

## 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)

JUNE 2003      UPDATED 05.DECEMBER.2003

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
2003/06/01	01:46:10.9	43.081N	15.332E	10.0G				SZGRF
2003/06/01	01:46:09.1	43.158N	15.381E	10G	4.1			NEIC

Adriatic Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
FUR	e Pn	Z 01:47:36.9	5.8	148.7					
WET	e Pn	Z 01:47:42.7	6.2	162.9					
	e Sn	N 01:48:52.5							
GRA1	e Pn	Z 01:47:55.4	7.1	154.8					
	e Sn	N 01:49:14.0							
BFO	e Sn	N 01:49:13.6	7.1	133.9					
GUNZ	e Pn	Z 01:48:01.1	7.5	162.7					
TANN	e Pn	Z 01:48:00.5	7.5	163.5					
WERD	e Pn	Z 01:48:02.3	7.6	162.8					
BRG	e Pn	Z 01:48:02.9	7.8	172.2					
MOX	e Pn	Z 01:48:05.0	7.9	159.6					
	e Sn	N 01:49:31.0							
CLL	e Pn	Z 01:48:11.3	8.3	167.9					
	e Sn	N 01:49:43.3							
TNS	e Pn	Z 01:48:15.2	8.5	143.5					
CLZ	e Pn	Z 01:48:26.3	9.3	156.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	04:50:27.9	42.977N	62.412E	33.0N	4.4			SZGRF

Northwestern Uzbekistan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:57:19.8	35.3	80.9	1.7	8	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	06:09:43.8	41.596N	49.443E	33.0G	4.7			SZGRF
2003/06/01	06:09:45.2	41.058N	47.374E	33N	4.7			NEIC

Caspian Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 06:15:07.7	25.0	100.1	0.9	15	4.6		
RUE	e P	Z 06:15:11.6	25.4	103.2	1.4	56	5.0		
WET	e P	Z 06:15:14.2	25.4	95.4	1.0	21	4.8		
CLL	e P	Z 06:15:13.9	25.6	100.0	1.1	49	5.0		
	e S	T 06:19:46.1							
	e LQ	T 06:22:24.9							
	e LR	Z 06:23:21.4							
	e L	Z 06:26:05.2			20.0	380		3.9	
TANN	e P	Z 06:15:17.8	25.8	97.7	1.0	5	4.2		
GUNZ	e P	Z 06:15:18.3	25.9	97.4	1.2	10	4.4		
MOX	e P	Z 06:15:21.3	26.4	97.3	1.3	8	4.3		
GRA1	e P	Z 06:15:28.4	26.5	95.1	1.2	28	5.0		
CLZ	e P	Z 06:15:29.7	27.3	98.5	0.9	11	4.7		
BSEG	e P	Z 06:15:32.1	27.7	102.4	1.1	17	4.8		
STU	e P	Z 06:15:33.1	27.8	91.6	1.0	21	4.9		
TNS	e P	Z 06:15:39.0	28.3	93.7	1.2	10	4.5		
BFO	e P	Z 06:15:44.3	28.4	90.1	2.0	23	4.7		
IBBN	e P	Z 06:15:45.3	29.0	96.9	1.2	17	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	09:07:01.5	2.909S	142.276E	33N	5.4	5.2		NEIC

Near north coast of New Guinea, Papua New Guinea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 09:25:46.4	117.6	58.2					
	e	09:25:57.0							
GRFO	e L	Z 10:16:00.7	117.6	58.2	20.1	427		5.1	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	15:45:20.0	41.842N	15.018E	10.0G				SZGRF

Southern Italy

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WET	e Pn	Z 15:47:07.2	7.5	167.6					
	e Sn	E 15:48:28.1							
BFO	e Pn	Z 15:47:14.1	8.0	141.5					

	e Sn	N	15:48:44.1						
STU	e Sn	N	15:48:44.3	8.0	147.3				
GRA1	e Pn	Z	15:47:20.7	8.3	160.0				
	e Sn	N	15:48:47.3						
GUNZ	e Pn	Z	15:47:25.1	8.7	166.7				
TANN	e Pn	Z	15:47:25.6	8.8	167.4				
	e Sn	N	15:49:02.6						
MOX	e Pn	Z	15:47:30.2	9.1	163.8				
	e Sn	N	15:49:07.8						
TNS	e Sn	N	15:49:17.2	9.5	149.0				
CLL	e Pn	Z	15:47:36.5	9.6	170.9				
	e Sn	N	15:49:22.2						

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	16:15:10.6	10.410N	62.815W	33.0N	5.0			SZGRF
2003/06/01	16:15:06.2	9.778N	62.868W	38D	4.7			NEIC

Near coast of Venezuela

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	16:26:30.2	72.3	264.2	1.2	15	5.0		
	e		16:26:41.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	17:50:40.0	30.610N	140.620E	33.0N	5.1	4.9		SZGRF
2003/06/01	17:50:25.3	28.188N	142.730E	33N	5.5			NEIC

Southeast of Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	18:03:14.5	87.9	43.3	1.4	25	5.2		
BSEG	e P	Z	18:03:15.6	88.2	40.6	1.2	31	5.4		
BRG	e P	Z	18:03:18.6	89.0	43.4	1.1	8	4.7		
CLL	i P	+ Z	18:03:19.5	89.1	42.7	1.1	18	5.2		
	e PP	Z	18:06:56.8							
	e SKSac	R	18:13:48.4							
	e S	T	18:14:11.7							
	e SP	Z	18:15:16.8							
	e SS	T	18:20:05.7							
	e LQ	T	18:36:41.8							
	e L	Z	18:47:24.9			18.0	880		5.2	
CLZ	e P	Z	18:03:23.2	89.7	40.6	1.2	25	5.2		
TANN	e P	Z	18:03:24.3	89.9	42.3	1.4	10	4.7		
WERD	e P	Z	18:03:23.9	90.0	42.1	1.5	9	4.7		
GUNZ	e P	Z	18:03:24.8	90.0	42.2	0.8	11	5.0		
MOX	e P	Z	18:03:24.9	90.1	41.6	1.1	8	4.7		
IBBN	e P	Z	18:03:26.6	90.4	38.6	1.2	31	5.5		

