

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

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

OCTOBER 2003 UPDATED 08.OCTOBER.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	
2003/10/01	00:44:07.7	13.648S	167.179E	197D	5.1			NEIC	
Vanuatu Islands									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPdf	Z 01:03:14.8	138.9	37.1					
	e	01:06:06.0							
Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/10/01	00:59:32.0	50.050N	87.745E	10G	4.3			NEIC	
Southwestern Siberia, Russia									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:08:10.0	47.0	58.6					
Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/10/01	01:03:33.3	49.760N	86.580E	33.0N	7.1	7.3		SZGRF	
2003/10/01	01:03:25.2	50.205N	87.703E	10G	6.3	7.1		NEIC	
Kazakhstan-Xinjiang border region									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 01:11:32.0	43.5	63.7	3.0	11916	7.1		
	e PP	Z 01:13:18.8							
RUE	e P	Z 01:11:37.3	44.2	62.0	2.6	7310	6.9		
	e PP	Z 01:13:20.2							
CLL	i P	- Z 01:11:45.0	45.3	60.6	1.2	1058	6.6		
	e PP	Z 01:13:36.8							

	e PcS	Z	01:17:18.7								
	e S	T	01:18:26.1								
	e SS	T	01:21:45.6								
	e LQ	T	01:24:05.8								
	e LR	Z	01:27:13.3								
	e L	Z	01:31:40.7			22.0	142115		6.9		
WERD	e P	Z	01:11:51.8	46.0	59.5	2.5					
	e PP	Z	01:13:37.4								
MOX	e P	Z	01:11:54.0	46.2	59.3	2.6	4216		7.0		
	e PP	Z	01:13:42.4								
WET	e P	Z	01:11:54.8	46.3	58.7	2.9	4410		7.0		
	e PP	Z	01:13:43.4								
HLG	e P	Z	01:11:55.7	46.4	60.4	2.7	5591		7.1		
	e PP	Z	01:13:44.8								
GRA1	e P	Z	01:12:00.1	46.9	58.4	2.2	6504		7.4		
	e PP	Z	01:13:46.8								
	e S	E	01:18:53.2								
	e SS	N	01:22:21.8								
	e L	Z	01:31:13.4			18.2	307379		7.3		
FUR	e P	Z	01:12:06.1	47.7	57.2	2.5	6768		7.3		
	e PP	Z	01:13:57.3								
TNS	e P	Z	01:12:09.4	48.2	57.5	2.5	3671		7.1		
	e PP	Z	01:14:01.4								
WLF	e P	Z	01:12:21.5	49.7	56.1	2.7	3633		6.8		
	e PP	Z	01:14:19.5								

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	01:30:19.9	41.833N	148.904E	33.0N	5.2			SZGRF
2003/10/01	01:30:24.8	42.029N	144.672E	33N	5.1			NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 01:42:21.2	77.7	34.6					
NRDL	e P	Z 01:42:21.1	77.7	32.8					
BRG	e P	Z 01:42:21.2	77.7	35.2					
CLZ	e P	Z 01:42:24.5	78.1	32.9					
MOX	e P	Z 01:42:27.3	78.7	33.6					
GEC2	e P	Z 01:42:31.4	79.4	34.8					
WET	e P	Z 01:42:32.2	79.5	34.3					
GRA1	e P	Z 01:42:33.0	79.6	33.2	0.9	21	5.2		
TNS	e P	Z 01:42:35.0	80.1	31.4					
FUR	e P	Z 01:42:39.2	80.9	33.1					
BFO	e P	Z 01:42:41.8	81.8	31.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2003/10/01	02:38:35.6	50.483N	86.160E	33.0N	5.1				SZGRF
2003/10/01	02:38:19.0	50.212N	87.824E	10G	4.8				NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:46:55.7	47.0	58.3	0.9	18	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	03:03:23.1	49.215N	86.454E	33.0N	5.0			SZGRF
2003/10/01	03:03:11.9	50.091N	88.287E	10G	4.4			NEIC

Kazakhstan-Xinjiang border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:11:49.5	47.3	58.3	0.9	11	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	03:17:53.1	49.694N	84.131E	33.0N	4.7			SZGRF
2003/10/01	03:17:32.9	50.335N	87.687E	10G	4.6			NEIC

Eastern Kazakhstan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:26:07.3	46.9	58.2	0.8	7	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	03:58:48.7	49.206N	87.623E	33.0N	5.1			SZGRF
2003/10/01	03:58:45.6	50.164N	87.789E	10G	4.9	4.7		NEIC

Kazakhstan-Xinjiang border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:07:20.2	47.0	58.4	1.2	18	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	04:10:14.0	41.957N	143.585E	33.0N	4.8			SZGRF
2003/10/01	04:10:08.2	41.613N	143.947E	33N	4.8			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:22:16.6	79.7	33.9	1.1	15	4.8		

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	05:44:18.4	49.784N	85.731E	33.0N	5.2			SZGRF
2003/10/01	05:44:05.0	50.247N	87.694E	10G	4.9			NEIC

Eastern Kazakhstan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:52:39.4	46.9	58.3	0.9	20	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	07:13:58.7	27.770N	57.670E	33N	4.6			NEIC

Arabian Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:21:44.4	41.4	104.3	0.7	24	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	16:23:40.8	44.152N	145.305E	33.0N	5.5	5.6		SZGRF
2003/10/01	16:23:29.3	42.064N	144.385E	33N	5.1	4.9		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 16:35:24.7	77.5	34.8	1.1	66	5.7		
	e PP	Z 16:38:21.8							
	e PPP	Z 16:40:07.3							
	e S	Z 16:45:18.2							
	e SS	Z 16:50:47.8							
	e SSS	Z 16:54:06.8							
	e L	Z 17:13:27.3			20.0	2662		5.6	
NRDL	e P	Z 16:35:24.9	77.5	33.0	1.3	29	5.3		
BRG	e P	Z 16:35:24.8	77.5	35.4	1.1	26	5.3		
CLZ	e P	Z 16:35:27.7	78.0	33.1	1.2	71	5.7		
WERD	e P	Z 16:35:30.2	78.5	34.2	1.5	35	5.3		
MOX	i P	+ Z 16:35:30.6	78.6	33.8	1.2	36	5.4		
GEC2	e P	Z 16:35:34.6	79.3	35.0	1.2	25	5.2		
WET	e P	Z 16:35:35.4	79.3	34.5	1.2	58	5.6		
BUG	e P	Z 16:35:34.6	79.3	30.9	1.1	45	5.5		
GRA1	e P	Z 16:35:36.2	79.5	33.4	1.2	98	5.8		
	e L	Z 17:14:36.7			18.3	2344		5.6	
TNS	e P	Z 16:35:38.4	80.0	31.6	1.2	42	5.3		
FUR	e P	Z 16:35:42.7	80.8	33.3	1.2	90	5.6		
WLF	e P	Z 16:35:45.3	81.2	30.0	2.0	120	5.5		
BFO	e P	Z 16:35:47.1	81.7	31.4	1.4	49	5.3		

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	17:22:10.4	41.481N	148.115E	33.0N	5.0			SZGRF
2003/10/01	17:22:15.2	41.783N	144.438E	33N	4.9			NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:34:23.8	79.8	33.5	0.9	12	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/01	23:05:27.4	46.659N	140.710E	33.0N	4.9	5.2		SZGRF
2003/10/01	23:04:53.3	41.492N	143.380E	33N	5.0	4.9		NEIC

Primorye, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 23:16:49.7	77.7	35.7	1.3	36	5.3		
	e pP	Z 23:16:59.5							
	e PP	Z 23:19:45.3							
	e S	E 23:26:43.0							
	e PS	Z 23:27:18.8							
	e L	Z 23:53:57.2			22.0	1053		5.1	
BRG	e P	Z 23:16:49.7	77.7	36.3					
NRDL	e P	Z 23:16:50.2	77.7	33.9					
CLZ	e P	Z 23:16:53.1	78.2	34.0					
WERD	e P	Z 23:16:55.2	78.6	35.2					
MOX	e P	Z 23:16:56.0	78.7	34.7	1.2	13	4.8		
GEC2	e P	Z 23:16:59.7	79.4	35.9	1.2	12	4.8		
WET	e P	Z 23:17:00.2	79.5	35.4	1.1	20	5.0		
BUG	e P	Z 23:17:00.0	79.5	31.9					
GRA1	e P	Z 23:17:01.3	79.6	34.4	1.1	34	5.3		
	e	23:17:11.4							
	e L	Z 23:56:44.2			18.1	1108		5.2	
TNS	e P	Z 23:17:04.0	80.2	32.6	1.1	9	4.7		
FUR	e P	Z 23:17:08.2	80.9	34.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/02	01:05:21.6	30.521S	177.101W	33N	5.0	5.3		NEIC

Kermadec Islands, New Zealand

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPab	Z 01:26:06.6	159.8	21.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2003/10/02 01:54:13.5 30.516S 177.401W 33N 5.2 5.2 NEIC
Kermadec Islands, New Zealand

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPab	Z 02:14:45.5	159.8	21.9					
	e pPKPab	Z 02:15:00.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/02	03:12:27.2	50.722N	86.730E	33.0N	5.1			SZGRF
2003/10/02	03:12:11.2	50.125N	87.709E	10G	4.6			NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 03:20:32.5	44.9	60.7					
CLL	e P	Z 03:20:34.3	45.2	60.6					
GRA1	e P	Z 03:20:48.8	47.0	58.5	1.8	40	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/02	05:58:25.1	42.184N	147.480E	33.0N	4.6			SZGRF
2003/10/02	05:58:24.6	41.424N	144.000E	33N	4.6			NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 06:10:34.0	79.9	34.0	0.9	6	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/02	06:59:4.1	45.240N	153.927E	33.0N	4.8			SZGRF
2003/10/02	06:59:03.4	45.947N	152.966E	33N	4.4			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:11:08.9	78.8	26.0	1.0	12	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/02	23:36:50.2	5.650S	153.230E	33N	5.0			NEIC

New Ireland reg, P.R.

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 23:55:50.5	125.6	48.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	00:14:2.1	44.060N	141.490E	33.0N	5.2			SZGRF
2003/10/03	00:14:27.1	44.024N	139.817E	235	4.7			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 00:25:34.0	72.9	37.5	1.5	67	5.5		
BRG	e P	Z 00:25:40.9	74.1	37.3	0.8	12	5.0		
CLL	e P	Z 00:25:40.6	74.2	36.8	0.7	46	5.6		
NRDL	e P	Z 00:25:41.3	74.2	35.1	0.8	13	5.0		
WERD	e P	Z 00:25:46.2	75.1	36.2	0.8	9	5.0		
IBBN	e P	Z 00:25:46.8	75.2	33.5	0.7	24	5.4		
MOX	e P	Z 00:25:47.1	75.2	35.8	0.9	9	4.9		
GEC2	e P	Z 00:25:50.7	75.9	36.8	0.8	7	4.8		
WET	e P	Z 00:25:51.6	75.9	36.3	1.0	22	5.3		
BUG	e P	Z 00:25:51.8	76.1	33.1	0.8	19	5.3		
GRA1	e P	Z 00:25:52.9	76.1	35.4	0.9	44	5.6		
TNS	e P	Z 00:25:55.2	76.7	33.7	0.8	8	4.9		
FUR	e P	Z 00:25:59.4	77.4	35.2	0.9	34	5.5		
BFO	e P	Z 00:26:04.0	78.3	33.4	1.0	15	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	00:32:25.6	51.843N	159.402E	33.0N	4.7			SZGRF
2003/10/03	00:32:25.9	52.105N	159.419E	56D	4.6			NEIC

Off east coast of Kamchatka Peninsula, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:44:03.7	74.7	19.6	1.7	14	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	00:43:58.7	53.539N	160.419E	33.0N	4.8			SZGRF
2003/10/03	00:43:53.5	52.501N	159.510E	65*	4.5			NEIC

Near east coast of Kamchatka Peninsula, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:55:28.8	74.3	19.4	1.7	18	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	00:46:37.1	53.117N	160.382E	33.0N	4.6			SZGRF
2003/10/03	00:46:34.1	52.432N	159.437E	67*	4.6			NEIC

Near east coast of Kamchatka Peninsula, Russia

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Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	00:58:09.5	74.4	19.5	1.6	11	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	00:53:14.6	30.259S	177.378W	33N	5.1	4.8		NEIC

Kermadec Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPab	Z	01:13:39.1	157.1	16.8					
CLL	e PKPab	Z	01:13:41.4	157.6	24.1					
IBBN	e PKPab	Z	01:13:41.7	157.6	11.7					
BRG	e PKPab	Z	01:13:42.2	157.7	26.6					
BUG	e PKPab	Z	01:13:45.2	158.5	11.0					
WERD	e PKPab	Z	01:13:46.1	158.5	23.4					
GRA1	e PKPab	Z	01:13:48.8	159.5	21.7					
TNS	e PKPab	Z	01:13:50.2	159.6	14.5					
WET	e PKPab	Z	01:13:51.0	159.6	26.2					
GEC2	e PKPab	Z	01:13:51.0	159.6	28.4					
FUR	e PKPab	Z	01:13:56.4	160.9	23.4					
BFO	e PKPab	Z	01:13:58.0	161.4	15.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	04:45:19.9	42.150N	144.250E	33.0N	5.2	4.6		SZGRF
2003/10/03	04:45:18.8	41.884N	143.402E	33N	4.9	4.5		NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	04:56:58.5	74.6	36.2	0.9	89	5.8		
RUE	e P	Z	04:57:06.7	76.1	36.2	0.8	34	5.5		
CLL	e P	Z	04:57:13.3	77.3	35.5	0.9	38	5.5		
BRG	e P	Z	04:57:13.5	77.3	36.1	1.0	12	5.0		
NRDL	e P	Z	04:57:13.6	77.4	33.7	0.9	13	5.1		
WERD	e P	Z	04:57:18.9	78.3	35.0	0.9	9	4.8		
IBBN	e P	Z	04:57:18.9	78.3	32.1	0.9	42	5.4		
MOX	e P	Z	04:57:19.4	78.4	34.5					
GEC2	e P	Z	04:57:23.1	79.1	35.7	1.1	10	4.8		
WET	e P	Z	04:57:24.0	79.1	35.2	1.2	25	5.0		
BUG	e P	Z	04:57:23.7	79.2	31.7	0.8	27	5.2		
GRA1	e P	Z	04:57:25.1	79.3	34.2	1.0	46	5.4		
	e L	Z	05:35:29.8			20.9	301		4.6	
TNS	e P	Z	04:57:27.4	79.8	32.4	0.9	13	4.9		
FUR	e P	Z	04:57:31.6	80.5	34.0	0.8	33	5.4		
BFO	e P	Z	04:57:36.0	81.5	32.1	1.0	15	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	11:39:30.0	18.525S	178.113W	500G	4.6			NEIC

Fiji region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKPbc	+ Z 11:58:13.2	146.1	19.2	0.7	21			
GRA1	e PKP	Z 11:58:18.8	148.0	16.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	12:34:34.6	29.225N	54.343E	33.0N	4.8			SZGRF
2003/10/03	12:34:50.1	29.730N	51.662E	33N	5.0			NEIC

Southern Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:41:52.6	36.3	108.0	0.9	16	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	14:14:15.7	29.816N	51.192E	33.0N	4.8			SZGRF
2003/10/03	14:14:08.8	29.622N	51.937E	33N	4.8	3.9		NEIC

Southern Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:21:14.2	36.6	107.9	1.3	20	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	15:30:33.6	6.461S	78.984W	33.0N	5.0			SZGRF
2003/10/03	15:30:26.4	3.898S	76.395W	108D	4.8			NEIC

Northern Peru

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:43:53.5	91.4	265.7	1.0	7	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	18:26:50.2	57.237N	155.122W	23.7	4.8			SZGRF
2003/10/03	18:26:43.0	56.383N	152.533W	20	4.5			NEIC

Alaska Peninsula, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 18:38:14.0	73.1	350.7	0.9	8	4.8		
	e pP	Z 18:38:20.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	20:38:44.3	42.584N	142.192E	33.0N	4.9			SZGRF

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:50:41.2	78.2	34.6	0.9	12	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/03	23:36:53.8	54.700N	167.440W	33.0N	5.2			SZGRF
2003/10/03	23:36:40.8	52.782N	167.101W	33N	4.8	4.4		NEIC

