Z	09:14:38.2	42.0	105.4	1.6	238	5.7		
	e L	Z	09:36:36.7			18.4	597		4.5	
MOX	e P	Z	09:14:38.2	42.0	106.8	1.6	21	4.6		
RGN	e P	Z	09:14:41.6	42.3	112.6					
UBBA	e P	Z	09:14:46.0	43.0	105.4					
STU	e P	Z	09:14:45.6	43.0	102.5					
CLZ	e P	Z	09:14:47.9	43.1	106.8					
NRDL	e P	Z	09:14:50.6	43.4	107.2					
TNS	e P	Z	09:14:53.7	43.8	103.3	1.4	94	5.3		
WLF	e P	Z	09:15:03.9	45.2	100.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28								
	Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb MS ML
	GRA1	e P	Z 18:01:25.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28	19:13:35.3	23.861N	120.806E	33.0N	5.1			SZGRF
2004/01/28	19:13:29.7	22.903N	121.003E	33N	4.7	5.2		NEIC
Taiwan								
	Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb MS ML
	GRA1	e P	Z 19:26:01.1	84.5	60.5	1.8	32	5.3

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28	20:09:19.0	45.312N	5.375E	10.0G			3.4	SZGRF
France								
	Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb MS ML
	BFO	e Pn	Z 20:10:15.3	3.6	214.9			3.4
		e Sg	E 20:11:14.1					
	STU	e Sg	N 20:11:36.3	4.3	218.4			
	WLF	e Sg	Z 20:11:37.5	4.4	187.2			
	FUR	e Sg	N 20:11:56.4	4.9	237.0			
	TNS	e Sg	E 20:12:09.8	5.3	204.0			
	GRA1	e Sg	E 20:12:26.3	5.9	224.2			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28								
	Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb MS ML
	GRA1	e PKP	Z 21:14:23.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/28	22:15:35.8	0.816N	130.784E	33.0N		6.5		SZGRF
2004/01/28	22:15:31.2	3.131S	127.420E	21	6.0	6.5		NEIC
Irian Jaya, Indonesia, region								
	Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb MS ML
	CLL	e Pdiff	Z 22:29:52.8	107.5	72.5			

	e PP	Z	22:34:25.7								
	e SKSac	R	22:40:28.1								
	e Sdiff	T	22:41:55.4								
	e SP	Z	22:43:37.9								
	e PPS	E	22:44:42.1								
	e PKKPab	Z	22:45:25.6								
	e SS	R	22:49:34.2								
	e SSS	R	22:53:31.5								
	e L	Z	23:28:08.1			20.0	18635			6.6	
GRA1	e Pdiff	Z	22:29:54.7	109.1	71.4						
	e PP	Z	22:34:22.4								
	e SP	Z	22:43:50.7								
	e SS	E	22:50:04.3								
	e L	Z	23:27:26.7			20.9	15411			6.5	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/29	03:52:48.8	51.500S	118.500W	33.0N		6.0		SZGRF
2004/01/29	03:52:52.0	50.255S	114.822W	10G	5.3	6.0		NEIC

Southern East Pacific Rise

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
STU	e PKPbc	Z 04:12:28.5	144.5	245.8					
TNS	e PKPbc	Z 04:12:28.2	144.6	247.4					
IBBN	e PKPbc	Z 04:12:27.8	145.0	249.8					
FUR	e PKPbc	Z 04:12:30.4	145.5	245.8					
UBBA	e PKPbc	Z 04:12:30.6	145.8	248.9					
GRA1	e PKPbc	Z 04:12:32.3	146.1	247.8					
	e SS	E 04:34:56.2							
	e L	Z 05:09:19.4			21.8	2806		6.0	
CLZ	e PKPbc	Z 04:12:33.4	146.3	250.5					
NRDL	e PKPbc	Z 04:12:33.8	146.4	251.3					
MOX	e PKPbc	Z 04:12:33.3	146.7	249.3					
BSEG	e PKPbc	Z 04:12:33.8	146.9	253.5					
GUNZ	e PKPbc	Z 04:12:33.5	147.0	249.2					
WERD	e PKPbc	Z 04:12:34.0	147.0	249.4					
GEC2	e PKPbc	Z 04:12:34.4	147.2	247.6					
CLL	e PKPbc	Z 04:12:38.3	147.7	250.9					
	e PP	Z 04:16:06.4							
	e SS	R 04:35:22.5							
	e SSS	R 04:40:48.3							
	e LR	Z 05:03:20.1							
	e L	Z 05:11:03.5			22.0	1942		5.8	
BRG	e PKPbc	Z 04:12:36.7	148.1	250.7					
RUE	e PKPbc	Z 04:12:40.1	148.5	253.1					