WET	e P	Z	18:03:27.4	90.7	42.6	1.2	9	4.9	
GRA1	e P	Z	18:03:29.8	91.0	41.3	1.0	23	5.5	
GRFO	e S	N	18:14:08.8	91.0	41.3				
	e L	Z	18:58:23.5			18.1	441		4.9
TNS	e P	Z	18:03:33.5	91.8	39.1	1.4	12	4.9	
FUR	e P	Z	18:03:34.8	92.1	41.4	0.9	28	5.5	
STU	e P	Z	18:03:36.7	92.6	39.8	1.1	20	5.3	
WLF	e P	Z	18:03:39.1	93.1	37.4	1.3	32	5.4	
BFO	e P	Z	18:03:39.3	93.3	39.1	1.0	13	5.2	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/01	22:34:33.6	50.241N	168.470W	33.0N	4.8			SZGRF
2003/06/01	22:34:35.3	51.359N	168.615W	33N	4.5			NEIC

South of Aleutian Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:46:40.4	78.9	359.9	0.8	11	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/02	00:12:38.8	20.712S	178.034W	500G	3.9			NEIC

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:31:35.2	150.1	17.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/02	22:44:52.1	6.145S	151.541E	37D	5.2	4.5		NEIC

New Britain Reg., P.N.G.

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 23:03:50.7	125.2	51.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/03	10:19: 2.9	44.571N	153.580E	33.0N	5.5			SZGRF
2003/06/03	10:19:13.5	45.871N	151.276E	63*	4.8			NEIC

East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 10:31:10.4	78.3	27.2	0.9	45	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/03	21:09:03.0	18.287S	167.240E	35D	5.6			NEIC

Vanuatu Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPdf	Z	21:28:31.0	143.2	40.1					
	e pPKPdf	Z	21:28:43.9							
GRFO	e L	Z	22:38:46.8	143.2	40.1	20.2	102		4.6	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/03	22:51:17.3	22.510S	175.357W	33N	4.8			NEIC

Tonga Region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	23:11:22.7	152.3	13.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/03	23:26:20.6	21.564S	170.822E	33N	4.9			NEIC

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKP	Z	23:45:54.3	144.4	32.2					
HLG	e PKP	Z	23:45:56.3	144.9	28.3					
BRG	e PKP	Z	23:45:58.3	145.6	40.2					
CLL	e PKPdf	Z	23:45:55.7	145.6	38.4					
	i PKPbc	+ Z	23:45:58.2			0.8	49			
CLZ	e PKP	Z	23:46:00.2	146.1	34.0					
TANN	e PKP	Z	23:46:01.2	146.5	38.4					
WERD	e PKP	Z	23:46:01.2	146.6	38.2					
IBBN	e PKP	Z	23:46:01.3	146.6	29.5					
GUNZ	e PKP	Z	23:46:01.6	146.6	38.3					
MOX	e PKP	Z	23:46:01.4	146.7	36.9					
GEC2	e PKP	Z	23:46:03.0	147.2	41.9					
WET	e PKP	Z	23:46:03.4	147.3	40.3					
BUG	e PKP	Z	23:46:03.6	147.5	29.3					
GRA1	e PKP	Z	23:46:04.2	147.6	37.2					
GRFO	e PKP	Z	23:46:04.3	147.6	37.2					
TNS	e PKP	Z	23:46:05.6	148.2	32.3					
STU	e PKP	Z	23:46:08.0	149.1	34.8					
WLF	e PKP	Z	23:46:09.2	149.4	28.9					
BFO	e PKP	Z	23:46:09.3	149.8	33.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/03	23:58:54.2	9.500S	65.110W	33.0N	5.3	5.6		SZGRF

Western Brazil

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z	00:11:29.1	85.5	249.5	1.4	44	5.5		
BFO	e P	Z	00:11:33.1	86.4	251.3	2.4	66	5.3		
BUG	e P	Z	00:11:34.8	86.7	250.3	1.2	35	5.4		
TNS	e P	Z	00:11:36.3	87.0	251.3	1.3	22	5.1		
STU	e P	Z	00:11:36.1	87.0	251.9	1.1	23	5.2		
IBBN	e P	Z	00:11:38.1	87.3	250.7	1.4	54	5.5		
FUR	e P	Z	00:11:42.1	88.2	253.5	1.3	51	5.7		
GRFO	e P	Z	00:11:42.8	88.6	253.5	1.5	28	5.4		
	e PP	Z	00:15:44.8							
	e S	E	00:22:30.6							
	e L	N	00:51:42.8			20.9	2681		5.6	
GRA1	e P	Z	00:11:43.1	88.6	253.5	1.5	42	5.5		
	e		00:12:09.3							
	e PP	Z	00:15:46.1							
CLZ	e P	Z	00:11:44.1	88.7	252.8	1.2	29	5.4		
MOX	e P	Z	00:11:45.7	89.1	253.8	1.9	32	5.2		
BSEG	e P	Z	00:11:46.0	89.3	252.7	1.3	21	5.2		
GUNZ	e P	Z	00:11:48.0	89.4	254.3	1.5	16	5.0		
WERD	e P	Z	00:11:47.5	89.5	254.3	1.9	28	5.2		
WET	e P	Z	00:11:47.6	89.5	254.7	1.6	24	5.2		
TANN	e P	Z	00:11:48.1	89.5	254.4	1.6	23	5.1		
GEC2	e P	Z	00:11:49.1	89.9	255.4	1.5	13	5.0		
CLL	e Pdiff	Z	00:11:50.2	90.1	254.8	1.9	32			
	e pPdiff	Z	00:11:59.3							
	e		00:12:16.2							
	e PP	Z	00:15:58.8							
	e SKSac	R	00:22:32.2							
	e Sdiff	T	00:23:29.2							
	e SP	R	00:24:57.6							
	e SS	R	00:30:34.0							
	e SSS	R	00:34:25.5							
	e L	Z	00:54:21.0			20.0	6882		6.2	
BRG	e P	Z	00:11:52.3	90.6	255.6	1.6	23	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/04	11:36:44.1	73.364N	19.022E	33.0N	4.8			SZGRF
2003/06/04	11:36:23.4	75.108N	16.657E	10G	4.9			NEIC