Fox Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e P	Z 23:48:21.6	74.7	358.2	1.1	25	5.3		
RUE	e P	Z 23:48:21.9	74.7	0.6	0.8	26	5.4		
IBBN	e P	Z 23:48:22.5	74.8	356.8	1.1	48	5.5		
BUG	e P	Z 23:48:27.0	75.7	356.5	1.1	26	5.2		
CLL	e P	Z 23:48:28.2	75.9	0.1	1.3	26	5.1		
BRG	e P	Z 23:48:31.0	76.3	0.6	1.1	24	5.1		
MOX	e P	Z 23:48:32.5	76.6	359.2	1.1	30	5.2		
WERD	e P	Z 23:48:33.6	76.8	359.6	1.2	15	4.9		
TNS	e P	Z 23:48:34.6	76.9	357.2	1.2	22	5.1		
WLF	e P	Z 23:48:37.5	77.4	355.8	1.2	35	5.4		
GRA1	e P	Z 23:48:38.3	77.5	359.0	1.1	46	5.5		
WET	e P	Z 23:48:41.2	78.1	360.0	1.2	19	5.1		
GEC2	e P	Z 23:48:42.7	78.4	0.5	1.2	19	5.1		
BFO	e P	Z 23:48:45.0	78.8	357.2	1.3	26	5.2		
FUR	e P	Z 23:48:46.7	79.0	359.0	1.3	54	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	00:13:24.7	36.516N	42.617E	33N	4.1			NEIC

Iraq

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:18:59.1	26.2	108.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	00:44:44.3	30.024N	50.856E	33.0N	4.7			SZGRF
2003/10/04	00:44:36.6	29.743N	51.666E	33N	4.6			NEIC

Northern and central Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 00:51:23.4	34.5	109.5	1.3	7	4.4		
BRG	e P	Z 00:51:28.5	35.1	112.5					
WET	e P	Z 00:51:28.0	35.1	109.0					
CLL	e P	Z 00:51:34.8	35.8	112.0	1.0	12	4.8		
FUR	e P	Z 00:51:34.3	35.8	106.0					
GRA1	e P	Z 00:51:39.3	36.3	108.0	0.7	23	5.1		
NRDL	e P	Z 00:51:53.5	37.9	110.3					
TNS	e P	Z 00:51:54.9	38.2	105.9	1.6	17	4.5		
BUG	e P	Z 00:52:04.2	39.2	106.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	03:10:33.9	41.653N	144.263E	33.0N	5.1			SZGRF

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	i P	Z 03:22:39.4	79.8	33.7	0.8	20	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	05:03: 9.3	41.782N	143.867E	33.0N	4.9			SZGRF
2003/10/04	05:03:05.6	42.151N	144.823E	33N	4.8			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	i P	Z 05:15:13.3	79.6	33.1	0.7	11	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	14:41: 4.7	41.196N	143.581E	33.0N	4.6			SZGRF
2003/10/04	14:41:08.9	41.898N	141.740E	33N	4.6			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:53:11.0	78.7	35.2	1.4	12	4.6		
	e	14:53:46.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	14:49:02.9	7.049S	125.421E	531D	5.5			NEIC

Kepulauan Barat Daya, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1 e Pdiff Z 15:06:37.4 110.9 75.7

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/04	18:30:48.8	50.610N	83.599E	33.0N	4.3			SZGRF
2003/10/04	18:30:16.6	50.412N	87.780E	10G	4.2			NEIC

Eastern Kazakhstan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 18:38:57.1	46.9	58.1	0.6	2	4.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/05	00:19:58.0	40.789N	143.252E	33.0N	4.6			SZGRF
2003/10/05	00:19:58.0	42.116N	144.717E	33N	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 00:32:05.6	79.6	33.2	1.0	7	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/05								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:51:43.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/05	02:46:45.0	44.731N	148.901E	33.0N	5.0			SZGRF
2003/10/05	02:46:39.1	44.521N	150.254E	33N	5.1			NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:58:44.1	79.3	28.4	1.3	20	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/05	11:34: 5.7	48.402N	26.523W	33.0N	4.5			SZGRF

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:39:22.5	24.5	281.6	1.5	16	4.5		

GRA1	e P	Z	02:35:32.5	77.6	359.0	1.2	12	4.9
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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/06	03:04:23.6	51.699N	34.115W	33.0N	4.4	4.5		SZGRF
2003/10/06	03:04:13.5	53.637N	35.424W	10G	4.6	4.7		NEIC

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
TNS	e P	Z 03:09:56.2	26.8	294.4					
NRDL	e P	Z 03:09:58.6	26.9	290.8					
CLZ	e P	Z 03:10:02.3	27.3	292.1					
BFO	e P	Z 03:10:03.2	27.6	297.7					
GRA1	e P	Z 03:10:14.7	28.7	296.0	0.8	5	4.4		
	e L	Z 03:20:54.4			20.6	1372		4.5	
CLL	e P	Z 03:10:16.7	29.0	293.9					
FUR	e P	Z 03:10:20.0	29.4	298.5					
WET	e P	Z 03:10:24.8	29.9	297.3					
GEC2	e P	Z 03:10:30.4	30.5	297.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/06	16:27:55.8	42.311N	141.998E	33.0N	5.2			SZGRF
2003/10/06	16:27:55.9	42.007N	142.229E	78*	4.8			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:39:53.6	78.8	34.9	0.8	19	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/06	18:29:38.1	10.668S	164.308E	33N	5.4	5.4		NEIC

Santa Cruz Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z 18:48:54.4	133.2	40.3	1.5	26			
	e PP	Z 18:51:24.1							
	e SKP	Z 18:52:22.2							
	e PKS	Z 18:52:31.2							
	e PS	Z 19:01:37.4							
	e PPS	Z 19:03:21.7							
	e SS	Z 19:09:24.9							
	e SSS	Z 19:14:39.1							
	e L	Z 19:46:42.9			22.0	2730		5.9	
GRA1	e PKP	Z 18:48:57.3	135.1	39.0					
	e PP	Z 18:51:26.8							

e SKP Z 18:52:24.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/06	19:26:29.1	44.736N	145.642E	33.0N	5.6	5.5		SZGRF
2003/10/06	19:26:15.6	42.247N	144.621E	33N	5.5	5.1		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 19:38:10.4	77.4	34.5	1.1	75	5.7		
BRG	e P	Z 19:38:10.9	77.5	35.1	1.4	54	5.5		
CLZ	e P	Z 19:38:13.7	77.9	32.8	1.4	121	5.8		
IBBN	e P	Z 19:38:15.8	78.4	31.1					
WERD	e P	Z 19:38:16.3	78.4	34.0					
MOX	e P	Z 19:38:16.6	78.5	33.5	1.5	81	5.6		
UBBA	e P	Z 19:38:17.7	78.9	32.5					
GEC2	e P	Z 19:38:20.7	79.2	34.7	1.4	41	5.4		
BUG	e P	Z 19:38:20.6	79.3	30.7					
WET	e P	Z 19:38:21.5	79.3	34.2	1.5	101	5.7		
GRA1	e P	Z 19:38:22.3	79.4	33.2	1.6	197	6.0		
	e L	Z 20:16:31.7			21.1	2536		5.5	
TNS	e P	Z 19:38:24.5	79.9	31.4	1.4	54	5.5		
FUR	e P	Z 19:38:28.8	80.7	33.1					
STU	e P	Z 19:38:29.6	80.9	31.7					
WLF	e P	Z 19:38:31.3	81.2	29.8					
BFO	e P	Z 19:38:33.3	81.6	31.1	1.2	55	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/07	02:37:23.6	76.561N	2.577E	33.0N	4.7	4.1		SZGRF
2003/10/07	02:36:54.3	79.133N	2.304E	10G	5.1	4.6		NEIC

Greenland Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:43:03.7	29.6	356.6	1.6	23	4.7		
	e L	Z 02:53:16.5			20.9	578		4.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/07	04:55:32.1	16.491S	170.254W	33N	6.1	5.9		NEIC

Samoa Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA3	e PKP	Z 05:15:10.8	146.7	2.7					
GRA1	e PP	Z 05:18:38.9	146.8	2.6					
	e L	Z 06:23:43.7			21.2	3021		6.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/07	08:00:28.9	42.184N	147.480E	44.6	5.3	4.8		SZGRF
2003/10/07	08:00:31.2	42.282N	144.950E	33N	5.1	4.5		NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 08:12:37.9	79.5	32.9	1.5	42	5.3		
	e pP	Z 08:12:50.7							
	e L	Z 08:51:06.9			18.5	440		4.8	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/07	11:40:25.3	42.510N	148.752E	33.0N	4.8			SZGRF
2003/10/07	11:40:28.5	42.211N	144.713E	33N	4.8			NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:52:35.0	79.5	33.1	1.0	11	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/07	17:40:49.5	42.345N	147.518E	33.0N	5.5	4.9		SZGRF
2003/10/07	17:40:51.9	42.473N	144.631E	33N	5.1	4.7		NEIC

Off southeast coast of Hokkaido, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WET	e P	Z 17:52:56.9	79.1	34.1					
GRA1	e P	Z 17:52:57.7	79.2	33.1	1.2	59	5.5		
	e L	Z 18:31:30.9			19.0	487		4.9	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/08	23:15:22.6	43.300N	145.340E	33.0N	6.1	6.0		SZGRF
2003/10/08	23:15:17.4	42.175N	144.682E	33N	5.8	5.4		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 23:27:06.1	76.3	35.2	1.3	364	6.4		
CLL	i P	+ Z 23:27:12.6	77.5	34.5	1.0	300	6.4		
	e pP	Z 23:27:25.4							
	e PP	Z 23:30:06.9							
	e PPP	Z 23:32:04.0							
	e S	E 23:36:59.2							

	e PS	Z	23:37:43.8							
	e SS	E	23:42:37.0							
	e L	Z	00:05:12.0			18.0	8844		6.1	
NRDL	e P	Z	23:27:13.0	77.5	32.7	1.9	301		6.1	
BRG	e P	Z	23:27:12.9	77.5	35.1	1.2	121		5.9	
CLZ	e P	Z	23:27:15.8	78.0	32.8	1.3	326		6.3	
IBBN	e P	Z	23:27:17.8	78.4	31.1	1.1	240		6.2	
WERD	e P	Z	23:27:18.3	78.5	34.0	1.2	116		5.9	
MOX	e P	Z	23:27:18.6	78.6	33.5	1.2	134		5.9	
GEC2	e P	Z	23:27:22.8	79.3	34.7	1.1	109		5.8	
BUG	e P	Z	23:27:22.6	79.3	30.7	1.1	167		6.0	
WET	e P	Z	23:27:23.5	79.4	34.2	1.1	251		6.2	
GRA1	e P	Z	23:27:24.3	79.5	33.2	1.2	360		6.3	
	e PP	Z	23:30:24.5							
TNS	e P	Z	23:27:26.4	80.0	31.4	1.2	128		5.7	
FUR	e P	Z	23:27:30.9	80.8	33.1	1.1	386		6.2	
WLF	e P	Z	23:27:33.1	81.2	29.8	1.3	149		5.9	
BFO	e P	Z	23:27:35.4	81.7	31.1	1.6	309		6.1	
GRA1	e L	Z	00:05:54.5	79.5	33.2	19.1	6807		6.0	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/08	01:55:37.4	37.027N	143.742E	33.0N	5.0			SZGRF
2003/10/08	01:55:37.3	37.351N	143.073E	33N	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 02:08:03.1	83.1	36.6	1.7	16	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/08	09:06:57.7	43.180N	145.180E	33.0N	6.4	7.0		SZGRF
2003/10/08	09:06:55.2	42.612N	144.559E	32G	5.9	6.6		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 09:18:41.3	75.9	35.1	1.9	1010	6.6		
NRDL	e P	Z 09:18:47.9	77.1	32.6	2.0	584	6.4		
CLL	i P	+ Z 09:18:48.0	77.1	34.4	1.2	258	6.2		
	e PP	Z 09:21:46.4							
	e PPP	Z 09:23:33.6							
	e S	T 09:28:35.8							
	e SKSac	R 09:28:56.3							
	e PS	Z 09:29:20.0							
	e SS	T 09:33:38.5							
	e LQ	T 09:41:18.5							
	e LR	Z 09:44:10.8							

	e L	Z	09:56:33.9			18.0	74981		7.1
	e R2	Z	11:30:58.8						
BRG	e P	Z	09:18:48.3	77.1	35.0	2.8	1299	6.6	
CLZ	e P	Z	09:18:51.1	77.6	32.7	1.7	654	6.5	
IBBN	e P	Z	09:18:53.1	78.0	31.0	2.0	1004	6.6	
WERD	e P	Z	09:18:53.5	78.1	33.8	2.9	1244	6.5	
MOX	e P	Z	09:18:53.6	78.1	33.4	2.6	1068	6.5	
UBBA	e P	Z	09:18:54.8	78.5	32.3	2.2	554	6.2	
GEC2	e P	Z	09:18:57.9	78.9	34.6	2.7	835	6.3	
BUG	e P	Z	09:18:57.9	78.9	30.6	1.8	535	6.3	
WET	e P	Z	09:18:58.5	78.9	34.1	1.7	448	6.2	
GRA1	e P	Z	09:18:59.7	79.1	33.0	1.8	911	6.5	
	e PP	Z	09:22:03.9						
	e S	N	09:28:53.8						
	e L	Z	09:57:34.7			18.6	69602		7.0
TNS	e P	Z	09:19:01.7	79.6	31.2	1.8	354	6.0	
FUR	e P	Z	09:19:06.3	80.3	32.9	1.7	720	6.3	
WLF	e P	Z	09:19:08.8	80.8	29.7	2.1	597	6.3	
BFO	e P	Z	09:19:10.1	81.2	31.0	1.8	361	6.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/08	13:32:13.0	42.910N	145.540E	33.0N	5.5	6.1		SZGRF
2003/10/08	13:32:09.5	42.241N	144.719E	33N	5.3	5.5		NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	13:43:57.9	76.2	35.2	1.0	52	5.6		
NRDL	e P	Z	13:44:04.8	77.5	32.7	1.0	32	5.4		
CLL	i P	+ Z	13:44:04.4	77.5	34.5	0.9	57	5.7		
	e		13:44:16.9							
	e PP	Z	13:47:01.6							
	e S	E	13:53:53.8							
	e PS	Z	13:54:41.9							
	e L	Z	14:22:04.3			18.0	11137		6.2	
BRG	e P	Z	13:44:04.9	77.5	35.0	1.2	33	5.3		
CLZ	e P	Z	13:44:07.7	77.9	32.8	0.8	41	5.6		
IBBN	e P	Z	13:44:09.7	78.4	31.1	0.9	53	5.6		
WERD	e P	Z	13:44:10.2	78.4	33.9	1.2	29	5.3		
MOX	e P	Z	13:44:10.5	78.5	33.5	2.3	188	5.7		
GEC2	e P	Z	13:44:14.6	79.3	34.6	2.5	134	5.5		
BUG	e P	Z	13:44:14.5	79.3	30.6	1.0	46	5.5		
WET	e P	Z	13:44:15.4	79.3	34.1	1.0	36	5.4		
GRA1	i P	Z	13:44:16.3	79.5	33.1	0.8	60	5.7		
	e PP	Z	13:47:15.1							
	e L	Z	14:22:46.6			19.2	8287		6.1	
TNS	e P	Z	13:44:18.4	80.0	31.3	1.1	27	5.1		
BFO	e P	Z	13:44:27.1	81.6	31.1	1.0	42	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/08	15:18:33.6	41.605N	144.147E	33.0N	4.9			SZGRF
2003/10/08	15:18:32.8	42.242N	144.257E	33N	4.9	4.6		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:30:39.1	79.3	33.4	1.2	17	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/09	06:53: 9.6	43.613N	144.321E	33.0N	5.6	5.3		SZGRF
2003/10/09	06:52:57.4	41.479N	143.494E	33N	5.5	5.2		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 07:04:53.8	77.7	35.7	1.1	79	5.8		
	e pP	Z 07:05:04.4							
	e PP	Z 07:07:51.7							
	e S	Z 07:14:51.8							
	e LR	Z 07:31:45.3							
	e L	Z 07:41:58.1			22.0	2596		5.5	
BRG	e P	Z 07:04:54.0	77.7	36.2	1.3	41	5.4		
NRDL	e P	Z 07:04:54.5	77.8	33.9	1.4	69	5.6		
CLZ	e P	Z 07:04:57.4	78.2	34.0	1.2	94	5.8		
WERD	e P	Z 07:04:59.5	78.7	35.1	1.3	38	5.4		
IBBN	e P	Z 07:04:59.6	78.7	32.2	1.1	90	5.8		
MOX	e P	Z 07:04:59.9	78.8	34.7	1.3	48	5.5		
GEC2	e P	Z 07:05:03.9	79.4	35.8	1.2	27	5.3		
WET	e P	Z 07:05:04.7	79.5	35.3	1.2	64	5.6		
BUG	e P	Z 07:05:04.1	79.6	31.8	1.1	55	5.6		
GRA1	e P	Z 07:05:05.7	79.7	34.3	1.2	129	5.9		
	e L	Z 07:42:23.6			21.9	1492		5.3	
TNS	e P	Z 07:05:07.9	80.2	32.5	1.2	44	5.4		
FUR	e P	Z 07:05:12.1	80.9	34.2	1.4	161	5.8		
BFO	e P	Z 07:05:16.5	81.9	32.2	1.3	62	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/09	16:06:02.5	50.094N	87.868E	10G	5.1	4.5		NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 16:14:24.2	45.5	60.7	1.0	30	5.3		
	e PP	Z 16:16:09.7							

e SS	Z	16:24:36.4									
e L	Z	16:34:16.7			22.0		380			4.3	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/09	16:02:52.7	20.166S	174.171W	33N	5.0			NEIC