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/29	09:48:43.7	6.275N	126.887E	218	5.7			NEIC

Mindanao, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e Pdiff	Z 10:01:58.4	98.7	67.6					
BRG	e Pdiff	Z 10:02:01.0	99.2	68.0					
CLL	e Pdiff	Z 10:02:02.0	99.6	67.2					
BSEG	e Pdiff	Z 10:02:02.8	100.0	64.5					
GEC2	e Pdiff	Z 10:02:05.0	100.1	68.1					
WERD	e Pdiff	Z 10:02:05.7	100.3	66.7					
GUNZ	e Pdiff	Z 10:02:06.3	100.3	66.8					
	e PP	Z 10:06:09.6							
NRDL	e Pdiff	Z 10:02:08.2	100.7	64.6					
CLZ	e Pdiff	Z 10:02:08.8	100.8	64.9					
GRA1	e Pdiff	Z 10:02:09.8	101.3	66.0					
	e PP	Z 10:06:19.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/29	20:10:48.9	19.347S	172.806W	33.0N		5.6		SZGRF
2004/01/29	20:10:44.4	20.853S	174.163W	33N	5.1	5.5		NEIC

Tonga Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 20:30:23.3	146.7	7.6					
RUE	e PKPbc	Z 20:30:26.4	147.8	14.0					
CLZ	e PKPbc	Z 20:30:29.0	148.8	8.2					
CLL	e PKPbc	Z 20:30:29.8	149.0	13.1					
BRG	e PKPbc	Z 20:30:30.5	149.3	15.0					
UBBA	e PKPbc	Z 20:30:32.3	149.9	7.8					
WERD	e PKPbc	Z 20:30:32.2	150.0	12.1					
GUNZ	e PKPbc	Z 20:30:32.5	150.0	12.2					
TNS	e PKPbc	Z 20:30:33.5	150.6	5.0					
GRA1	e PKPbc	Z 20:30:34.5	150.8	10.4					
	e L	Z 21:43:51.8			20.5	935		5.6	
FUR	e PKPbc	Z 20:30:37.9	152.3	11.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/30	01:37:57.4	18.341S	175.588W	100G	4.7			NEIC

Tonga

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPbc	Z 01:57:27.2	146.3	14.8					
BRG	e PKPbc	Z 01:57:28.8	146.6	16.6					
GRA1	e PKPbc	Z 01:57:32.8	148.2	12.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/30	13:25:35.7	35.995N	72.213E	33.0N	4.6			SZGRF
2004/01/30	13:25:43.4	36.739N	71.063E	33N	4.9			NEIC

Pakistan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 13:33:51.5	44.2	83.4	0.9	6	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/30	15:53:28.0	27.610N	145.410E	33.0N	5.1			SZGRF
2004/01/30	15:53:32.5	27.744N	142.819E	33N	4.8			NEIC

North Pacific Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:06:36.7	91.4	41.5	1.2	9	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/30	17:51:44.9	44.850N	150.330E	33.0N	5.7	4.7		SZGRF
2004/01/30	17:51:45.5	44.682N	150.035E	39	5.4			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 18:03:28.2	75.6	28.3	1.2	105	5.8		
RUE	e P	Z 18:03:29.6	75.8	30.5	1.2	231	6.2		
NRDL	e P	Z 18:03:35.5	76.9	28.0	1.3	80	5.7		
CLL	i P	+ Z 18:03:36.3	77.1	29.8	1.1	144	6.0		
	e pP	Z 18:03:47.8							
	e (S)	Z 18:13:50.1							
	e SS	Z 18:18:25.8							
	e L	Z 18:39:52.1			22.0	414		4.7	
BRG	e P	Z 18:03:37.0	77.2	30.4	1.2	60	5.6		
CLZ	e P	Z 18:03:38.8	77.4	28.1	1.3	183	6.1		
IBBN	e P	Z 18:03:40.3	77.7	26.4	1.2	122	5.9		
WERD	e P	Z 18:03:42.0	78.0	29.3	1.6	89	5.6		
MOX	e P	Z 18:03:42.2	78.1	28.8	1.5	93	5.7		
GUNZ	e P	Z 18:03:42.5	78.1	29.3	1.8	98	5.6		
UBBA	e P	Z 18:03:42.6	78.4	27.8	1.5	61	5.4		
BUG	e P	Z 18:03:45.2	78.6	26.0	1.4	105	5.7		
GEC2	e P	Z 18:03:47.1	79.0	30.0	1.2	32	5.2		
GRA1	e P	Z 18:03:47.9	79.0	28.5	1.9	291	6.0		
	e L	Z 18:41:39.8			20.0	385		4.7	
TNS	e P	Z 18:03:49.2	79.4	26.7	1.2	35	5.2		