Norwegian Sea

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	11:41:09.6	20.6	2.4	1.1	168	5.2		
BSEG	e P	Z	11:41:16.8	21.3	4.5	1.1	70	4.8		

RUE	e P	Z	11:41:29.0	22.7	1.9	1.3	77	4.9
IBBN	e P	Z	11:41:33.7	23.1	5.8	1.5	52	4.7
CLZ	e P	Z	11:41:36.4	23.4	4.1	1.6	52	4.7
CLL	e P	Z	11:41:39.5	23.8	2.3	1.8	46	4.6
BUG	e P	Z	11:41:41.2	24.0	5.9	1.8	125	5.1
BRG	e P	Z	11:41:43.3	24.3	1.7	1.7	45	4.7
MOX	e P	Z	11:41:46.6	24.6	3.1	0.9	26	4.8
WERD	e P	Z	11:41:48.2	24.7	2.7	1.4	20	4.5
TANN	e P	Z	11:41:48.6	24.8	2.6	1.9	28	4.5
GUNZ	e P	Z	11:41:48.9	24.8	2.6	1.0	18	4.6
TNS	e P	Z	11:41:52.8	25.1	5.0	1.2	39	4.8
GRA1	e P	Z	11:41:55.7	25.5	3.2	1.1	36	4.8
WLF	e P	Z	11:42:00.8	25.8	6.2	1.0	28	4.7
WET	e P	Z	11:42:00.6	26.0	2.2	1.8	71	4.9
GEC2	e P	Z	11:42:03.1	26.3	1.7	1.0	38	5.1
STU	e P	Z	11:42:07.5	26.5	4.3	1.1	23	4.8
BFO	e P	Z	11:42:08.9	27.0	4.7	1.2	22	4.7

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/04	16:28:52.1	40.170N	76.430E	12.3	5.2	4.6		SZGRF
2003/06/04	16:28:37.5	39.450N	77.571E	10G	5.0	4.6		NEIC

Kyrgyzstan-Xinjiang border region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	16:36:54.6	44.6	82.2	1.6	190	5.6		
BRG	e P	Z	16:36:55.4	44.8	79.0	1.4	40	4.9		
CLL	i P	+ Z	16:36:59.0	45.3	78.8	1.2	28	5.2		
	e PP	Z	16:38:47.3							
	e PPPP	Z	16:39:45.2							
	e S	T	16:43:33.8							
	e SS	Z	16:47:11.7							
	e LR	Z	16:51:27.3							
	e L	Z	16:58:38.1			18.0	1077		4.8	
GEC2	e P	Z	16:37:00.4	45.4	76.8	1.1	47	5.1		
TANN	e P	Z	16:37:03.6	45.8	77.6	1.2	20	4.9		
WET	e P	Z	16:37:03.8	45.9	76.6	1.4	28	5.0		
WERD	e P	Z	16:37:03.9	45.9	77.5	1.7	41	5.1		
GUNZ	e P	Z	16:37:03.6	45.9	77.4	1.2	24	5.0		
MOX	e P	Z	16:37:07.2	46.3	77.2	1.2	20	4.9		
BSEG	e P	Z	16:37:07.6	46.4	79.4	1.3	40	5.2		
GRA1	e P	Z	16:37:11.5	46.8	76.1	2.1	237	5.9		
	e sP	Z	16:37:16.3							
GRFO	e L	Z	16:57:18.3	46.8	76.1	20.1	656		4.6	
CLZ	e P	Z	16:37:11.1	46.8	77.5	1.1	21	5.1		
NRDL	e P	Z	16:37:11.6	46.8	78.0	1.2	42	5.3		
FUR	e P	Z	16:37:14.3	47.1	74.8	0.8	60	5.7		
HLG	e P	Z	16:37:18.4	47.8	78.0	1.2	88	5.8		

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IBBN	e P	Z	16:37:21.8	48.3	76.2	0.9	25	5.3
STU	e P	Z	16:37:22.4	48.3	74.1	1.2	37	5.4
TNS	e P	Z	16:37:23.8	48.4	74.9	1.6	32	5.2
BUG	e P	Z	16:37:26.4	48.8	75.2	1.2	30	5.3
BFO	e P	Z	16:37:27.0	49.0	73.2	0.9	19	5.2
WLF	e P	Z	16:37:36.9	49.9	73.0	1.0	28	5.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/04								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 23:33:47.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	00:17:36.8	14.764N	88.650W	33.0N	4.6			SZGRF
2003/06/05	00:17:50.3	16.947N	85.976W	10G	4.9			NEIC