Tonga

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 16:22:42.9	150.2	10.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/09	22:13:20.7	57.092N	32.794W	33.0N	5.3	5.0		SZGRF
2003/10/09	22:13:12.4	57.343N	33.449W	10G	5.1	5.2		NEIC

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
IBBN	e P	Z 22:18:27.8	23.9	298.6					
BUG	e P	Z 22:18:30.7	24.0	300.2					
WLF	e P	Z 22:18:32.5	24.4	303.5					
NRDL	e P	Z 22:18:38.9	25.0	298.6					
TNS	e P	Z 22:18:42.2	25.3	302.5	1.6	110	5.3		
CLZ	e P	Z 22:18:43.8	25.5	299.8					
UBBA	e P	Z 22:18:46.1	25.8	301.6					
BFO	e P	Z 22:18:51.1	26.3	305.8	1.8	77	5.0		
MOX	e P	Z 22:18:54.0	26.8	302.1	1.9	140	5.4		
GRA1	e P	Z 22:18:57.8	27.1	303.6	1.9	206	5.5		
	e L	Z 22:29:13.4			18.0	3729		5.0	
CLL	e P	Z 22:18:57.8	27.2	301.1	2.1	116	5.3		
WERD	e P	Z 22:18:58.4	27.3	302.5					
WET	e P	Z 22:19:08.5	28.3	304.6	2.1	114	5.3		
GEC2	e P	Z 22:19:15.7	28.9	305.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/09	22:19:26.8	17.140N	120.564E	33.0N	5.6	5.9		SZGRF
2003/10/09	22:19:13.5	13.803N	120.045E	33N	6.1	5.7		NEIC

Luzon, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 22:32:08.0	89.1	68.9	1.2	55	5.6		
CLL	i P	+ Z 22:32:09.6	89.5	68.2	1.4	68	5.7		
	e pP	Z 22:32:19.5							
	e S	N 22:42:58.7							
	e PS	Z 22:44:11.3							

	e SS	N	22:48:58.2							
	e L	Z	23:17:50.5			20.0	5085		5.9	
GEC2	e P	Z	22:32:12.2	90.0	68.7	1.1	31	5.6		
WERD	e P	Z	22:32:13.2	90.3	67.7					
WET	e P	Z	22:32:14.3	90.4	68.1	1.4	45	5.6		
MOX	e P	Z	22:32:14.8	90.6	67.1	1.3	49	5.7		
NRDL	e P	Z	22:32:15.7	90.7	65.9					
CLZ	e P	Z	22:32:16.2	90.8	66.1	1.3	51	5.6		
GRA1	e P	Z	22:32:17.9	91.2	66.8	1.1	40	5.6		
	e L	Z	23:15:23.0			19.3	4560		5.9	
UBBA	e P	Z	22:32:17.7	91.5	65.9					
FUR	e P	Z	22:32:20.4	91.8	66.9					
IBBN	e P	Z	22:32:21.6	92.1	64.0					
TNS	e P	Z	22:32:24.3	92.6	64.7	1.2	36	5.5		
BUG	e P	Z	22:32:24.5	92.7	63.7					
BFO	e P	Z	22:32:27.8	93.5	64.7	1.2	33	5.5		
WLF	e P	Z	22:32:31.8	94.2	62.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/10	03:29:29.0	40.220N	97.050E	14.4	5.1			SZGRF
2003/10/10	03:29:12.4	39.201N	98.391E	10G	5.1			NEIC

Gansu, China

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 03:39:01.4	56.9	67.0	0.7	29	5.4		
BRG	e P	Z 03:39:05.0	57.5	66.2	1.2	20	5.0		
GEC2	e P	Z 03:39:12.5	58.5	64.9	1.5	25	5.0		
WET	e P	Z 03:39:14.7	58.8	64.6	1.3	17	4.9		
MOX	e P	Z 03:39:15.5	58.9	64.6	1.2	15	4.9		
NRDL	e P	Z 03:39:15.9	59.0	64.7	1.1	36	5.3		
CLZ	e P	Z 03:39:16.9	59.1	64.5	1.0	32	5.3		
GRA1	e P	Z 03:39:20.3	59.6	63.9	0.9	28	5.3		
	e pP	Z 03:39:24.3							
FUR	e P	Z 03:39:25.2	60.2	63.1	1.3	58	5.5		
TNS	e P	Z 03:39:29.9	60.9	62.5	1.6	35	5.1		
BUG	e P	Z 03:39:30.2	61.0	62.4	0.7	16	5.1		
BFO	e P	Z 03:39:35.0	61.9	61.5	0.9	11	4.7		
WLF	e P	Z 03:39:40.5	62.5	60.8	0.9	24	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/10	03:33: 6.5	11.522N	124.784E	33.0N	5.2			SZGRF
2003/10/10	03:32:45.4	7.497N	126.502E	33N	5.1			NEIC

Leyte, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1 e P Z 03:46:29.6 100.0 65.6 1.2 10 5.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/10	12:58:23.8	41.877N	144.098E	33.0N	5.4			SZGRF
2003/10/10	12:58:20.1	42.066N	144.730E	33N	5.1			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 13:10:27.8	79.6	33.2	1.3	68	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/10	23:40:24.8	15.127S	173.351W	33N	4.8			NEIC

Tonga

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:00:01.8	145.2	7.8					
	e	00:00:11.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	00:08:51.5	42.490N	144.770E	33.0N	6.1	6.5		SZGRF
2003/10/11	00:08:49.0	41.962N	144.280E	33N	5.8	5.7		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 00:20:30.1	74.8	35.6	1.8	1105	6.6		
RUE	e P	Z 00:20:37.9	76.3	35.6	1.8	723	6.5		
CLL	i P	+ Z 00:20:44.4	77.6	34.9	0.9	228	6.3		
	e PP	Z 00:23:38.0							
	e PPP	Z 00:25:33.4							
	e S	E 00:30:35.7							
	e PS	Z 00:31:19.5							
	e (SS)	E 00:36:24.2							
	e L	Z 00:58:49.9			20.0	25692		6.6	
BRG	e P	Z 00:20:44.7	77.6	35.5	1.7	223	6.0		
NRDL	e P	Z 00:20:44.9	77.6	33.1	1.7	219	6.0		
CLZ	e P	Z 00:20:47.7	78.0	33.2	1.8	645	6.4		
IBBN	e P	Z 00:20:49.8	78.5	31.5	1.8	497	6.2		
MOX	e P	Z 00:20:50.5	78.6	33.9	1.7	255	6.0		
UBBA	e P	Z 00:20:52.6	79.0	32.8	1.0	64	5.6		
GEC2	e P	Z 00:20:54.5	79.3	35.1	1.7	173	5.8		
WET	e P	Z 00:20:55.3	79.4	34.6	1.0	138	6.0		
BUG	e P	Z 00:20:54.5	79.4	31.1	0.9	111	5.9		
GRA1	e P	Z 00:20:56.2	79.5	33.5	0.9	243	6.1		

	e S	N	00:31:13.7							
	e SS	N	00:35:52.9							
	e L	Z	00:59:59.8			19.2	23532		6.5	
TNS	e P	Z	00:20:58.4	80.1	31.7	1.7	205	5.8		
FUR	e P	Z	00:21:02.7	80.8	33.4	0.9	251	6.2		
WLF	e P	Z	00:21:05.4	81.3	30.1	1.1	80	5.7		
BFO	e P	Z	00:21:07.1	81.7	31.5	1.8	285	6.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	00:36:1.0	42.160N	145.450E	33.0N	5.3			SZGRF
2003/10/11	00:36:00.5	41.875N	144.340E	33N	5.2	4.8		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 00:47:50.8	76.4	35.6	1.2	59	5.6		
CLL	e P	Z 00:47:56.9	77.7	34.9	0.9	58	5.7		
BRG	e P	Z 00:47:57.0	77.7	35.5	1.1	20	5.2		
CLZ	e P	Z 00:48:00.1	78.1	33.2	1.2	54	5.5		
IBBN	e P	Z 00:48:02.1	78.6	31.5	1.0	41	5.4		
MOX	e P	Z 00:48:02.8	78.7	33.9	1.1	21	5.1		
UBBA	e P	Z 00:48:04.7	79.1	32.8	1.5	25	4.9		
GEC2	e P	Z 00:48:06.8	79.4	35.1	1.1	18	4.9		
WET	e P	Z 00:48:07.6	79.5	34.6	1.0	40	5.3		
BUG	e P	Z 00:48:07.0	79.5	31.0	0.9	26	5.1		
GRA1	e P	Z 00:48:08.5	79.6	33.5	0.9	46	5.4		
TNS	e P	Z 00:48:10.7	80.2	31.7	1.2	26	5.1		
FUR	e P	Z 00:48:15.2	80.9	33.4	0.9	55	5.6		
WLF	e P	Z 00:48:18.6	81.4	30.1	1.3	28	5.2		
BFO	e P	Z 00:48:19.5	81.8	31.5	1.6	47	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	01:11:28.7	43.960N	148.900E	33.0N	6.4	5.3		SZGRF
2003/10/11	01:11:29.3	43.952N	148.164E	38	6.2	5.2		NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 01:23:06.5	74.3	32.0	1.0	1199	6.9		
RUE	e P	Z 01:23:15.5	75.9	32.0	1.0	986	6.9		
NRDL	e P	Z 01:23:21.8	77.0	29.6	1.1	369	6.4		
CLL	e P	Z 01:23:22.2	77.1	31.4	1.1	1052	6.9		
BRG	e P	Z 01:23:22.6	77.2	31.9	1.3	403	6.4		
CLZ	e P	Z 01:23:25.0	77.5	29.7	1.1	882	6.8		
IBBN	e P	Z 01:23:26.6	77.9	28.0	1.2	781	6.7		
MOX	e P	Z 01:23:28.1	78.2	30.4	0.9	282	6.3		
UBBA	e P	Z 01:23:29.7	78.5	29.3	0.7	192	6.2		

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BUG	e P	Z	01:23:31.4	78.8	27.6	0.8	256	6.3	
GEC2	e P	Z	01:23:32.8	79.0	31.6	0.8	146	6.0	
WET	e P	Z	01:23:33.4	79.0	31.1	0.9	293	6.2	
GRA1	e P	Z	01:23:33.9	79.1	30.0	0.8	536	6.5	
	e L	Z	02:03:12.0			19.0	1271		5.3
TNS	e P	Z	01:23:35.6	79.5	28.3	0.8	200	6.1	
FUR	e P	Z	01:23:40.7	80.4	29.9	0.9	580	6.6	
WLF	e P	Z	01:23:41.9	80.7	26.7	1.4	216	6.0	
BFO	e P	Z	01:23:44.5	81.2	28.0	0.8	228	6.4	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	01:36:25.0	43.580N	81.930E	33.0N	5.4			SZGRF
2003/10/11	01:36:08.2	43.114N	84.670E	33N	5.1	4.9		NEIC

Northern Xinjiang, China

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	01:44:40.0	47.0	70.5					
CLL	e P	Z	01:44:42.4	47.4	70.3					
WET	e P	Z	01:44:49.3	48.2	68.4					
MOX	e P	Z	01:44:51.1	48.4	68.9					
NRDL	e P	Z	01:44:53.0	48.7	69.6					
GRA1	e P	Z	01:44:54.7	49.0	67.9	0.9	33	5.4		
IBBN	e P	Z	01:45:04.0	50.1	68.0					
TNS	e P	Z	01:45:08.1	50.5	66.8					
BFO	e P	Z	01:45:12.7	51.3	65.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	06:13:24.3	43.088N	15.601E	10.0G				SZGRF
2003/10/11	06:13:26.3	43.118N	15.377E	10G				NEIC

Adriatic Sea

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
KBA	e Pn	Z	06:14:29.0	4.2	159.4					
MOA	e Pn	Z	06:14:37.8	4.8	170.3					
GEC2	e Pn	Z	06:14:51.1	5.8	167.9					
	e Sn	N	06:15:57.9							
WET	e Pn	Z	06:14:56.5	6.3	163.1					
	e Sn	E	06:16:05.9							
TANN	e Pn	Z	06:15:14.8	7.6	163.6					
MOX	e Pn	Z	06:15:19.1	8.0	159.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	08:46:41.8	44.181N	85.921E	33.0N	4.6			SZGRF

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2003/10/11 08:46:41.2
Northern Xinjiang, China

43.208N 84.504E 33N 4.7 NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 08:55:26.8	48.9	67.9	0.9	6	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:57:08.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	10:37:27.5	39.075N	46.564E	33.0N	4.4			SZGRF

Iran-Armenia-Azerbaijan border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 10:43:07.6	27.1	99.5	1.5	14	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	18:26:21.1	42.200N	144.350E	34.5	5.7	5.6		SZGRF
2003/10/11	18:26:18.6	41.793N	143.626E	33N	5.5	5.2		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 18:38:07.6	76.3	36.1	1.7	303	6.2		
CLL	i P	+ Z 18:38:14.1	77.5	35.4	0.9	102	6.0		
	e pP	Z 18:38:23.6							
	e PP	Z 18:41:09.8							
	e PPP	R 18:43:07.1							
	e S	T 18:48:13.2							
	e PS	Z 18:48:51.7							
	e SS	R 18:53:15.8							
	e LQ	T 19:02:40.6							
	e LR	Z 19:05:42.3							
	e L	Z 19:15:35.8			22.0	4009		5.7	
BRG	e P	Z 18:38:14.3	77.5	36.0	1.1	49	5.5		
NRDL	e P	Z 18:38:14.5	77.5	33.6	1.0	50	5.6		
CLZ	e P	Z 18:38:17.5	78.0	33.7	0.9	106	6.0		
IBBN	e P	Z 18:38:19.7	78.5	32.0	0.9	113	5.9		
MOX	e P	Z 18:38:20.1	78.5	34.4	1.0	50	5.5		
UBBA	e P	Z 18:38:21.9	79.0	33.4	0.9	27	5.3		
GEC2	e P	Z 18:38:24.0	79.2	35.6	0.9	29	5.3		