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2004/01/31 14:26: 8.8 51.229N 159.085E 33.0N 5.1 SZGRF  
2004/01/31 14:26:14.3 51.653N 157.978E 66 4.8 NEIC  
Off east coast of Kamchatka Peninsula, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 14:37:37.9	72.9	21.9					
GRA1	e P	Z 14:37:49.8	74.8	20.6	1.0	16	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2004/01/31	20:07:28.7	44.922N	14.559E	10.0G			3.6	SZGRF

Adriatic Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 20:08:29.8	4.0	171.2					3.6
	e Sn	N 20:09:15.5							
GRA1	e Sg	E 20:10:22.6	5.3	153.4					
GUNZ	e Pn	Z 20:08:52.1	5.6	163.8					
	e Sn	N 20:09:55.2							
TANN	e Pn	Z 20:08:52.5	5.7	164.8					
	e Sn	N 20:09:55.1							
WERD	e Pn	Z 20:08:53.0	5.7	163.8					
BRG	e Pn	Z 20:08:55.4	6.0	175.8					
MOX	e Pn	Z 20:08:58.1	6.1	159.8					
	e Sn	E 20:10:04.2							
CLL	e Pn	Z 20:09:03.5	6.5	170.2					

#### Format description

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(K. Klinge Email:klinge@szgrf.bgr.de and A. Schick)

In general all regional and teleseismic events clearly recorded with GRF-Array stations and stronger events recorded with stations of the German Regional Seismological Network (GRSN) are included in this bulletin. Additionally, some selected events are analysed more comprehensively at CLL-station and included in the bulletin (ISOP-analysis).

Each event is reported by several EPICENTER LINES with possible COMMENT LINES, a REGION LINE and a block of PHASE LINES.

#### EPICENTER LINES:

The epicenter locations of several authorities can be reported. The epicenter location with the highest priority (i.e. the most reliable one) is written in the undermost EPICENTER LINE. The REGION LINE and all origin related

parameter in the PHASE LINES (i.e. Def, Dist, EvAz) are determined regarding this epicenter location with the highest priority.

Date	Date of the event
Origin Time	Origin time of the event
Lat	Geographic latitude (N/S) of epicenter in degree
Long	Geographic longitude (E/W) of epicenter in degree
Depth	Depth of the hypocenter beneath the surface in kilometer
	Appended flag indicates the method by which the depth was determined:
	BLANK - free
	N - preset depth of 33 kilometer
	G - geophysicist preset depth
mb, Ms, ML	Magnitudes of the event and magnitude type
Source	Abbreviations for the authority (e.g. SZGRF, NEIC, PIDC, SED)

## COMMENT LINE:

Each EPICENTER LINE can be followed by a COMMENT LINE about interesting topics submitted by the preceding authority.

## REGION LINE:

The region name of the epicenter location with the highest priority (undermost EPICENTER LINE).

## PHASE LINE:

Sta	Station code of the reported phase
Phase	Preceded flag for the sharpness of the onset of the phase
	e - emergent
	i - impulsive
	w - weak
	ISC phase code
	Flag for the direction of the first motion
	'+' - compression
	'-' - dilatation
	Component where the phase was picked
Time	Arrival time of the reported phase
Dist	Distance from the epicenter location with the highest priority to the station in kilometer
BAz	Backazimuth from the epicenter location with the highest priority to the station in degree
T[s]	Phase Period
A[nm]	Phase Amplitude
mb	Body wave magnitude
MS	Surface wave magnitude
ML	Local Richter magnitude