Honduras

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:30:09.3	81.7	286.4	1.2	5	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	00:37:55.1	43.129N	15.300E	10.0G				SZGRF

Adriatic Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 00:39:20.5	5.8	168.4					
	e Sn	N 00:40:26.1							
WET	e Pn	Z 00:39:26.5	6.2	163.5					
	e Sn	N 00:40:35.6							
BFO	e Sn	N 00:40:56.6	7.1	134.4					
WERD	e Pn	Z 00:39:45.3	7.6	163.3					
MOX	e Pn	Z 00:39:49.4	7.9	160.1					
	e Sn	N 00:41:14.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	03:34:30.3	27.920S	176.716W	33N	5.0	4.7		NEIC

Kermadec Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 03:54:56.0	157.4	18.5					



e 03:55:07.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	05:14:40.1	17.647S	175.309W	210D	4.4			NEIC
Tonga Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 05:34:02.8	147.5	11.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	06:06:39.0	28.241N	130.168E	33N	4.8			NEIC
Ryukyu Islands, Japan								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z 06:19:05.9	83.5	52.2	0.9	37	5.6		
	e SP	Z 06:30:41.7							
	e L	Z 07:00:02.2			20.0	311		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	08:23:18.3	30.549S	178.876W	114D	5.4			NEIC
Kermadec Islands, New Zealand								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e PKPdf	Z 08:42:58.4	154.5	25.0					
BSEG	e PKPdf	Z 08:42:58.1	155.7	19.5					
	e	08:43:09.9							
	e PKPab	Z 08:43:26.3							
HLG	e PKPdf	Z 08:43:00.3	155.9	14.4					
	e	08:43:10.3							
	e PKPab	Z 08:43:27.3							
RUE	e PKPdf	Z 08:42:59.1	156.2	27.9					
	e	08:43:10.9							
	e PKPab	Z 08:43:28.7							
NRDL	e PKPdf	Z 08:42:59.4	157.1	20.2					
	e	08:43:12.8							
	e PKPab	Z 08:43:31.9							
CLL	i PKPdf	Z 08:43:00.1	157.5	27.5	1.2	36			
	i PKPdf	Z 08:43:13.5			0.9	68			
	e PKPab	Z 08:43:32.7			0.9	108			
	e sPKPab	Z 08:44:11.7							
	e PP	Z 08:47:12.1							
	e sPP	Z 08:47:54.8							
	e PPP	Z 08:50:42.1							

	e sPPP	Z	08:51:24.9		
	e SKKSac	R	08:53:59.6		
	e SKKSdf	R	08:58:16.0		
	e PPS	Z	09:00:26.1		
	e SS	T	09:06:55.2		
	e sSS	T	09:07:52.8		
	e SSS	T	09:13:01.2		
	e LR	Z	09:37:44.8		
BRG	e PKPdf	Z	08:43:00.4	157.5	30.0
	e		08:43:13.7		
	e PKPab	Z	08:43:34.6		
CLZ	e PKPdf	Z	08:43:00.8	157.6	21.3
	e		08:43:14.3		
	e PKPab	Z	08:43:35.1		
IBBN	e PKPdf	Z	08:43:00.8	157.7	15.2
	e		08:43:14.2		
	e PKPab	Z	08:43:35.2		
TANN	e PKPdf	Z	08:43:01.3	158.4	27.4
	e		08:43:15.6		
	e PKPab	Z	08:43:38.6		
WERD	e PKPdf	Z	08:43:00.9	158.4	27.0
	e		08:43:16.1		
	e PKPab	Z	08:43:37.9		
MOX	e PKPdf	Z	08:43:01.1	158.4	25.3
	e		08:43:15.6		
	e PKPab	Z	08:43:38.5		
BUG	e PKPdf	Z	08:43:01.6	158.6	14.6
	e PKPab	Z	08:43:38.6		
GEC2	e PKPdf	Z	08:43:01.9	159.4	32.2
	e		08:43:17.2		
	e PKPab	Z	08:43:42.5		
WET	e PKPdf	Z	08:43:02.0	159.4	29.9
	e PKPab	Z	08:43:42.9		
GRFO	e PKPab	Z	08:43:42.8	159.4	25.4
TNS	e PKPab	Z	08:43:43.4	159.6	18.3
WLF	e PKPab	Z	08:43:47.7	160.5	13.1
FUR	e PKPab	Z	08:43:48.7	160.8	27.4
STU	e PKPab	Z	08:43:48.5	160.8	21.5
BFO	e PKPab	Z	08:43:51.0	161.4	19.8

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/05	17:14:20.7	38.518N	42.116E	33.0N	4.5			SZGRF
2003/06/05	17:14:01.9	38.460N	45.197E	33N	4.4			NEIC

Turkey

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	17:19:38.3	26.6	102.0	1.0	9	4.5		



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GRA3 e L Z 14:23:13.5 110.5 69.1 20.0 484 5.1

Date Origin Time Lat Long Depth mb Ms ML Source  
2003/06/06

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e 17:40:10.5

Date Origin Time Lat Long Depth mb Ms ML Source  
2003/06/06 20:59:52.6 31.247S 58.770E 10G 4.7 4.5 NEIC  
Southwest Indian Ridge

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e P Z 21:12:59.3 91.0 140.8

Date Origin Time Lat Long Depth mb Ms ML Source  
2003/06/07 00:32:44.9 5.100S 152.342E 33N 6.1 6.8 NEIC  
New Britain, Papua New Guinea, region