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WET	e P	Z	18:38:24.7	79.3	35.1	1.0	69	5.5
BUG	e P	Z	18:38:24.4	79.3	31.6	0.9	73	5.6
GRA1	e P	Z	18:38:25.8	79.5	34.1	0.9	134	5.9
	e pP	Z	18:38:35.7					
	e PP	Z	18:41:10.1					
	e S	E	18:48:37.8					
	e L	Z	19:16:55.7			20.2	2719	5.6
TNS	e P	Z	18:38:28.1	80.0	32.3	1.0	48	5.4
FUR	e P	Z	18:38:32.3	80.7	33.9	0.9	113	5.9
WLF	e P	Z	18:38:34.7	81.2	30.7	1.3	61	5.5
BFO	e P	Z	18:38:36.7	81.6	32.0			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	19:46:08.1	17.864S	178.609W	599D	5.3			NEIC
Fiji Islands region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
HLG	e PKP	Z	20:04:35.3	143.3	10.4					
RUE	e PKP	Z	20:04:37.2	144.0	20.4					
NRDL	e PKP	Z	20:04:39.2	144.7	14.5					
IBBN	e PKPbc	Z	20:04:41.3	145.2	10.7					
CLZ	e PKPdf	Z	20:04:40.3	145.3	15.1					
	e PKPbc	Z	20:04:41.9							
CLL	e PKPdf	Z	20:04:39.3	145.3	19.7	1.0	28			
	e PKPbc	Z	20:04:41.0			0.9	397			
	e pPKPdf	Z	20:06:56.4							
	e (SKPbc)	Z	20:07:25.2							
BRG	e PKPdf	Z	20:04:40.2	145.5	21.4					
	e PKPbc	Z	20:04:42.4							
BUG	e PKPdf	Z	20:04:41.3	146.1	10.1					
	e PKPbc	Z	20:04:43.6							
	e PKPab	Z	20:04:45.8							
MOX	e PKPdf	Z	20:04:41.6	146.2	17.7					
	e PKPbc	Z	20:04:44.2							
	e PKPab	Z	20:04:46.6							
UBBA	e PKPdf	Z	20:04:41.8	146.3	14.9					
	e PKPbc	Z	20:04:44.9							
	e PKPab	Z	20:04:47.5							
TNS	e PKPdf	Z	20:04:43.5	147.2	12.4					
	e PKPbc	Z	20:04:46.3							
	e PKPab	Z	20:04:50.1							
GRA1	e PKPdf	Z	20:04:43.2	147.2	17.5					
	e PKPbc	Z	20:04:46.5							
	e PKPab	Z	20:04:50.9							
	e PP	Z	20:08:10.9							
GRFO	e PKPdf	Z	20:04:43.4	147.2	17.5					
	e PKPbc	Z	20:04:46.6							

	e PKPab	Z	20:04:51.0					
WET	e PKPdf	Z	20:04:43.6	147.4	20.6			
	e PKPbc	Z	20:04:47.3					
	e PKPab	Z	20:04:52.2					
GEC2	e PKPdf	Z	20:04:43.6	147.5	22.2			
	e PKPbc	Z	20:04:47.1					
WLF	e PKPdf	Z	20:04:45.1	148.0	8.6			
	e PKPbc	Z	20:04:48.9					
FUR	e PKPdf	Z	20:04:45.3	148.6	18.3			
	e PKPbc	Z	20:04:50.2					
	e PKPab	Z	20:04:56.7					
BFO	e PKPdf	Z	20:04:45.8	149.0	12.9			
	e PKPbc	Z	20:04:50.9					
	e PKPab	Z	20:04:58.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/11	23:08:55.6	0.377N	16.905W	33.0N	4.9			SZGRF
2003/10/11	23:08:45.6	1.361S	14.989W	10G	4.8	4.6		NEIC

North of Ascension Island

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 23:18:23.1	55.8	212.3	1.2	15	4.9		
CLL	e P	Z 23:18:38.1	57.6	213.8	2.2	44	5.1		
	e PP	Z 23:20:51.7							
	e S	Z 23:26:35.6							
	e SS	Z 23:30:46.7							
	e LR	Z 23:36:12.6							
	e L	Z 23:45:16.7			18.0	658		4.8	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/12								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:01:01.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/12	08:47:52.7	18.780S	174.880W	253.0				SZGRF
2003/10/12	08:47:49.3	18.543S	175.602W	237D	4.9			NEIC

Tonga Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 09:07:00.6	145.3	15.7					
NRDL	e PKPbc	Z 09:07:01.9	145.8	9.6					

IBBN	e	PKPbc	Z	09:07:03.3	146.1	5.7
	e	pPKPbc	Z	09:08:07.1		
CLZ	e	PKPdf	Z	09:07:02.6	146.4	10.3
	e	PKPbc	Z	09:07:04.1		
CLL	e	PKPdf	Z	09:07:02.5	146.5	14.9
	e	PKPbc	Z	09:07:04.4		
BRG	e	PKPdf	Z	09:07:03.3	146.8	16.7
	e	PKPbc	Z	09:07:05.4		
BUG	e	pPKPbc	Z	09:08:09.6	147.0	5.0
MOX	e	PKPdf	Z	09:07:04.3	147.4	12.8
	e	PKPbc	Z	09:07:06.9		
UBBA	e	PKPab	Z	09:07:09.3		
	e	PKPbc	Z	09:07:06.5	147.4	9.9
TNS	e	PKPbc	Z	09:07:08.9	148.2	7.3
	e	PKPab	Z	09:07:12.7		
GRA1	e	PKPdf	Z	09:07:05.7	148.4	12.4
	e	PKPab	Z	09:07:13.8		
	e	pPKPbc	Z	09:08:14.3		
WET	e	PKPbc	Z	09:07:10.4	148.6	15.6
GEC2	e	PKPdf	Z	09:07:06.3	148.8	17.2
	e	PKPbc	Z	09:07:10.7		
WLF	e	PKPdf	Z	09:07:06.8	148.8	3.2
	e	PKPbc	Z	09:07:11.5		
	e	PKPab	Z	09:07:15.7		
STU	e	PKPdf	Z	09:07:07.6	149.5	9.0
	e	PKPbc	Z	09:07:12.4		
FUR	e	PKPab	Z	09:07:17.8		
	e	PKPdf	Z	09:07:07.8	149.9	13.1
	e	PKPbc	Z	09:07:13.1		
BFO	e	PKPab	Z	09:07:19.6		
	e	PKPbc	Z	09:07:13.6	150.0	7.5
	e	PKPab	Z	09:07:20.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/13	03:48:28.6	20.547S	178.136W	500G	4.6			NEIC
Fiji region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e	PKPbc	Z 04:07:14.5	146.8	20.7					
NRDL	e	PKPbc	Z 04:07:16.0	147.4	14.4					
IBBN	e	PKPbc	Z 04:07:17.2	147.9	10.4					
CLZ	e	PKPdf	Z 04:07:14.0	148.0	15.2					
	e	PKPbc	Z 04:07:17.7							
	e	PKPab	Z 04:07:22.5							
CLL	i	PKPbc	- Z 04:07:17.6	148.0	20.0	0.9	33			
	i	PKPab	Z 04:07:22.2			0.7	14			
BRG	e	PKPdf	Z 04:07:14.2	148.2	21.8					

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	e	PKPbc	Z	04:07:18.0					
	e	PKPab	Z	04:07:23.0					
MOX	e	PKPbc	Z	04:07:20.0	148.9	17.9			
	e	PKPab	Z	04:07:25.8					
WERD	e	PKPbc	Z	04:07:20.1	149.0	19.2			
	e	PKPab	Z	04:07:26.5					
GUNZ	e	PKPbc	Z	04:07:20.1	149.1	19.3			
	e	PKPab	Z	04:07:26.9					
UBBA	e	PKPbc	Z	04:07:20.1	149.1	14.9			
TNS	e	PKPbc	Z	04:07:22.1	149.9	12.3			
GRA1	e	PKPab	Z	04:07:30.6	149.9	17.7			
WET	e	PKPbc	Z	04:07:22.5	150.1	21.0			
	e	PKPab	Z	04:07:31.4					
GEC2	e	PKPbc	Z	04:07:22.6	150.2	22.7			
WLF	e	PKPbc	Z	04:07:24.6	150.7	8.2			
FUR	e	PKPbc	Z	04:07:25.4	151.4	18.6			
BFO	e	PKPbc	Z	04:07:26.0	151.7	12.9			
	e	PKPab	Z	04:07:37.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/13	04:22:46.9	4.221S	102.342E	33N	4.9			NEIC
Southern Sumatra, Indonesia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z 04:45:25.2	92.2	93.9					
CLL	e PKPbc	Z 04:45:24.2	92.8	93.1					
GEC2	e PKPbc	Z 04:45:30.0	92.3	93.8					
GRA1	e PKPbc	Z 04:45:29.5	93.9	91.9					
MOX	e PKPbc	Z 04:45:26.7	93.7	92.1					
NRDL	e PKPbc	Z 04:45:23.2	95.1	92.4					
TNS	e PKPbc	Z 04:45:29.1	95.7	89.7					
WLF	e PKPbc	Z 04:45:31.7	95.9	89.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/13	05:26:50.0	50.350N	86.020E	33.0N	5.4	5.0		SZGRF
2003/10/13	05:26:37.7	50.233N	87.610E	10G	5.3	5.0		NEIC
Southwestern Siberia, Russia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 05:34:49.3	44.1	62.0	1.2	159	5.6		
	e PP	Z 05:36:30.6							
BRG	e P	Z 05:34:54.8	44.8	60.6	1.1	26	4.9		
	e PP	Z 05:36:37.2							
CLL	i P	- Z 05:34:57.3	45.1	60.6	1.0	71	5.5		
	e PP	Z 05:36:42.7							

	e SS	N	05:45:03.0								
	e L	Z	05:55:00.6			18.0	1688		5.0		
WERD	e P	Z	05:35:03.8	45.9	59.5	1.1	27	5.1			
GUNZ	e P	Z	05:35:04.2	45.9	59.4	1.1	51	5.4			
GEC2	e P	Z	05:35:04.4	45.9	58.8	1.0	26	5.1			
NRDL	e P	Z	05:35:05.6	46.0	60.2	1.2	59	5.4			
MOX	e P	Z	05:35:06.0	46.2	59.4	1.1	45	5.3			
CLZ	e P	Z	05:35:06.6	46.2	59.8	1.2	32	5.2			
	e PP	Z	05:36:54.9								
WET	e P	Z	05:35:06.8	46.2	58.7	1.1	40	5.3			
	e PP	Z	05:36:52.8								
GRA1	e P	Z	05:35:12.3	46.9	58.4	1.1	76	5.6			
	e PP	Z	05:37:00.6								
	e L	Z	05:55:52.3			20.0	1552		5.0		
UBBA	e P	Z	05:35:12.1	47.0	58.7	1.4	27	5.1			
IBBN	e P	Z	05:35:15.3	47.4	58.8	1.0	61	5.7			
	e PP	Z	05:37:07.9								
FUR	e P	Z	05:35:18.2	47.7	57.2	1.0	108	5.9			
	e PP	Z	05:37:07.4								
BUG	e P	Z	05:35:21.2	48.1	57.9	1.1	65	5.7			
TNS	e P	Z	05:35:21.3	48.1	57.6	1.0	36	5.4			
	e PP	Z	05:37:11.8								
STU	e P	Z	05:35:23.9	48.5	56.8	1.0	56	5.6			
BFO	e P	Z	05:35:29.5	49.2	56.1	1.1	26	5.3			
	e PP	Z	05:37:23.3								
WLF	e P	Z	05:35:32.9	49.7	56.1	1.0	24	5.2			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/13	09:52:27.5	17.590S	178.927W	33.0N		6.0		SZGRF
2003/10/13	09:52:30.2	15.899S	178.310W	33N	5.4	5.8		NEIC

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z	10:12:03.2	143.5	18.5	0.9	8			
	e PP	Z	10:15:38.2							
	e SS	E	10:33:50.8							
	e SSS	E	10:39:26.5							
	e LR	Z	10:59:55.5							
	e L	Z	11:11:31.0			22.0	3054		6.0	
GRA1	e PKPbc	Z	10:12:06.0	145.3	16.3					
	e L	Z	11:15:22.2			21.8	2869		6.0	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/13	21:49:11.7	42.190N	49.070E	33.0N	4.6			SZGRF

2003/10/13 21:48:43.3
Caspian Sea

40.863N 52.534E 33N 4.5

NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 21:54:37.0	28.3	95.5	0.8	15	4.8		
RUE	e P	Z 21:54:38.8	28.6	98.3					
CLL	e P	Z 21:54:42.1	28.9	95.5	0.8	8	4.4		
GUNZ	e P	Z 21:54:45.2	29.3	93.2					
WERD	e P	Z 21:54:45.6	29.3	93.4					
MOX	e P	Z 21:54:49.8	29.7	93.1	0.8	19	4.9		
GRA2	e P	Z 21:54:50.6	29.9	91.2					
FUR	e P	Z 21:54:50.6	29.9	88.5					
GRFO	e P	Z 21:54:51.7	30.0	91.1	0.9	8	4.4		
CLZ	e P	Z 21:54:57.2	30.6	94.1	0.7	10	4.7		
UBBA	e P	Z 21:54:58.9	30.8	92.1					
STU	e P	Z 21:55:02.7	31.3	88.1					
TNS	e P	Z 21:55:07.8	31.7	89.9	0.9	9	4.6		
IBBN	e P	Z 21:55:11.8	32.2	92.7					
BUG	e P	Z 21:55:14.2	32.5	90.9	0.9	9	4.6		
WLF	e P	Z 21:55:21.5	33.2	87.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/14	12:39:36.9	44.293N	144.888E	33.0N	5.3	5.4		SZGRF
2003/10/14	12:39:22.0	41.615N	144.168E	33N	5.1	5.3		NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 12:51:19.0	77.8	35.2	0.9	32	5.4		
BRG	e P	Z 12:51:19.5	77.8	35.7	1.2	19	5.1		
NRDL	e P	Z 12:51:19.5	77.9	33.3					
CLZ	e P	Z 12:51:22.4	78.3	33.4	1.6	64	5.5		
IBBN	e P	Z 12:51:24.6	78.8	31.7					
WERD	e P	Z 12:51:24.7	78.8	34.6					
GUNZ	e P	Z 12:51:25.3	78.9	34.6					
MOX	e P	Z 12:51:25.3	78.9	34.1	1.6	37	5.3		
UBBA	e P	Z 12:51:27.0	79.3	33.1					
WET	e P	Z 12:51:29.7	79.7	34.8	1.1	26	5.3		
BUG	e P	Z 12:51:29.3	79.7	31.3	1.4	39	5.4		
GRA1	e P	Z 12:51:30.9	79.8	33.8	1.1	46	5.5		
	e L	Z 13:30:45.2			19.8	1865		5.4	
TNS	e P	Z 12:51:33.1	80.3	32.0	1.3	25	5.1		
FUR	e P	Z 12:51:37.3	81.1	33.7	1.2	58	5.5		
BFO	e P	Z 12:51:41.9	82.0	31.7	1.3	31	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2003/10/14 21:40:54.2
New Caledonia region

24.730S 167.795E 33.0N

SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 22:00:38.9	149.1	44.7					

Date Origin Time
2003/10/15 02:20: 5.4
Mid-Indian Ridge

Lat Long Depth mb Ms
19.613S 68.979E 18.4 5.1

ML Source
SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:32:43.1	86.0	127.0	1.2	17	5.1		
	e pP	Z 02:32:48.4							

Date Origin Time
2003/10/15 02:19:43.6
2003/10/15 02:19:44.0
Fiji Islands region

Lat Long Depth mb Ms
18.100S 176.680W 582.3
17.744S 178.732W 583D 5.8

ML Source
SZGRF
NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 02:38:14.6	143.9	20.5					
NRDL	e PKPbc	Z 02:38:16.7	144.6	14.6					
IBBN	e PKPpdf	Z 02:38:17.5	145.1	10.8					
	e PKPbc	Z 02:38:18.1							
	e PKPab	Z 02:38:19.6							
CLZ	e PKPpdf	Z 02:38:17.4	145.2	15.3					
	e PKPbc	Z 02:38:18.6							
	e PKPab	Z 02:38:20.2							
CLL	i PKPpdf	Z 02:38:17.1	145.2	19.8	1.0	24			
	i PKPbc	Z 02:38:18.5			0.8	134			
	e PKPab	Z 02:38:20.0			1.1	133			
	e pPKPbc	Z 02:40:35.6							
	e	02:41:04.5							
	e sPKPbc	Z 02:41:29.3							
	e pPP	Z 02:43:41.8							
	e sPP	Z 02:44:47.4							
	e SKKSac	N 02:47:37.1							
	e SKSP	Z 02:51:01.3							
BRG	e SPP	Z 02:53:31.8							
	e SS	E 02:59:48.0							
	e sSS	E 03:03:28.4							
	e SSS	E 03:05:19.7							
	e PKPpdf	Z 02:38:17.7	145.4	21.6					
	e PKPbc	Z 02:38:19.4							
	e PKPab	Z 02:38:20.9							