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
CLL e Pdiff Z 00:48:12.2 122.9 50.6  
e PKPdf Z 00:51:39.9 0.9 65  
e PP Z 00:53:25.6  
e PKSdf E 00:55:03.3  
e PPP Z 00:56:02.3  
e SKSac R 00:58:43.1  
e SKKSac R 01:00:23.4  
e PKKP Z 01:01:34.0  
e PS E 01:03:23.7  
e PPS Z 01:04:26.4  
e SS T 01:10:07.2  
e SSS R 01:14:45.8  
e LR Z 01:32:17.0  
e L Z 01:50:47.7 20.0 13636 6.6  
GRA1 e PKP Z 00:51:43.5 124.7 49.5  
e 00:54:32.7  
e L Z 01:47:34.7 21.2 22324 6.8

Date Origin Time Lat Long Depth mb Ms ML Source  
2003/06/07



GRA1	e PKP	Z	21:05:59.5	149.4	17.4
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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 01:09:14.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	02:17: 1.2	36.322N	22.089E	10.0G				SZGRF
2003/06/08	02:16:56.7	36.632N	23.154E	69?	4.0			NEIC

Southern Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
MOA	e Pn	Z 02:19:59.9	13.0	146.5					
WTTA	e Pn	Z 02:20:09.0	13.6	137.1					
WET	e Pn	Z 02:20:27.4	14.6	145.3					
GRA1	e Pn	Z 02:20:39.7	15.7	142.1					
BRG	e Pn	Z 02:20:40.1	15.7	151.6					
CLL	e Pn	Z 02:20:48.4	16.4	149.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 02:20:03.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	03:52:30.3	38.731N	76.321E	33.0N	4.4			SZGRF
2003/06/08	03:53:42.8	33.739N	81.726E	33N	4.3			NEIC

Southern Xinjiang, China

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:00:53.9	17.1	228.7	1.0	3	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	04:32:36.5	17.286S	177.324W	400G	4.1			NEIC

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	04:51:34.4	146.9	15.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	04:57:49.8	33.480N	138.290E	33.0N	5.1			SZGRF
2003/06/08	04:58:33.9	34.155N	136.323E	378D	4.6			NEIC

Southeast of Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	05:10:06.8	80.4	42.8	1.1	17	5.1		
BRG	e P	Z	05:10:10.5	81.0	45.0	0.9	8	5.0		
CLL	i P	- Z	05:10:10.8	81.1	44.4	1.4	26	5.2		
	e pP	Z	05:11:41.8							
	e sP	Z	05:12:19.7							
NRDL	e P	Z	05:10:12.9	81.5	42.5	1.5	13	4.9		
CLZ	e P	Z	05:10:15.1	81.9	42.6	1.1	30	5.5		
TANN	e P	Z	05:10:15.7	82.0	43.9	1.0	8	4.9		
WERD	e P	Z	05:10:15.9	82.1	43.8	1.2	15	5.1		
MOX	e P	Z	05:10:16.7	82.2	43.4	1.2	14	5.1		
GEC2	e P	Z	05:10:18.3	82.6	44.7	1.1	16	5.1		
IBBN	e P	Z	05:10:18.2	82.6	40.7	0.8	28	5.5		
WET	e P	Z	05:10:19.5	82.7	44.1	1.2	12	5.0		
GRA1	e P	Z	05:10:21.5	83.1	43.0	1.0	41	5.6		
BUG	e P	Z	05:10:22.4	83.5	40.3	1.0	18	5.3		
TNS	e P	Z	05:10:24.9	83.9	41.1	0.9	7	4.8		
FUR	e P	Z	05:10:26.8	84.2	42.9	1.0	25	5.3		
STU	e P	Z	05:10:28.6	84.7	41.5	1.0	14	5.1		
WLF	e P	Z	05:10:32.0	85.3	39.4	1.1	9	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e Pn	Z	05:53:14.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	06:12: 4.9	19.540N	121.830E	33.0N	5.4	5.1		SZGRF
2003/06/08	06:12:05.6	19.831N	121.427E	33N	5.3	5.0		NEIC

Philippine Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	06:24:41.2	85.1	64.2	1.4	73	5.6		
CLL	i P	- Z	06:24:42.7	85.5	63.5	1.5	79	5.6		

	e PP	Z	06:27:59.8								
	e SKSac	R	06:35:11.3								
	e S	Z	06:35:27.2								
	e SP	Z	06:36:21.8								
	e SS	R	06:40:50.3								
	e LR	Z	06:53:41.1								
	e L	Z	07:06:20.2			22.0	999		5.2		
BSEG	e P	Z	06:24:44.1	85.7	61.6	1.2	59	5.6			
GEC2	e P	Z	06:24:46.3	86.2	63.9	1.7	50	5.4			
TANN	e P	Z	06:24:46.4	86.2	63.1	1.7	43	5.3			
WERD	e P	Z	06:24:46.7	86.3	63.0	1.6	44	5.3			
NRDL	e P	Z	06:24:48.3	86.5	61.4	1.6	73	5.6			
WET	e P	Z	06:24:48.4	86.5	63.3	1.9	59	5.4			
MOX	e P	Z	06:24:48.1	86.6	62.5	1.5	31	5.2			
CLZ	e P	Z	06:24:49.1	86.7	61.6	1.8	81	5.6			
GRA3	e L	Z	07:08:15.7	87.1	62.2	20.6	841	5.1			
GRA1	e P	Z	06:24:52.0	87.2	62.1	1.6	51	5.6			
	e PP	Z	06:28:18.0								
IBBN	e P	Z	06:24:54.3	87.8	59.6	1.4	48	5.5			
TNS	e P	Z	06:24:57.4	88.5	60.0	1.5	17	5.0			
BUG	e P	Z	06:24:57.3	88.5	59.2	1.2	25	5.3			
STU	e P	Z	06:24:58.7	88.8	60.6						
BFO	e P	Z	06:25:01.9	89.5	59.9	1.4	14	5.0			
WLF	e P	Z	06:25:05.0	90.1	58.3	1.0	36	5.7			

Date Origin Time Lat Long Depth mb Ms ML Source  
 2003/06/08 12:23:40.9 44.587N 11.737E 10.0G 2.8 SZGRF  
 Northern Italy

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WTTA	e Pg	Z	12:24:28.2	2.7	178.5					
	e Sg	N	12:25:06.1							
KBA	e Pn	Z	12:24:26.1	2.7	204.8					
MOA	e Pn	Z	12:24:38.0	3.7	209.1					
GEC2	e Pn	Z	12:24:47.2	4.5	198.3					
WET	e Pn	Z	12:24:49.5	4.6	190.1					
TANN	e Pn	Z	12:25:07.1	5.8	185.1					
WERD	e Pn	Z	12:25:08.5	5.9	184.0					
BRG	e Pn	Z	12:25:15.9	6.5	194.1					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2003/06/08 12:58:18.4 11.913S 67.432E 33.0N 5.1 SZGRF  
 2003/06/08 12:57:56.1 16.286S 67.201E 10G 4.9 4.3 NEIC  
 Mid-Indian Ridge



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Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 13:10:18.3	82.3	126.6	1.0	19	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 13:18:06.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	14:16:17.0	33.324N	27.196E	10.0G				SZGRF
2003/06/08	14:16:32.2	34.235N	25.688E	33N	4.2			NEIC

Eastern Mediterranean Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 14:20:32.0	17.1	144.3					
FUR	e P	Z 14:20:37.5	17.6	137.1					
WET	e P	Z 14:20:38.3	17.7	142.8					
GRA1	e P	Z 14:20:51.3	18.8	140.0					
TANN	e P	Z 14:20:51.3	18.8	144.1					
WERD	e P	Z 14:20:52.4	18.9	143.9					
STU	e P	Z 14:20:54.3	19.0	133.8					
CLL	e P	Z 14:20:57.3	19.4	146.8					
CLZ	e P	Z 14:21:11.7	20.8	142.0					
NRDL	e P	Z 14:21:18.4	21.4	142.5					
BUG	e P	Z 14:21:23.1	21.7	135.2					
BSEG	e P	Z 14:21:28.7	22.5	145.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	15:32:26.8	73.270N	12.056E	33.0N	3.7			SZGRF

Norwegian Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:37:35.0	23.6	0.6	0.9	2	3.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/08	20:14:49.2	44.600N	147.240E	33.0N	5.5			SZGRF
2003/06/08	20:14:52.7	44.183N	147.026E	88	5.0			NEIC

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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BSEG	e P	Z	20:26:28.9	75.2	30.6	0.9	45	5.5
RUE	e P	Z	20:26:29.7	75.3	32.7	0.8	59	5.7
NRDL	e P	Z	20:26:36.2	76.5	30.3	0.9	24	5.3
CLL	e P	Z	20:26:36.3	76.6	32.0	0.9	87	5.9
BRG	e P	Z	20:26:36.8	76.6	32.6	0.9	24	5.3
CLZ	e P	Z	20:26:39.3	76.9	30.4	0.9	64	5.7
IBBN	e P	Z	20:26:41.0	77.3	28.7	1.0	69	5.7
TANN	e P	Z	20:26:42.0	77.5	31.6	0.9	11	5.0
WERD	e P	Z	20:26:42.2	77.5	31.5	1.0	23	5.3
MOX	e P	Z	20:26:42.4	77.6	31.0	1.3	45	5.5
BUG	e P	Z	20:26:45.9	78.2	28.2	1.1	59	5.6
GEC2	e P	Z	20:26:47.0	78.4	32.2	0.6	20	5.4
WET	e P	Z	20:26:47.7	78.4	31.7	1.0	53	5.6
GRA1	e P	Z	20:26:48.2	78.5	30.7	0.9	107	5.9
TNS	e P	Z	20:26:50.1	79.0	28.9	1.1	35	5.3
FUR	e P	Z	20:26:55.0	79.8	30.6	0.9	76	5.6
STU	e P	Z	20:26:55.6	80.0	29.3	0.9	49	5.4
BFO	e P	Z	20:26:59.1	80.7	28.7	1.0	26	5.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	01:52:48.5	23.772N	122.764E	39.2	5.6	6.1		SZGRF
2003/06/09	01:52:54.8	24.808N	121.899E	67	5.3			NEIC

Taiwan region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML								
CLL	i P	Z 02:05:09.1	83.2	60.3	1.0	19	5.2										
	e	Z 02:05:17.7															
	e PP	Z 02:08:20.7															
	e PPP	Z 02:10:02.0															
	e PPPP	R 02:11:51.7															
	e S	T 02:15:16.9															
	e PPS	Z 02:16:33.4															
	e SS	T 02:20:38.1															
	e LQ	T 02:32:14.0															
	e L	Z 02:46:02.2															
	GRA1	e P								Z 02:05:19.3	83.5	58.7	1.5	62	5.6		6.0
		e PP								Z 02:08:32.2							
		e pPP								Z 02:08:42.6							
e L		Z 02:47:10.7															
					19.4	7150		6.1									

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	07:06:51.2	40.011N	20.895E	10.0G				SZGRF
2003/06/09	07:06:39.1	39.889N	22.238E	18D	5.1	4.9		NEIC