BUG	e	PKPdf	Z	02:38:18.9	146.0	10.2
MOX	e	PKPdf	Z	02:38:18.8	146.1	17.9
	e	PKPbc	Z	02:38:21.2		
WERD	e	PKPdf	Z	02:38:18.9	146.1	19.1
	e	PKPbc	Z	02:38:21.4		
	e	PKPab	Z	02:38:23.8		
GUNZ	e	PKPdf	Z	02:38:19.3	146.2	19.2
	e	PKPbc	Z	02:38:21.7		
	e	PKPab	Z	02:38:24.4		
UBBA	e	PKPdf	Z	02:38:18.9	146.2	15.1
TNS	e	PKPdf	Z	02:38:20.5	147.0	12.6
	e	PKPbc	Z	02:38:23.7		
	e	PKPab	Z	02:38:27.0		
	e	pPKPbc	Z	02:40:36.0		
GRA1	e	PKPdf	Z	02:38:20.6	147.1	17.6
	e	PKPbc	Z	02:38:24.0		
	e	PKPab	Z	02:38:27.7		
	e	pPKPbc	Z	02:40:36.5		
	e	SS	E	03:00:04.3		
	e	SSS	E	03:05:53.7		
WET	e	PKPdf	Z	02:38:20.8	147.2	20.7
	e	PKPbc	Z	02:38:24.4		
	e	PKPab	Z	02:38:28.7		
GEC2	e	PKPdf	Z	02:38:20.7	147.3	22.3
	e	PKPbc	Z	02:38:24.6		
WLF	e	PKPdf	Z	02:38:21.7	147.8	8.8
	e	PKPbc	Z	02:38:26.4		
	e	PKPab	Z	02:38:30.0		
STU	e	PKPdf	Z	02:38:22.5	148.3	14.5
	e	PKPbc	Z	02:38:27.1		
	e	PKPab	Z	02:38:32.3		
FUR	e	PKPdf	Z	02:38:22.6	148.5	18.5
	e	PKPbc	Z	02:38:27.5		
	e	PKPab	Z	02:38:33.7		
	e	pPKPbc	Z	02:40:42.1		
BFO	e	PKPdf	Z	02:38:23.0	148.9	13.1
	e	PKPbc	Z	02:38:28.4		
	e	PKPab	Z	02:38:34.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/15	07:30:30.3	34.018N	140.215E	63.9	5.3			SZGRF
2003/10/15	07:30:35.2	35.432N	139.860E	72*	5.0			NEIC

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:42:58.1	83.5	39.8	1.1	25	5.3		
	e pP	Z 07:43:15.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/16	03:21:0.1	18.653N	69.803W	33.0N	4.9			SZGRF
2003/10/16	03:20:55.2	19.658N	70.780W	10G	4.8			NEIC

Dominican Republic region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:32:09.8	70.0	277.2	1.5	14	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/16	11:20:10.7	37.093N	70.376E	33.0N	4.6			SZGRF
2003/10/16	11:20:03.6	35.910N	69.967E	33N	4.7			NEIC

Afghanistan-Tajikistan border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:28:11.8	44.0	85.1	1.2	16	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/16								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 11:29:53.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/16	12:28:5.3	24.718N	101.817E	33.0N	5.3	5.6		SZGRF
2003/10/16	12:28:08.8	25.891N	101.326E	33N	5.2	5.6		NEIC

Yunnan, China

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:39:24.8	70.6	72.5	1.4	38	5.3		
	e L	Z 13:12:58.9			18.3	3224		5.6	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/16	22:44:51.7	37.375N	23.126E	33.0G	4.2			SZGRF
2003/10/16	22:44:39.9	36.500N	23.090E	17	4.5			NEIC

Southern Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
FUR	e P	Z 22:48:13.1	14.5	139.0					

WET	e P	Z	22:48:14.9	14.7	145.7					
GRA1	e P	Z	22:48:26.9	15.7	142.5	0.7		36		
	e		22:48:31.1			0.9		91		
BRG	e P	Z	22:48:26.8	15.8	152.0					
GUNZ	e P	Z	22:48:29.3	15.9	146.7					
WERD	e P	Z	22:48:29.1	16.0	146.8					
BFO	e P	Z	22:48:28.6	16.0	132.1					
MOX	e P	Z	22:48:34.1	16.4	145.4	0.8		13		
CLL	e P	Z	22:48:34.9	16.5	150.2	0.8		29	4.5	
RUE	e P	Z	22:48:43.5	17.3	154.0					
TNS	e P	Z	22:48:44.4	17.3	136.9					
CLZ	e P	Z	22:48:51.7	17.8	144.6	1.0		14	4.0	
WLF	e P	Z	22:48:58.1	18.0	130.7	1.3		31		
NRDL	e P	Z	22:49:03.2	18.4	145.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	05:30:29.7	52.125N	89.007E	33.0N	5.4	4.7		SZGRF
2003/10/17	05:30:20.5	50.142N	87.694E	10G	5.1	4.7		NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:38:56.8	47.0	58.5	1.3	37	5.4		
	e PP	Z 05:40:48.0							
	e L	Z 05:57:55.8			19.3	836		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	07:02:07.2	19.283S	169.009E	179*	4.7			NEIC

Vanuatu Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 07:21:24.3	144.8	38.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	10:19:06.5	5.471S	154.069E	132D	6.2			NEIC

Bougainville - Solomon Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e Pdiff	Z 10:34:25.6	124.0	49.0					
	i PKPdf	+ Z 10:37:50.2			1.0	60			
	e pPKPdf	Z 10:38:25.2							
	e PP	Z 10:39:42.8							
	e PKKP	Z 10:47:35.7							
	e SKSP	Z 10:49:26.9							

	e			10:50:51.7							
	e SS	N		10:56:23.4							
	e LR	Z		11:18:17.6							
	e L	Z		11:29:49.2			22.0	1923		5.7	
GRA1	e Pdiff	Z		10:34:32.9	125.9	47.9					
	e PKPdf	Z		10:37:54.3							
	e pPKPdf	Z		10:38:31.3							
	e PP	Z		10:39:53.8							
	e L	Z		11:33:33.0			21.3	2098		5.8	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	12:57: 5.2	36.000N	22.940E	33.0N	5.1	5.3		SZGRF
2003/10/17	12:57:07.6	35.955N	22.219E	33N	5.3			NEIC

Southern Greece

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
FUR	e P	Z	13:00:34.9	14.6	142.5	1.3	304			
WET	e P	Z	13:00:34.0	14.8	149.2	1.4	157			
GRA1	e P	Z	13:00:51.5	15.9	145.7	1.5	648			
	e L	Z	13:08:13.9			18.0	18828		5.3	
STU	e P	Z	13:00:51.0	16.0	138.5	1.9	348			
BFO	e P	Z	13:00:53.9	16.0	135.3	1.5	204	5.0		
BRG	e P	Z	13:00:51.8	16.1	155.1	1.2	118	4.9		
GUNZ	e P	Z	13:00:53.8	16.1	149.9	1.0	106			
WERD	e P	Z	13:00:52.4	16.2	150.0	1.9	365			
MOX	e P	Z	13:00:59.4	16.6	148.5	1.9	309			
CLL	e P	Z	13:01:01.0	16.7	153.2	1.0	154	5.1		
UBBA	e P	Z	13:01:09.4	17.3	144.7	1.6	240			
TNS	e P	Z	13:01:10.6	17.4	139.9	1.5	230			
RUE	e P	Z	13:01:13.1	17.6	156.8	0.8	235			
CLZ	e P	Z	13:01:18.1	18.0	147.4	1.5	224	5.1		
WLF	e P	Z	13:01:19.3	18.0	133.5	1.2	275			
NRDL	e P	Z	13:01:26.1	18.6	147.9	1.6	391			
BUG	e P	Z	13:01:28.2	18.8	139.6	1.7	650	5.6		
IBBN	e P	Z	13:01:34.7	19.3	142.3	1.4	151			
HLG	e P	Z	13:01:47.0	20.8	145.6	0.9	222			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	14:58:28.6	44.425N	11.574E	10.0G				SZGRF
2003/10/17	14:58:25.8	44.111N	11.539E	3				NEIC

Northern Italy

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WET	e Pn	Z	14:59:40.0	5.1	190.8					
	e Sn	E	15:00:34.8							

WERD	e Pn	Z	14:59:58.9	6.4	185.0
MOX	e Pn	Z	14:59:58.9	6.5	180.5
	e Sn	N	15:01:08.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	17:19:51.4	6.130S	102.410E	33.0N	5.7	5.4		SZGRF
2003/10/17	17:19:53.3	4.997S	102.509E	33N	5.6	5.7		NEIC

Southwest of Sumatera, Indonesia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	17:33:05.4	93.0	94.3	1.5	54	5.6		
RUE	e P	Z	17:33:06.2	93.2	94.1	1.4	83	5.9		
WET	e P	Z	17:33:07.9	93.5	93.6	1.3	57	5.7		
CLL	i P	- Z	17:33:07.8	93.6	93.5	1.3	28	5.5		
	e PP	Z	17:37:07.5							
	e PPP	Z	17:39:08.9							
	e SKSac	E	17:43:39.0							
	e S	N	17:44:16.3							
	e SP	Z	17:45:24.2							
	e SS	E	17:50:36.6							
	e LR	Z	18:05:46.1							
	e L	Z	18:23:05.8			20.0	2139		5.6	
GUNZ	e P	Z	17:33:09.9	94.0	93.1	1.3	33	5.6		
WERD	e P	Z	17:33:09.8	94.0	93.0	1.2	24	5.5		
MOX	e P	Z	17:33:11.8	94.4	92.5	1.3	31	5.6		
FUR	e P	Z	17:33:12.3	94.5	92.4	0.7	19	5.7		
GRA1	e P	Z	17:33:13.3	94.6	92.3	1.3	59	5.9		
	e PP	Z	17:37:21.4							
	e SP	Z	17:45:47.7							
	e L	Z	18:24:08.6			21.2	1405		5.4	
CLZ	e P	Z	17:33:15.5	95.2	91.4	1.6	45	5.8		
NRDL	e P	Z	17:33:16.5	95.4	91.1	1.5	39	5.7		
UBBA	e P	Z	17:33:16.3	95.5	91.2	1.5	22	5.5		
STU	e P	Z	17:33:18.5	95.9	90.8	1.4	37	5.8		
TNS	e P	Z	17:33:21.0	96.4	90.1	1.1	28	5.8		
BFO	e P	Z	17:33:20.6	96.5	90.2	2.1	67	5.9		
BUG	e P	Z	17:33:24.5	97.2	89.0					
WLF	e P	Z	17:33:28.0	97.9	88.4	1.4	34	5.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/17	22:50:12.2	41.398N	143.999E	29.4	5.5	5.1		SZGRF
2003/10/17	22:50:09.8	41.648N	144.030E	33N	5.2	5.0		NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1	e P	Z	23:02:18.3	79.7	33.9	1.0	62	5.5
	e pP	Z	23:02:26.8					
GRFO	e S	N	23:12:46.6	79.7	33.9			
	e L	Z	23:41:21.4			20.4	810	5.1

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/18	22:26:58.1	0.620S	126.740E	50.0N		6.3		SZGRF
2003/10/18	22:27:13.3	0.509N	126.059E	33N	6.2	6.1		NEIC

Southern Molucca Sea

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e SP	Z	22:54:17.7	102.5	70.9					
RUE	e Pdiff	Z	22:41:10.1	102.9	71.7					
	e SP	Z	22:54:21.9							
BRG	e Pdiff	Z	22:41:11.5	103.3	72.2					
	e SP	Z	22:54:26.8							
CLL	i Pdiff	Z	22:41:13.4	103.8	71.3	1.0	19			
	e		22:41:21.4							
	e PP	Z	22:45:38.4							
	e SKSac	R	22:51:51.4							
	e Sdiff	T	22:52:56.2							
	e SP	Z	22:54:31.8							
	e SS	R	23:00:29.3							
	e SSS	Z	23:04:58.9							
	e LQ	T	23:09:52.3							
	e L	Z	23:30:29.6			22.0	11303		6.4	
WET	e Pdiff	Z	22:41:18.6	104.5	71.7					
	e SP	Z	22:54:41.0							
MOX	e Pdiff	Z	22:41:18.6	104.8	70.3					
	e SP	Z	22:54:42.2							
NRDL	e Pdiff	Z	22:41:19.9	105.0	68.6					
	e SP	Z	22:54:44.5							
CLZ	e Pdiff	Z	22:41:21.7	105.1	69.0					
	e SP	Z	22:54:44.3							
GRA1	e Pdiff	Z	22:41:28.1	105.4	70.2					
	e PP	Z	22:45:57.9							
	e SKSac	E	22:51:59.4							
	e SP	Z	22:54:48.2							
	e L	Z	23:31:10.3			21.6	9479		6.3	
HLG	e SP	Z	22:54:52.5	105.6	66.2					
UBBA	e SP	Z	22:54:48.8	105.7	68.9					
FUR	e SP	Z	22:54:52.3	105.8	70.7					
IBBN	e Pdiff	Z	22:41:25.2	106.4	66.6					
	e SP	Z	22:54:59.2							
TNS	e SP	Z	22:55:00.6	106.8	67.8					
STU	e SP	Z	22:55:03.7	106.9	68.8					
BUG	e SP	Z	22:55:05.6	107.1	66.4					

BFO	e SP	Z	22:55:10.8	107.6	68.2
WLF	e SP	Z	22:55:20.2	108.4	66.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/19	02:10:30.8	43.853N	15.352E	10.0G				SZGRF
2003/10/19	02:10:28.7	43.747N	15.276E	10G				NEIC

Adriatic Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
FUR	e Pn	Z 02:11:47.9	5.2	146.3					
	e Sn	N 02:12:46.0							
WET	e Pn	Z 02:11:52.6	5.6	162.1					
	e Sn	N 02:12:54.7							
GRA1	e Pn	Z 02:12:05.8	6.6	153.4					
BFO	e Pn	Z 02:12:06.7	6.6	131.0					
	e Sn	E 02:13:19.2							
TANN	e Pn	Z 02:12:10.2	6.9	162.9					
	e Sn	N 02:13:26.2							
MOX	e Pn	Z 02:12:15.2	7.3	158.8					
	e Sn	N 02:13:33.7							
CLL	e Pn	Z 02:12:21.5	7.7	167.7					
TNS	e Pn	Z 02:12:25.8	8.0	141.7					
	e Sn	E 02:13:52.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/19	05:20:52.8	34.667N	138.755E	33.0N	5.0			SZGRF

Near south coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:33:18.8	83.7	41.0	0.9	9	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/19	13:27: 5.0	31.970S	181.950E	33.0N	5.6			SZGRF
2003/10/19	13:27:38.3	30.429S	179.451W	265*	4.7			NEIC

Kermadec Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPab	Z 13:47:33.9	156.8	21.4	1.0	5			
CLL	e PKPdf	Z 13:47:04.7	157.2	28.6	0.8	3			
	e PKPdif	Z 13:47:14.4			0.9	7			
	i PKPab	Z 13:47:35.4			0.9	26			
BRG	e PKPab	Z 13:47:36.2	157.3	31.1	0.9	10	5.4		
CLZ	e PKPab	Z 13:47:36.6	157.4	22.5	1.0	17	5.3		

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IBBN	e	PKPab	Z	13:47:36.8	157.5	16.4	1.1	58	5.8
WERD	e	PKPab	Z	13:47:40.2	158.1	28.2	1.1	16	5.4
MOX	e	PKPab	Z	13:47:39.9	158.2	26.4	1.2	23	5.5
GUNZ	e	PKPab	Z	13:47:40.4	158.2	28.3	1.0	22	5.5
UBBA	e	PKPab	Z	13:47:40.8	158.4	22.7			
WET	e	PKPab	Z	13:47:44.6	159.1	31.0	1.0	8	5.2
GRA1	e	PKPab	Z	13:47:44.7	159.1	26.6	1.2	33	5.7
TNS	e	PKPab	Z	13:47:44.9	159.3	19.6	0.9	12	5.4
WLF	e	PKPab	Z	13:47:49.5	160.3	14.5			
FUR	e	PKPab	Z	13:47:50.7	160.5	28.7	1.0	44	6.2
STU	e	PKPab	Z	13:47:50.3	160.5	22.9	1.2	22	5.8
BFO	e	PKPab	Z	13:47:52.8	161.1	21.2	0.9	10	5.5

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/19	18:22:41.3	19.010S	178.360W	33.0N				SZGRF

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
IBBN	e	PKPbc	Z 18:42:18.7	146.4	10.5					
CLZ	e	PKPbc	Z 18:42:19.0	146.5	15.1					
CLL	e	PKPbc	Z 18:42:18.7	146.5	19.7					
BRG	e	PKPbc	Z 18:42:19.6	146.7	21.5					
BUG	e	PKPab	Z 18:42:23.0	147.3	9.9					
MOX	e	PKPbc	Z 18:42:21.4	147.4	17.7					
	e	PKPab	Z 18:42:23.6							
TNS	e	PKPbc	Z 18:42:23.9	148.3	12.3					
	e	PKPab	Z 18:42:27.3							
GRA1	e	PKPbc	Z 18:42:24.2	148.4	17.5					
	e	PKPab	Z 18:42:27.6							
GRFO	e	PKPab	Z 18:42:28.2	148.4	17.5					
WET	e	PKPbc	Z 18:42:24.5	148.5	20.7					
FUR	e	PKPbc	Z 18:42:27.9	149.8	18.3					
BFO	e	PKPbc	Z 18:42:28.5	150.2	12.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/19	23:27:23.3	44.080N	145.810E	13.9	5.1			SZGRF
2003/10/19	23:27:27.7	43.015N	145.070E	88	4.9			NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e	P	Z 23:39:13.3	76.9	33.9	1.1	27	5.2		
BRG	e	P	Z 23:39:13.6	77.0	34.4	1.1	8	4.7		
CLZ	e	P	Z 23:39:16.5	77.4	32.2	1.5	50	5.4		
IBBN	e	P	Z 23:39:18.5	77.8	30.5					
WERD	e	P	Z 23:39:19.0	77.9	33.3					

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GUNZ	e P	Z	23:39:19.4	77.9	33.3	1.0	11	4.9
MOX	e P	Z	23:39:19.4	78.0	32.9	0.9	5	4.7
BUG	e P	Z	23:39:23.1	78.7	30.1	1.1	19	5.1
WET	e P	Z	23:39:24.3	78.8	33.5	1.2	19	5.1
GRA1	e P	Z	23:39:25.0	78.9	32.5	0.9	21	5.2
	e pP	Z	23:39:29.0					
TNS	e P	Z	23:39:27.0	79.4	30.7	1.2	12	4.9
FUR	e P	Z	23:39:31.7	80.2	32.4	0.9	22	5.3
STU	e P	Z	23:39:32.5	80.4	31.1			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/20	03:16:42.2	43.344N	145.664E	33.0N	4.9			SZGRF
2003/10/20	03:16:37.5	43.856N	148.143E	33N	4.7			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:28:42.3	79.2	30.1	1.0	13	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/20	06:26:36.9	38.400N	47.740E	33.0N	4.6	4.1		SZGRF
2003/10/20	06:26:51.0	38.684N	44.518E	10G	4.8			NEIC

Northwestern Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 06:32:13.2	24.6	107.7					
WET	e P	Z 06:32:15.8	24.8	102.9	0.9	14	4.4		
	e S	E 06:36:51.0							
CLL	e P	Z 06:32:20.3	25.3	107.5					
	e S	E 06:36:58.1							
GUNZ	e P	Z 06:32:22.8	25.5	104.8	1.7	30	4.5		
WERD	e P	Z 06:32:22.7	25.5	105.0	1.6	15	4.3		
FUR	e P	Z 06:32:24.2	25.7	99.2					
	e S	E 06:37:08.4							
MOX	e S	E 06:37:08.4	26.0	104.6					
GRA1	e P	Z 06:32:28.2	26.0	102.3	1.6	123	5.2		
	e S	E 06:37:15.5							
	e L	Z 06:45:20.9			20.8	568		4.1	
UBBA	e P	Z 06:32:37.4	27.0	103.2					
CLZ	e P	Z 06:32:36.2	27.1	105.5					
NRDL	e P	Z 06:32:40.4	27.4	106.5					
BFO	e P	Z 06:32:43.5	27.7	96.8					
	e S	E 06:37:41.8							
TNS	e S	E 06:37:47.0	27.9	100.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/20	18:40:2.7	18.750S	175.940W	50.0N				SZGRF
2003/10/20	18:40:00.5	18.672S	175.094W	33N	5.3			NEIC

Tonga Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z	18:59:34.3	145.5	14.9					
NRDL	e PKPbc	Z	18:59:36.0	145.9	8.8					
IBBN	e PKPbc	Z	18:59:37.5	146.3	4.9					
CLZ	e PKPbc	Z	18:59:38.1	146.6	9.4					
CLL	e PKPbc	Z	18:59:38.2	146.7	14.1					
BRG	e PKPbc	Z	18:59:39.3	147.0	15.9					
BUG	e PKPbc	Z	18:59:39.4	147.2	4.1					
MOX	e PKPbc	Z	18:59:40.8	147.6	11.9					
	e PKPab	Z	18:59:42.6							
WERD	e PKPbc	Z	18:59:41.1	147.7	13.2					
GUNZ	e PKPbc	Z	18:59:41.0	147.8	13.3					
	e PKPab	Z	18:59:43.8							
TNS	e PKPbc	Z	18:59:42.8	148.3	6.4					
	e PKPab	Z	18:59:46.2							
GRA1	e PKPbc	Z	18:59:43.6	148.6	11.5					
	e PKPab	Z	18:59:47.6							
WET	e PKPbc	Z	18:59:44.0	148.9	14.7					
WLF	e PKPbc	Z	18:59:45.0	149.0	2.3					
STU	e PKPbc	Z	18:59:46.3	149.7	8.1					
FUR	e PKPbc	Z	18:59:47.1	150.1	12.2					
	e PKPab	Z	18:59:53.0							
BFO	e PKPbc	Z	18:59:47.4	150.2	6.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/20	22:39:54.6	17.984S	175.959E	33.0N				SZGRF

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPdf	Z	22:59:14.2	146.0	26.6					
	e PKPab	Z	22:59:31.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/21	14:52:19.5	44.330N	146.565E	33.0N	5.1			SZGRF
2003/10/21	14:52:33.7	44.960N	146.538E	151D	4.6			NEIC

Kuril Islands, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	15:04:16.4	77.7	30.6	0.8	15	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/21	21:06:38.1	23.181S	176.265W	33N	4.9			NEIC

South of the Fiji Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKP	Z 21:26:24.9	149.7	18.5					
CLZ	e PKP	Z 21:26:28.2	150.9	12.6					
CLL	e PKP	Z 21:26:27.9	151.0	17.8					
BRG	e PKP	Z 21:26:28.6	151.2	19.8					
MOX	e PKP	Z 21:26:29.7	151.9	15.5					
WERD	e PKP	Z 21:26:30.2	151.9	16.9					
GRA1	e PKP	Z 21:26:31.1	152.8	15.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/22	02:30:39.3	8.444N	102.937W	10G	5.2	5.2		NEIC

Off coast of Mexico

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PP	Z 02:48:28.1	99.1	295.7					
	e SKSac	R 02:55:02.8							
	e SP	R 02:57:14.1							
	e PPS	T 02:58:05.5							
	e SS	R 03:02:46.1							
	e LQ	T 03:12:11.9							
	e LR	Z 03:17:28.6							
	e L	Z 03:26:46.1			22.0	1253		5.4	
GRA1	e PP	Z 02:48:35.7	98.6	294.1					
	e PS	N 02:57:26.1							
	e SS	N 03:02:47.3							
	e L	Z 03:25:29.5			20.8	1193		5.4	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/22	11:45:28.1	6.250S	148.720E	33.0G		6.3		SZGRF
2003/10/22	11:45:28.2	6.053S	147.686E	33N	6.3	6.3		NEIC

New Britain, Papua New Guinea, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPdf	Z 12:04:17.0	120.2	56.0					
	e PP	Z 12:05:46.8							
BRG	e PKPdf	Z 12:04:18.8	121.0	57.0					
CLL	e PKPdf	Z 12:04:19.2	121.3	55.8					
	e	12:04:35.8							

NRDL	e	PKPdf	Z	12:04:21.0	122.0	52.3			
WERD	e	PKPdf	Z	12:04:21.0	122.1	55.6			
GUNZ	e	PKPdf	Z	12:04:20.9	122.2	55.7			
	e			12:04:37.8					
CLZ	e	PKPdf	Z	12:04:21.3	122.3	52.9			
	e	PP	Z	12:06:01.2					
MOX	e	PKPdf	Z	12:04:21.4	122.4	54.8			
WET	e	PKPdf	Z	12:04:21.4	122.6	56.8			
	e	PP	Z	12:06:02.0					
UBBA	e	PKPdf	Z	12:04:22.3	123.1	53.1			
GRA1	e	Pdiff	Z	12:00:55.9	123.1	54.9			
	e	PKPdf	Z	12:04:23.6					
	e			12:04:38.8					
	e	PP	Z	12:06:07.6					
	e	PPP	Z	12:08:43.1					
	e	PKKPab	Z	12:14:14.9					
	e			12:14:30.5					
	e	PS	R	12:16:04.4					
	e	SS	T	12:23:23.5					
	e	L	Z	13:02:38.4			19.6	7168	6.3
IBBN	e	PKPdf	Z	12:04:23.8	123.3	50.0			
	e	PP	Z	12:06:07.0					
FUR	e	PKPdf	Z	12:04:24.2	124.0	55.8			
BUG	e	PKPdf	Z	12:04:25.3	124.1	49.9			
TNS	e	PKPdf	Z	12:04:25.3	124.3	51.8			
	e	PP	Z	12:06:14.6					
STU	e	PKPdf	Z	12:04:26.4	124.8	53.3			
BFO	e	PKPdf	Z	12:04:26.6	125.5	52.7			
WLF	e	PKPdf	Z	12:04:28.5	125.8	49.7			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/22	16:46:14.7	43.172N	13.675E	10.0G			3.5	SZGRF
2003/10/22	16:46:11.9	43.135N	13.735E	10G				NEIC

Central Italy

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
KBA	e Pn	Z 16:47:14.6	4.0	175.9					3.4
	e Sn	N 16:47:58.6							
ARSA	e Pn	Z 16:47:19.7	4.3	197.7					
WTTA	e Pn	Z 16:47:21.0	4.4	159.5					
	e Sn	N 16:48:12.2							
MOA	e Pn	Z 16:47:26.1	4.7	184.7					3.3
	e Sn	E 16:48:18.8							
DAVA	e Sn	E 16:48:22.7	5.0	145.4					3.6
WET	e Pn	Z 16:47:41.6	6.0	174.0					
	e Sn	E 16:48:46.6							
GRA1	e Sn	N 16:49:07.6	6.8	164.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/22	20:11:27.7	26.462N	45.718W	33.0N	4.7			SZGRF
2003/10/22	20:11:59.5	30.906N	41.144W	10G	4.6	4.3		NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:20:11.6	43.1	264.3	1.5	16	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/22	22:35:57.8	6.515S	154.882E	29D	5.1	4.5		NEIC

Bougainville reg, P.N.G.

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKP	Z 22:54:57.2	125.1	49.9					
CLL	e PKP	Z 22:54:57.7	125.3	48.7					
WET	e PKP	Z 22:55:00.9	126.7	49.7					
GRA1	e PKP	Z 22:55:01.4	127.2	47.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	00:25:55.5	50.680N	87.540E	33.0N	5.2	4.9		SZGRF
2003/10/23	00:25:46.0	49.924N	88.295E	10G	5.1	4.8		NEIC

Southwestern Siberia, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 00:34:01.3	44.6	62.0	1.0	59	5.3		
BRG	e P	Z 00:34:06.5	45.3	60.7	1.2	22	4.9		
CLL	e P	Z 00:34:09.5	45.6	60.6	0.7	37	5.5		
	e PP	Z 00:35:59.8							
	e S	E 00:40:58.3							
	e SS	N 00:44:12.6							
	e LR	Z 00:46:48.3							
	e L	Z 00:54:29.7			18.0	684		4.6	
WERD	e P	Z 00:34:15.6	46.4	59.6	1.1	15	5.0		
GUNZ	e P	Z 00:34:15.9	46.5	59.5	1.4	42	5.3		
GEC2	e P	Z 00:34:16.0	46.5	58.9	1.2	14	4.9		
NRDL	e P	Z 00:34:17.6	46.6	60.2	1.4	51	5.4		
MOX	e P	Z 00:34:17.8	46.7	59.4	1.0	27	5.2		
CLZ	e P	Z 00:34:18.5	46.8	59.8	0.9	13	5.0		
WET	e P	Z 00:34:18.6	46.8	58.8	1.8	44	5.2		
GRA1	e P	Z 00:34:24.0	47.4	58.5	1.3	77	5.7		
	e L	Z 00:55:54.2			18.6	1128		4.9	
UBBA	e P	Z 00:34:24.1	47.5	58.8	1.7	36	5.2		

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IBBN	e P	Z	00:34:26.4	47.9	58.8	1.1	76	5.7
FUR	e P	Z	00:34:29.9	48.2	57.3	0.9	38	5.5
BUG	e P	Z	00:34:33.0	48.6	57.9	1.0	33	5.4
TNS	e P	Z	00:34:33.1	48.6	57.6	0.9	19	5.2
STU	e P	Z	00:34:35.7	49.0	56.9	0.9	29	5.4
BFO	e P	Z	00:34:41.0	49.7	56.2	1.0	14	4.9
WLF	e P	Z	00:34:45.6	50.2	56.1	1.1	20	5.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	04:55:32.4	18.022S	178.570W	600G	4.3			NEIC
Fiji Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 05:14:11.0	147.4	17.5					
GRB2	e pPKP	Z 05:16:25.9	147.7	18.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	07:53:56.0	11.513N	141.543E	33N	5.2	5.1		NEIC
State of Yap, Fed. States of Micronesia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PP	Z 08:12:14.7	103.2	52.0					
	e SKKSac	Z 08:19:11.1							
	e PS	E 08:21:20.0							
	e PPS	E 08:22:10.4							
	e SS	Z 08:27:02.3							
	e SS	E 08:27:04.6							
	e L	Z 08:58:39.8			20.0	2017		5.6	
GRA1	e L	Z 08:59:30.0	105.1	50.7	18.8	1706		5.6	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	07:58:28.8	23.852S	178.789W	546.7				SZGRF
2003/10/23	07:58:27.2	23.803S	179.723E	536D	5.2			NEIC
South of Fiji Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 08:17:17.0	149.4	25.9					
NRDL	e PKPdf	Z 08:17:12.6	150.2	19.4					
	e PKPbc	Z 08:17:18.8							
CLL	i PKPdf	Z 08:17:13.4	150.7	25.4	1.0	10			
	i PKPbc	+ Z 08:17:19.8			0.7	130			
	i PKPab	Z 08:17:29.1			0.6	21			
	e pPKPdf	Z 08:19:22.9							