Greece-Albania border region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
ARSA	e P	Z	07:08:48.1	8.8	144.2					
MOA	e P	Z	07:09:01.9	9.8	141.3					
WTTA	e S	N	07:11:08.2	10.6	130.1					
GEC2	e P	Z	07:09:16.5	10.8	142.7					
WET	e P	Z	07:09:26.6	11.4	140.8					
BRG	e P	Z	07:09:41.2	12.4	149.0					
GRA1	e P	Z	07:09:42.1	12.5	137.4					
TANN	e P	Z	07:09:39.5	12.6	143.2					
WERD	e P	Z	07:09:42.0	12.6	142.8					
BFO	e P	Z	07:09:44.1	13.0	125.2					
MOX	e P	Z	07:09:48.2	13.1	141.3					
CLL	e P	Z	07:09:48.4	13.1	147.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	07:32:50.9	25.581S	179.357E	600G	4.5			NEIC

South of the Fiji Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	07:52:03.0	154.2	25.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	09:59:40.2	38.140N	142.020E	33.0N	5.0			SZGRF
2003/06/09	09:59:34.4	36.491N	140.557E	33N	4.8			NEIC

Near east coast of eastern Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	10:11:48.4	80.9	40.8	1.1	13	4.8		
CLL	e P	Z	10:11:48.4	80.9	40.2	0.9	19	5.0		
CLZ	e P	Z	10:11:52.1	81.5	38.4	1.1	18	5.0		
MOX	e P	Z	10:11:54.4	82.0	39.2	1.2	7	4.6		
WET	e P	Z	10:11:58.4	82.6	39.9	1.4	16	5.0		
GRA1	e P	Z	10:11:59.5	82.9	38.8	0.9	26	5.4		
STU	e P	Z	10:12:07.0	84.4	37.3	1.1	20	5.3		
BFO	e P	Z	10:12:10.3	85.1	36.7	1.0	15	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	13:47:57.2	13.440S	167.654E	33N	5.1			NEIC

Vanuatu Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	14:07:24.4	138.9	36.3					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/09	18:27:40.5	46.796N	151.524E	33.0N	4.6			SZGRF

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 18:39:33.7	77.6	26.6	0.9	5	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/10	07:07:2.5	8.919S	62.566E	33.0N	4.8			SZGRF

South Indian Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:18:33.4	73.7	126.5	1.1	11	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/10	07:24:23.0	39.787N	142.655E	33.0N	5.5			SZGRF
2003/06/10	07:24:03.4	38.891N	141.511E	64D	4.7			NEIC

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 07:36:03.6	79.2	37.2	0.6	4	4.5		
	e pP	Z 07:36:22.3							
	e sP	Z 07:36:29.9							
GRA1	e pP	Z 07:36:34.1	81.2	36.9	1.1	51	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/10	08:40:34.5	24.820N	122.110E	33.0N	6.1	5.9		SZGRF
2003/06/10	08:40:29.6	23.473N	121.502E	33N	5.7	5.6		NEIC

Taiwan region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 08:52:43.0	80.9	62.0	1.0	136	5.8		
RUE	e P	Z 08:52:47.0	81.6	62.0	0.9	225	6.2		
BRG	e P	Z 08:52:50.3	82.3	61.9	1.0	80	5.8		
	e S	T 09:03:00.8							
CLL	i P	+ Z 08:52:51.7	82.6	61.3	0.9	149	6.2		
	e pP	Z 08:53:04.2							
	e PP	Z 08:56:05.9							
	e PPP	Z 08:58:00.3							
	e S	T 09:03:02.7							
	e SS	T 09:08:31.6							

	e	SSSS	T	09:14:42.4							
	e	LQ	T	09:19:40.7							
	e	LR	Z	09:23:56.4							
	e	L	Z	09:33:50.8			20.0	8629		6.1	
BSEG	e	P	Z	08:52:52.6	82.7	59.6	1.0	84		5.8	
TANN	e	P	Z	08:52:55.7	83.3	60.8	1.1	78		5.9	
GEC2	e	P	Z	08:52:56.2	83.4	61.5	0.9	155		6.2	
	e	S	T	09:03:14.1							
WERD	e	P	Z	08:52:56.1	83.4	60.7	1.0	92		6.0	
NRDL	e	P	Z	08:52:57.3	83.6	59.3	1.2	114		6.0	
	e	S	T	09:03:13.5							
MOX	e	P	Z	08:52:57.5	83.7	60.2	1.0	108		6.0	
WET	e	P	Z	08:52:58.0	83.7	61.0	1.2	91		5.9	
CLZ	e	P	Z	08:52:58.3	83.7	59.4	0.9	195		6.3	
GRA1	e	P	Z	08:53:01.5	84.4	59.8	1.0	174		6.2	
	e	PP	Z	08:56:16.5							
	e	L	Z	09:34:03.1			20.2	4853		5.9	
IBBN	e	P	Z	08:53:03.6	84.9	57.5	0.9	255		6.5	
FUR	e	P	Z	08:53:05.3	85.1	59.7	1.0	325		6.5	
BUG	e	P	Z	08:53:07.1	85.6	57.0	1.1	207		6.3	
TNS	e	P	Z	08:53:07.5	85.6	57.8	1.1	76		5.8	
STU	e	P	Z	08:53:08.9	86.0	58.3	1.4	106		5.9	
BFO	e	P	Z	08:53:12.0	86.7	57.6	1.5	74		5.6	
WLF	e	P	Z	08:53:15.2	87.2	56.1	1.0	236		6.3	