	e pPKPbc	Z	08:19:27.3		
	e SKKSac	R	08:26:58.6		
	e PPS	Z	08:34:05.4		
	e SS	T	08:39:37.1		
BRG	e PKPdf	Z	08:17:13.8	150.8	27.4
	e PKPbc	Z	08:17:20.4		
	e pPKPbc	Z	08:19:27.5		
CLZ	e PKPdf	Z	08:17:13.8	150.8	20.3
	e PKPbc	Z	08:17:20.4		
IBBN	e PKPdf	Z	08:17:13.9	150.8	15.2
	e PKPbc	Z	08:17:20.2		
	e PKPab	Z	08:17:30.4		
MOX	e PKPdf	Z	08:17:14.5	151.6	23.4
	e PKPbc	Z	08:17:22.0		
	e PKPab	Z	08:17:33.1		
	e pPKPbc	Z	08:19:29.7		
WERD	e PKPdf	Z	08:17:14.8	151.6	24.8
	e PKPbc	Z	08:17:22.1		
GUNZ	e PKPdf	Z	08:17:14.9	151.7	24.9
	e PKPbc	Z	08:17:22.4		
	e PKPab	Z	08:17:34.2		
	e pPKPbc	Z	08:19:29.2		
BUG	e PKPdf	Z	08:17:15.0	151.8	14.7
	e PKPbc	Z	08:17:21.7		
UBBA	e PKPdf	Z	08:17:14.8	151.8	20.2
	e PKPbc	Z	08:17:22.1		
GRA1	e PKPdf	Z	08:17:15.9	152.6	23.3
	e PKPbc	Z	08:17:24.4		
	e PKPab	Z	08:17:37.9		
WET	e PKPdf	Z	08:17:15.4	152.6	26.9
	e PKPbc	Z	08:17:23.8		
	e PKPab	Z	08:17:38.4		
GEC2	e PKPdf	Z	08:17:15.8	152.6	28.7
	e PKPbc	Z	08:17:24.2		
	e PKPab	Z	08:17:38.6		
TNS	e PKPdf	Z	08:17:16.2	152.7	17.6
	e PKPbc	Z	08:17:24.3		
	e PKPab	Z	08:17:37.5		
WLF	e PKPdf	Z	08:17:17.7	153.7	13.3
	e PKPbc	Z	08:17:26.7		
	e PKPab	Z	08:17:42.9		
STU	e PKPdf	Z	08:17:18.6	153.9	20.0
	e PKPbc	Z	08:17:26.9		
	e PKPab	Z	08:17:43.3		
FUR	e PKPdf	Z	08:17:18.6	154.0	24.7
	e PKPbc	Z	08:17:27.3		
	e PKPab	Z	08:17:44.2		
BFO	e PKPdf	Z	08:17:18.6	154.5	18.6
	e PKPbc	Z	08:17:28.1		

e PKPab Z 08:17:45.5

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	10:54:44.9	51.920N	176.190E	41.8	5.6	5.0		SZGRF
2003/10/23	10:54:39.3	51.427N	176.626E	33N	5.4	5.1		NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	11:06:09.9	73.1	10.8					
RUE	e P	Z	11:06:21.7	75.1	11.0					
NRDL	e P	Z	11:06:23.8	75.5	8.6	1.4	44	5.3		
IBBN	e P	Z	11:06:26.4	75.8	7.1	0.9	97	6.0		
CLZ	e P	Z	11:06:27.8	76.1	8.8	1.1	59	5.6		
CLL	i P	+ Z	11:06:28.5	76.3	10.4	1.8	85	5.6		
	e pP	Z	11:06:40.3							
	e PP	Z	11:09:20.0							
	e PPP	Z	11:11:01.0							
	e S	T	11:16:11.1							
	e PS	R	11:16:55.2							
	e SS	R	11:21:08.8							
	e LQ	T	11:29:27.1							
	e LR	Z	11:31:21.1							
	e L	Z	11:38:24.3			22.0	726		5.0	
BRG	e P	Z	11:06:30.3	76.7	11.0	0.8	14	5.2		
	e pP	Z	11:06:42.3							
BUG	e P	Z	11:06:31.0	76.7	6.8	1.2	60	5.6		
	e pP	Z	11:06:42.3							
UBBA	e P	Z	11:06:33.1	77.1	8.5	1.5	44	5.4		
MOX	e P	Z	11:06:33.3	77.1	9.5	2.2	121	5.6		
WERD	e P	Z	11:06:34.2	77.3	9.9	1.4	42	5.4		
	e pP	Z	11:06:46.4							
GUNZ	e P	Z	11:06:34.4	77.3	10.0	1.5	59	5.5		
TNS	e P	Z	11:06:37.4	77.9	7.5	1.2	36	5.4		
GRA1	e P	Z	11:06:39.4	78.1	9.2	0.5	41	5.8		
	e pP	Z	11:06:51.2							
	e L	Z	11:51:03.0			18.6	698		5.0	
GRFO	e PP	Z	11:09:36.8	78.1	9.2					
	e S	R	11:16:44.1							
	e SS	R	11:21:46.5							
WET	e P	Z	11:06:41.3	78.5	10.3	1.5	45	5.4		
WLF	e P	Z	11:06:41.8	78.6	6.0	0.7	28	5.5		
GEC2	e P	Z	11:06:42.1	78.7	10.8					
STU	e P	Z	11:06:44.8	79.2	7.9	1.0	62	5.6		
FUR	e P	Z	11:06:48.0	79.6	9.2	1.0	58	5.6		
BFO	e P	Z	11:06:47.7	79.7	7.4	1.1	34	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	11:57:26.5	17.449S	177.656W	400G	4.4			NEIC

Fiji region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKP	Z 12:16:19.4	145.1	18.0					
BRG	e PKP	Z 12:16:20.4	145.3	19.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	15:32:20.2	53.199N	176.271W	33.0N	4.7			SZGRF
2003/10/23	15:32:09.8	51.440N	176.631E	33N	4.7			NEIC

Andreanof Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:44:09.7	78.1	9.2	0.9	6	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	17:24:14.6	37.282N	40.893E	33.0N	5.2			SZGRF
2003/10/23	17:24:04.5	37.518N	42.613E	33N	4.7	4.6		NEIC

Turkey

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:29:33.3	25.5	106.5	1.0	47	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	22:50:41.4	19.029S	178.984W	600G	4.5			NEIC

Fiji region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKP	Z 23:09:15.3	145.8	15.4					
CLL	i PKPbc	- Z 23:09:16.5	146.4	20.8	0.9	16			
BRG	e PKP	Z 23:09:17.1	146.5	22.6					
MOX	e PKP	Z 23:09:19.1	147.3	18.8					
WERD	e PKP	Z 23:09:19.5	147.3	20.0					
GUNZ	e PKP	Z 23:09:19.9	147.4	20.1					
TNS	e PKP	Z 23:09:21.4	148.2	13.4					
GEC2	e PKP	Z 23:09:22.1	148.5	23.4					
WLF	e PKP	Z 23:09:24.5	149.1	9.5					
STU	e PKP	Z 23:09:24.1	149.5	15.4					
FUR	e PKP	Z 23:09:25.2	149.7	19.5					
BFO	e PKP	Z 23:09:26.1	150.1	14.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	23:14:15.9	45.948N	7.655E	10.0G				SZGRF

Northern Italy

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
ZUR	e Pn	Z 23:14:43.8	1.6	204.4					
	e Sg	E 23:15:05.9							
SULZ	e Pn	Z 23:14:44.7	1.6	191.4					
	e Sg	N 23:15:08.1							
WILA	e Pn	Z 23:14:45.8	1.7	210.8					
SLE	e Pn	Z 23:14:48.1	1.9	197.8					
	e Sg	N 23:15:15.1							
BFO	e Pn	Z 23:14:55.1	2.4	191.2					
TNS	e Pn	Z 23:15:21.2	4.3	187.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/23	22:47:21.2	3.618S	149.679E	33N	4.9			NEIC

Bismarck Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PS	Z 23:17:16.0	120.3	52.5					
	e	23:19:22.4							
	e SS	R 23:24:14.0							
	e SSS	R 23:28:18.2							
	e LR	Z 23:45:29.3							
	e L	Z 23:58:44.0			22.0	352	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/24	01:27:1.6	3.940S	146.310E	33.0N		6.0		SZGRF
2003/10/24	01:26:57.3	3.595S	145.388E	33N				NEIC

Bismarck Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e PP	Z 01:46:49.0	116.0	55.5					
RUE	e PP	Z 01:46:55.3	117.0	56.8					
	e PPP	Z 01:49:23.8							
BRG	e PP	Z 01:46:59.8	117.7	57.7					
	e PPP	Z 01:49:30.3							
CLL	e PP	Z 01:47:02.9	118.0	56.6					
	e PPP	Z 01:49:20.8							
	e Sdiff	T 01:54:47.8							
	e SKSP	R 01:56:44.4							
	e PS	E 01:56:44.5							

	e SS	R	02:03:21.7								
	e SSS	R	02:07:35.4								
	e LQ	T	02:18:41.1								
	e LR	Z	02:24:26.3								
	e L	Z	02:35:41.9			22.0	5040		6.1		
NRDL	e PP	Z	01:47:06.3	118.8	53.2						
	e PPP	Z	01:49:38.9								
GEC2	e PP	Z	01:47:08.1	118.9	58.4						
	e PPP	Z	01:49:40.1								
CLZ	e PP	Z	01:47:08.6	119.0	53.8						
MOX	e PP	Z	01:47:08.0	119.1	55.6						
	e PPP	Z	01:49:42.1								
WET	e PP	Z	01:47:09.8	119.2	57.5						
	e PPP	Z	01:49:43.1								
UBBA	e PP	Z	01:47:14.4	119.8	53.9						
	e PPP	Z	01:49:48.8								
GRA1	e PP	Z	01:47:15.6	119.8	55.6						
	e L	Z	02:39:35.7			20.1	3423		6.0		
GRFO	e PS	E	01:57:01.8	119.8	55.6						
	e SS	N	02:03:59.3								
IBBN	e PPP	Z	01:49:49.0	120.0	51.0						
FUR	e PP	Z	01:47:19.5	120.7	56.4						
BUG	e PP	Z	01:47:19.4	120.8	50.9						
	e PPP	Z	01:49:57.9								
TNS	e PP	Z	01:47:22.6	121.0	52.6						
	e PPP	Z	01:49:58.4								
STU	e PP	Z	01:47:25.4	121.5	54.1						
BFO	e PP	Z	01:47:31.9	122.2	53.4						
WLF	e PP	Z	01:47:34.5	122.5	50.6						

Date Origin Time Lat Long Depth mb Ms ML Source
 2003/10/24 02:05:19.7 45.397N 11.544E 10.0G 2.8 SZGRF
 Northern Italy

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
KBA	e Sg	E 02:06:27.0	2.1	217.2					2.5
DAVA	e Pn	Z 02:05:58.2	2.2	148.1					2.5
	e Sg	N 02:06:29.1							
MOA	e Pn	Z 02:06:08.7	3.1	218.3					
GEC2	e Pn	Z 02:06:17.0	3.7	203.9					
	e Sn	N 02:07:00.4							
WET	e Pn	Z 02:06:18.3	3.9	194.1					2.9
	e Sg	E 02:07:23.0							
GRA1	e Sg	E 02:07:36.3	4.3	177.0					3.3

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/24	05:58:32.5	28.965N	53.042E	33.0N	5.0			SZGRF
2003/10/24	05:58:21.4	28.412N	54.062E	33N	5.2	4.5		NEIC

Southern Iran

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z	06:05:29.9	36.9	108.6	1.5	32	4.9		
BRG	e P	Z	06:05:34.5	37.5	111.3	0.9	24	4.9		
WET	e P	Z	06:05:34.6	37.5	108.1	1.1	21	4.8		
RUE	e P	Z	06:05:40.5	38.2	113.1	1.1	51	5.2		
CLL	i P	+ Z	06:05:40.5	38.2	110.9	1.0	44	5.1		
	e PP	Z	06:07:11.0							
	e PcP	Z	06:07:54.9							
	e L	Z	06:24:43.0			18.0	304		4.2	
FUR	e P	Z	06:05:41.1	38.3	105.3	1.0	92	5.5		
GRA1	e P	Z	06:05:45.3	38.7	107.1	0.9	46	5.2		
MOX	e P	Z	06:05:45.7	38.8	108.6	1.1	24	4.8		
UBBA	e P	Z	06:05:54.5	39.8	107.2	1.8	45	4.8		
CLZ	e P	Z	06:05:55.7	39.9	108.7	0.8	76	5.4		
BFO	e P	Z	06:05:56.6	40.2	102.7	0.9	9	4.4		
NRDL	e P	Z	06:05:59.0	40.3	109.2	1.0	70	5.3		
TNS	e P	Z	06:06:00.8	40.6	105.0	1.4	39	4.9		
IBBN	e P	Z	06:06:09.7	41.6	106.6	1.3	83	5.3		
BUG	e P	Z	06:06:10.1	41.6	105.2	1.2	49	5.1		
WLF	e P	Z	06:06:11.2	41.9	102.2	0.9	26	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/25	12:41:35.6	38.020N	101.800E	33.0N	6.1	5.7		SZGRF
2003/10/25	12:41:34.9	38.348N	100.963E	10G	5.9	5.7		NEIC

Gansu, China

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	12:51:34.4	58.4	66.9	1.4	612	6.4		
RUE	e P	Z	12:51:38.1	59.0	66.1	1.5	410	6.2		
BRG	e P	Z	12:51:42.0	59.5	65.3	1.4	183	5.9		
CLL	i P	+ Z	12:51:44.1	59.9	65.0	1.3	166	5.9		
	e PcP	Z	12:52:30.8							
	e PP	Z	12:53:57.1							
	e S	E	13:00:00.7							
	e SS	E	13:04:04.9							
	e SSS	N	13:06:29.9							
	e L	Z	13:25:37.7			18.0	9277		6.0	
GEC2	e P	Z	12:51:49.2	60.5	64.1	1.5	166	5.8		
WET	e P	Z	12:51:51.7	60.9	63.8	1.6	188	5.7		
MOX	e P	Z	12:51:51.9	61.0	63.8	1.6	233	5.8		
	e S	R	13:00:13.8							
NRDL	e P	Z	12:51:52.6	61.0	63.7	1.5	423	6.0		

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CLZ	e P	Z	12:51:53.3	61.1	63.6	1.4	314	6.0
GRA1	e P	Z	12:51:56.8	61.6	63.1	1.5	436	6.5
	e S	R	13:00:23.6					
	e L	Z	13:22:20.1			20.7	5666	5.7
GRFO	e P	Z	12:51:56.8	61.6	63.1			
UBBA	e P	Z	12:51:57.4	61.8	62.8	1.4	145	6.0
FUR	e P	Z	12:52:01.4	62.3	62.4	1.8	608	6.5
IBBN	e P	Z	12:52:01.3	62.3	62.1	1.7	395	6.4
TNS	e P	Z	12:52:05.4	62.9	61.6	1.7	201	6.0
BUG	e P	Z	12:52:05.9	63.0	61.4	1.6	335	6.2
STU	e P	Z	12:52:06.9	63.2	61.4	1.6	213	6.0
BFO	e P	Z	12:52:11.4	63.9	60.7	1.2	90	5.9
WLF	e P	Z	12:52:16.1	64.5	60.0	1.4	275	6.3

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/25	12:48:4.9	38.500N	100.910E	33.0N	6.0			SZGRF
2003/10/25	12:47:58.2	38.345N	100.984E	10G	5.5	5.4		NEIC

Gansu, China

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	12:58:05.9	59.5	65.3	1.5	192	5.9		
CLL	i P	+ Z	12:58:07.9	59.9	65.0	1.4	150	5.8		
	e PcP	Z	12:58:53.6							
	e PP	Z	13:00:16.0							
	e PPP	Z	13:01:39.7							
	e S	E	13:06:24.4							
	e L	Z	13:25:38.3			18.0	9277		6.0	
GEC2	e P	Z	12:58:12.9	60.6	64.1	1.5	149	5.8		
WET	e P	Z	12:58:15.4	60.9	63.8	1.6	203	5.7		
MOX	e P	Z	12:58:15.5	61.0	63.8	1.7	215	5.7		
NRDL	e P	Z	12:58:16.3	61.0	63.7	1.5	313	5.9		
CLZ	e P	Z	12:58:17.0	61.1	63.6	1.3	199	5.8		
	e S	T	13:06:35.6							
GRA1	e P	Z	12:58:20.4	61.6	63.0	1.5	375	6.0		
GRFO	e P	Z	12:58:20.7	61.6	63.0	1.5	303	5.9		
UBBA	e P	Z	12:58:20.9	61.8	62.8	1.7	180	6.0		
FUR	e P	Z	12:58:25.1	62.3	62.4	1.6	508	6.5		
IBBN	e P	Z	12:58:25.1	62.4	62.1	1.8	351	6.3		
TNS	e P	Z	12:58:29.2	63.0	61.6	1.8	176	5.9		
BUG	e P	Z	12:58:29.7	63.0	61.4	1.7	258	6.1		
STU	e P	Z	12:58:30.7	63.2	61.4	1.7	198	6.0		
BFO	e P	Z	12:58:35.1	63.9	60.7	1.9	143	5.9		
WLF	e P	Z	12:58:39.8	64.5	60.0	1.5	248	6.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2003/10/25 13:25:24.4 37.542N 101.493E 33.0N 4.9 SZGRF
2003/10/25 13:25:22.8 38.340N 101.084E 10G 5.0 NEIC
Qinghai, China

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 13:35:44.8	61.7	63.0	1.5	14	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/25								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 14:40:12.7							
CLL	e P	Z 14:40:20.7							
WET	e P	Z 14:40:01.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/26	16:27: 6.3	16.068S	69.769W	33.0N	5.3			SZGRF
2003/10/26	16:27:09.0	17.661S	69.922W	108D	5.0			NEIC

Peru-Bolivia border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:40:32.8	97.8	251.9	1.1	13	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/27	02:15:35.9	24.942N	121.682E	33.0N	4.8			SZGRF
2003/10/27	02:15:23.2	24.203N	123.840E	33N	4.8			NEIC

Taiwan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 02:27:47.4	83.0	59.8					
CLL	e P	Z 02:27:48.5	83.3	59.1					
GEC2	e P	Z 02:27:53.6	84.1	59.4					
CLZ	e P	Z 02:27:55.3	84.4	57.2					
GRA1	e P	Z 02:27:59.8	85.1	57.7	1.5	10	4.8		
IBBN	e P	Z 02:28:00.4	85.5	55.3					
BUG	e P	Z 02:28:04.6	86.2	54.8					
BFO	e P	Z 02:28:12.0	87.4	55.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/27	03:05:54.5	40.196N	27.731E	33.0N				SZGRF

Turkey

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:09:29.6	15.0	123.0	1.0	6			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/27	20:57:12.2	44.400N	6.788E	2				NEIC

France

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BFO	e Pn	Z 20:58:14.2	4.1	195.7					
GEC2	e Pn	Z 20:58:48.9	6.5	229.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	02:33:50.4	5.347S	151.448E	56	5.8			NEIC

New Britain, Papua New Guinea, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPdf	Z 02:52:41.2	122.4	52.8					
CLL	i PKPdf	+ Z 02:52:41.5	122.6	51.6	1.0	42			
	e pPKPdf	Z 02:52:54.3							
	e sPKPdf	Z 02:52:59.0							
	e PP	Z 02:54:25.3							
	e PPP	Z 02:57:04.1							
	e SKS	R 02:59:45.1							
	e SKKSac	R 03:01:23.6							
	e PS	R 03:04:15.7							
	e PPS	Z 03:05:45.9							
	e SS	R 03:10:59.6							
	e SSS	R 03:15:42.8							
	e LR	Z 03:34:37.0							
	e L	Z 03:46:07.2			22.0	3597		6.0	
NRDL	e PKPdf	Z 02:52:43.1	123.2	48.0					
	e pPKPdf	Z 02:52:55.9							
WERD	e PKPdf	Z 02:52:43.1	123.5	51.3					
CLZ	e PKPdf	Z 02:52:43.7	123.5	48.6					
GUNZ	e PKPdf	Z 02:52:43.2	123.5	51.4					
MOX	e PKPdf	Z 02:52:43.5	123.7	50.5					
GEC2	e PKPdf	Z 02:52:43.6	123.7	53.6					
WET	e PKPdf	Z 02:52:44.4	124.0	52.6					
IBBN	e PKPdf	Z 02:52:45.0	124.4	45.6					
GRA1	e PKPdf	Z 02:52:44.8	124.5	50.6					
	e	02:54:35.4							
BUG	e PKPdf	Z 02:52:46.4	125.2	45.5					
STU	e PKPdf	Z 02:52:48.4	126.1	49.0					

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BFO	e PKPdf	Z	02:52:49.3	126.8	48.3
WLF	e PKPdf	Z	02:52:50.3	126.9	45.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	08:14:34.3	12.712S	69.820W	197.6	5.5			SZGRF
2003/10/28	08:14:25.5	14.130S	70.459W	197D	5.5			NEIC

Central Peru

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 08:27:29.6	95.5	254.6	1.5	38	5.5		
	e pP	Z 08:28:18.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 08:52:32.0							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	10:43:20.2	4.453S	152.497E	87D	5.0			NEIC

New Britain region, P.N.G.

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 11:02:10.8	124.2	49.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	15:58: 1.1	10.300N	82.760W	33.0N	5.0			SZGRF
2003/10/28	15:58:05.1	9.517N	80.269W	46	4.8	4.3		NEIC

North of Panama

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:10:32.1	83.7	277.3	0.9	8	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	18:32:07.4	16.175S	174.225W	166D	4.7			NEIC

Tonga

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 18:51:30.3	146.2	9.4					

e 18:52:15.7

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	18:48: 3.4	44.007N	129.378W	33.0N	4.5			SZGRF
2003/10/28	18:47:52.0	44.546N	129.855W	10G	4.2			NEIC

Off coast of Oregon, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:00:10.9	79.8	332.9	1.2	6	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	19:24:48.6	2.249S	67.556E	33.0N	4.7			SZGRF

Carlsberg Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:36:02.4	70.8	118.3	1.4	8	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	21:48:15.0	43.320N	148.080E	33.0G	6.3	5.3		SZGRF
2003/10/28	21:48:20.3	43.802N	147.760E	60	6.1			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 21:59:54.5	74.3	32.4	1.2	1075	6.8		
RUE	e P	Z 22:00:03.6	75.9	32.4	1.5	899	6.7		
HLG	e P	Z 22:00:05.6	76.2	28.6	1.1	533	6.6		
NRDL	e P	Z 22:00:10.0	77.0	29.9	1.1	215	6.2		
CLL	i P	+ Z 22:00:10.2	77.1	31.7	0.9	414	6.5		
	e	22:00:38.4							
	e	Z 22:00:44.3							
	e PP	Z 22:03:08.2							
	e sS	Z 22:10:17.5							
	e (sSS)	Z 22:16:01.4							
	e LR	Z 22:25:45.5							
	e L	Z 22:38:38.9			22.0	1920		5.4	
BRG	e P	Z 22:00:10.7	77.2	32.3	1.0	165	6.1		
CLZ	e P	Z 22:00:13.0	77.5	30.0	1.6	1046	6.7		
IBBN	e P	Z 22:00:14.7	77.9	28.3	1.0	430	6.4		
WERD	e P	Z 22:00:16.0	78.1	31.2	1.0	155	6.0		
MOX	e P	Z 22:00:16.2	78.2	30.7	1.1	216	6.1		
GUNZ	e P	Z 22:00:16.3	78.2	31.2	0.9	186	6.1		
UBBA	e P	Z 22:00:19.0	78.5	29.7	1.4	186	5.9		
BUG	e P	Z 22:00:19.5	78.8	27.9	1.0	309	6.2		

GEC2	e P	Z	22:00:20.6	79.0	31.9	0.9	115	5.8	
WET	e P	Z	22:00:21.2	79.0	31.4	1.0	267	6.1	
GRA1	e P	Z	22:00:21.8	79.1	30.4	1.0	474	6.4	
	e		22:00:55.6						
	e L	Z	22:40:07.3			19.0	1473		5.3
TNS	e P	Z	22:00:23.7	79.5	28.6	1.0	190	6.0	
FUR	e P	Z	22:00:28.5	80.4	30.3	1.0	409	6.4	
STU	e P	Z	22:00:29.2	80.6	29.0	0.9	277	6.3	
WLF	e P	Z	22:00:29.8	80.7	27.0	1.8	711	6.5	
BFO	e P	Z	22:00:32.5	81.2	28.4	1.0	179	6.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/28	22:45:32.1	25.572N	70.057W	10.0N	4.7	4.9		SZGRF
2003/10/28	22:45:00.4	19.753N	70.719W	10G	4.9	4.7		NEIC

Off east coast of United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:56:14.5	69.9	277.2	1.1	6	4.7		
	e L	Z 23:23:02.4			19.6	844		4.9	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/29	05:56:45.9	14.483N	120.116E	33.0N	5.1			SZGRF
2003/10/29	05:56:50.5	15.970N	119.411E	33N	5.1			NEIC

Luzon, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 06:09:45.6	89.1	66.0	1.3	14	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/29	21:15:48.2	40.785N	22.826E	33N				NEIC

Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 21:18:18.8	10.3	137.9					
GRB5	e Pn	Z 21:18:33.7	11.4	132.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/29	21:10:20.9	49.060S	124.737E	10G	5.4	5.0		NEIC

South of Australia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1 e PKP Z 21:29:46.1 138.2 115.7

Date Origin Time Lat Long Depth mb Ms ML Source
 2003/10/30 01:16:49.0 35.595S 104.817W 10G 4.8
 Southern Pacific Ocean

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML
 GRA1 e PKP Z 01:36:08.2 132.4 261.9

Date Origin Time Lat Long Depth mb Ms ML Source
 2003/10/30 06:00:45.3 60.674S 25.165W 10G 5.4 5.5
 South Sandwich Islands region

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML
 GRA1 e PP Z 06:20:16.4 114.2 198.6
 e L Z 07:02:07.6 21.4 1318 5.5

Date Origin Time Lat Long Depth mb Ms ML Source
 2003/10/30 13:09:29.4 9.828N 72.563W 33.0N 4.8
 2003/10/30 13:09:02.5 4.747N 76.237W 100G 4.7
 Venezuela

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML
 GRA1 e P Z 13:21:27.8 84.7 271.1 1.4 13 4.8

Date Origin Time Lat Long Depth mb Ms ML Source
 2003/10/30 15:22:32.5 21.100N 94.850E 33.0N 5.7 4.8
 2003/10/30 15:22:21.2 19.754N 95.794E 33N 5.4 5.1
 Myanmar

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML
 RUE e P Z 15:33:30.0 69.7 83.7 1.0 114 6.0
 BRG e P Z 15:33:30.3 69.7 83.3 0.9 50 5.7
 GEC2 e P Z 15:33:33.0 70.1 82.4 1.0 54 5.7
 CLL e P Z 15:33:33.5 70.3 82.7 1.1 37 5.5
 WET e P Z 15:33:36.0 70.6 81.9 1.0 44 5.6
 GUNZ e P Z 15:33:37.2 70.8 81.9 0.9 58 5.8
 WERD e P Z 15:33:37.2 70.8 81.9 0.9 48 5.7
 MOX e P Z 15:33:39.5 71.2 81.5 1.0 34 5.4
 GRA1 e P Z 15:33:42.5 71.6 80.9 1.4 103 5.8
 e L Z 16:09:13.6 20.8 588 4.8

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CLZ	e P	Z	15:33:43.2	71.8	80.9	1.1	56	5.6
NRDL	e P	Z	15:33:43.5	71.9	80.9	1.2	63	5.6
STU	e P	Z	15:33:51.0	73.1	79.1	0.9	64	5.7
TNS	e P	Z	15:33:52.2	73.3	79.0	0.9	40	5.5
IBBN	e P	Z	15:33:52.3	73.3	79.1	1.0	76	5.8
WLF	e P	Z	15:34:01.6	74.8	77.2	1.0	77	5.8

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/30	16:26:04.6	22.297S	170.503E	33N	5.2	5.3		NEIC

SE of the Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKP	Z 16:45:42.3	146.2	39.5					
GRA1	e PKP	Z 16:45:48.6	148.1	38.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/31	01:06:33.7	38.220N	143.140E	33.0N	6.4	6.8		SZGRF
2003/10/31	01:06:28.3	37.830N	142.629E	10G	6.1	6.8		NEIC

Off east coast of Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 01:18:29.8	77.9	38.7	1.9	1062	6.6		
RUE	e P	Z 01:18:37.6	79.4	38.7	2.2	1194	6.4		
BSEG	e P	Z 01:18:38.3	79.5	36.4	1.2	188	5.9		
BRG	e P	Z 01:18:43.9	80.5	38.7	2.0	602	6.3		
CLL	i P	+ Z 01:18:43.8	80.6	38.1	1.6	366	6.2		
	e	01:18:57.5							
	e PP	Z 01:21:52.7							
	e PPP	Z 01:23:42.5							
	e S	T 01:28:50.0							
	e SS	T 01:34:09.9							
	e SSS	T 01:37:29.4							
	e LQ	T 01:42:30.5							
	e L	Z 01:58:12.3			18.0	189819		7.5	
NRDL	e P	Z 01:18:44.8	80.7	36.1	2.2	706	6.3		
CLZ	e P	Z 01:18:47.3	81.1	36.3	2.0	718	6.4		
WERD	e P	Z 01:18:49.3	81.5	37.5	2.3	722	6.4		
GUNZ	e P	Z 01:18:49.7	81.6	37.5	2.4	1022	6.5		
MOX	e P	Z 01:18:49.7	81.6	37.0	2.2	744	6.4		
IBBN	e P	Z 01:18:49.8	81.7	34.4	1.0	186	6.2		
UBBA	e P	Z 01:18:51.9	82.1	35.9	2.3	499	6.2		
GEC2	e P	Z 01:18:52.8	82.2	38.3	2.5	695	6.4		
WET	e P	Z 01:18:53.7	82.3	37.8	2.3	790	6.5		
GRA1	e P	Z 01:18:55.0	82.5	36.7	2.1	1610	6.9		
	e	01:19:08.5							

	e PP	R	01:22:07.7								
	e S	T	01:29:10.3								
	e L	Z	01:58:21.0			21.8	41755		6.8		
BUG	e P	Z	01:18:54.3	82.6	34.0	2.3	820		6.5		
TNS	e P	Z	01:18:57.7	83.2	34.8	2.5	897		6.6		
FUR	e P	Z	01:19:00.9	83.7	36.6	2.0	1105		6.8		
STU	e P	Z	01:19:02.3	84.1	35.2	2.2	1124		6.7		
WLF	e P	Z	01:19:04.5	84.4	33.1	2.1	1165		6.7		
BFO	e P	Z	01:19:05.7	84.8	34.6	2.3	988		6.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/31								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 03:53:22.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/31	14:14:53.8	38.570N	141.220E	33.0N	5.5			SZGRF
2003/10/31	14:15:09.8	38.643N	139.819E	153D	5.2			NEIC

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 14:26:52.1	77.6	40.3	1.3	70	5.6		
BSEG	e P	Z 14:26:53.0	77.7	38.1	1.1	58	5.5		
BRG	e P	Z 14:26:58.2	78.7	40.2	0.9	30	5.2		
CLL	i P	- Z 14:26:58.2	78.8	39.6	0.9	63	5.7		
	e pP	Z 14:27:35.5							
NRDL	e P	Z 14:26:59.3	79.0	37.7	1.0	21	5.0		
CLZ	e P	Z 14:27:02.0	79.4	37.9	1.1	61	5.4		
WERD	e P	Z 14:27:03.7	79.7	39.0	1.4	42	5.3		
GUNZ	e P	Z 14:27:04.1	79.8	39.0	1.1	36	5.3		
MOX	e P	Z 14:27:04.3	79.8	38.6	0.9	28	5.3		
IBBN	e P	Z 14:27:04.7	80.0	36.1	1.3	86	5.6		
UBBA	e P	Z 14:27:06.8	80.3	37.5	0.9	16	5.1		
GEC2	e P	Z 14:27:07.0	80.4	39.8	1.0	33	5.3		
WET	e P	Z 14:27:08.1	80.5	39.3	1.1	44	5.4		
GRA1	e P	Z 14:27:09.7	80.7	38.2	1.0	100	5.9		
BUG	e P	Z 14:27:09.3	80.8	35.6	1.1	34	5.4		
TNS	e P	Z 14:27:12.5	81.4	36.4	1.2	32	5.3		
FUR	e P	Z 14:27:15.5	81.9	38.1	0.9	120	6.1		
STU	e P	Z 14:27:17.0	82.3	36.7	1.0	61	5.8		
BFO	e P	Z 14:27:20.7	83.0	36.1	1.0	67	5.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/10/31	19:32:44.9	41.047N	143.510E	33.0N	4.9			SZGRF
2003/10/31	19:32:45.4	41.433N	142.538E	33N	4.9			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:44:51.7	79.4	35.0	0.9	14	4.9		

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-analyses).

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