Date 2003/06/10 Origin Time 18:22:43.6 Lat 9.423N Long 41.292E Depth 10.0G mb 4.8 Ms ML Source SZGRF Ethiopia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 18:31:18.0	47.4	137.8	1.5	13	4.8		

Date 2003/06/10 Origin Time 20:59:26.4 Lat 51.794N Long 179.416W Depth 33.0N mb 5.2 Ms 4.5 ML Source SZGRF  
 Date 2003/06/10 Origin Time 20:59:19.8 Lat 51.268N Long 179.249W Depth 33N mb 5.2 Ms 4.6 ML Source NEIC  
 Andreanof Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 21:10:59.1	74.5	6.2	1.1	62	5.5		
NRDL	e P	Z 21:11:06.9	75.9	6.0	1.2	38	5.4		
CLZ	e P	Z 21:11:10.9	76.6	6.2	1.1	61	5.6		
CLL	i P	+ Z 21:11:11.7	76.9	7.8	1.1	23	5.2		
	e SP	Z 21:21:40.1							
	e SS	Z 21:26:01.3							
	e L	Z 21:53:20.6			18.0	377		4.8	



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Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:25:11.0							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/11	07:00:14.1	48.557N	86.022E	33.0N	4.8			SZGRF
Kazakhstan-Xinjiang border region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 07:08:41.3	46.9	61.1	0.9	8	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/11	19:45:48.2	40.484N	144.660E	33.0N	4.7			SZGRF
2003/06/11	19:46:00.0	41.535N	139.486E	33N	4.7			NEIC
Off east coast of Honshu, Japan								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:58:00.0	78.1	36.9	0.9	6	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/11	22:02:32.6	22.830S	178.990W	33.0N				SZGRF
2003/06/11	22:03:38.5	20.889S	178.828W	600G	4.2			NEIC
South of Fiji Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 22:22:14.7	146.2	15.5					
CLL	e PKPdf	Z 22:22:16.1	148.2	21.3	0.8	3			
	i PKPbc	Z 22:22:19.9			0.9	20			
	i PKPab	Z 22:22:25.3			0.6	12			
MOX	e PKPbc	Z 22:22:22.2	149.1	19.3					
TANN	e PKPbc	Z 22:22:22.5	149.2	20.9					
WERD	e PKPbc	Z 22:22:22.5	149.2	20.6					
GRA1	e PKPbc	Z 22:22:24.7	150.1	19.1					
	e PKPab	Z 22:22:33.8							
	e	22:26:05.5							
WET	e PKPab	Z 22:22:34.5	150.2	22.5					
GEC2	e PKPbc	Z 22:22:24.9	150.3	24.2					
FUR	e PKPbc	Z 22:22:27.6	151.5	20.1					
	e PKPab	Z 22:22:39.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/12	03:58:55.4	24.614N	122.097E	33.0N	4.6			SZGRF

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2003/06/12 03:58:52.9  
Taiwan region

23.505N 121.561E 61\* 4.4 NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 04:11:21.8	84.4	59.8	0.9	4	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/12	08:59:20.3	5.982S	154.758E	185D	5.9			NEIC

Bougainville - Solomon Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPdf	Z 09:17:58.9	124.1	44.3					
BRG	e PKPdf	Z 09:17:59.6	124.6	49.7					
CLL	e Pdiff	Z 09:14:29.4	124.7	48.5					
	e sPdiff	Z 09:15:40.5							
	i PKPdf	Z 09:17:59.7			0.8	80			
	e PP	Z 09:19:49.8							
	e sPP	Z 09:20:53.0							
	e PPP	Z 09:22:26.5							
	e sPPP	Z 09:23:35.8							
	e SKSac	R 09:24:43.6							
	e SKKSac	R 09:26:27.5							
	e SP	Z 09:29:36.5							
	e	09:31:24.9							
	e SS	T 09:36:30.3							
	e L	Z 10:09:30.0			22.0	958		5.4	
NRDL	e PKPdf	Z 09:18:01.2	125.2	44.8					
CLZ	e PKPdf	Z 09:18:01.9	125.6	45.4					
TANN	e PKPdf	Z 09:18:01.7	125.6	48.4					
WERD	e PKPdf	Z 09:18:01.8	125.6	48.2					
MOX	e PKPdf	Z 09:18:02.0	125.8	47.4					
GEC2	e PKPdf	Z 09:18:02.3	126.0	50.6					
WET	e PKPdf	Z 09:18:03.0	126.2	49.5					
IBBN	e PKPdf	Z 09:18:03.2	126.3	42.2					
GRA3	e L	Z 10:10:32.2	126.6	47.5	21.8	999		5.5	
GRA1	e PKPdf	Z 09:18:03.7	126.6	47.5					
	e PP	Z 09:20:00.6							
GRFO	e PKPdf	Z 09:18:03.7	126.6	47.5					
BUG	e PKPdf	Z 09:18:04.6	127.2	42.1					
TNS	e PKPdf	Z 09:18:05.5	127.6	44.1					
FUR	e PKPdf	Z 09:18:05.6	127.6	48.4					
BFO	e PKPdf	Z 09:18:07.8	129.0	45.0					
WLF	e PKPdf	Z 09:18:09.0	129.0	41.8					



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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/12	14:03:23.4	30.701N	130.843E	33.0N	5.1			SZGRF

Kyushu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 14:15:48.0	83.4	48.8	1.0	13	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/12	18:43:32.8	13.290N	120.670E	33.0N	5.8	5.3		SZGRF
2003/06/12	18:43:30.4	13.203N	120.460E	33N	5.2	5.1		NEIC

Mindoro, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 18:56:29.4	89.9	69.0	1.1	76	5.8		
CLL	i P	+ Z 18:56:30.8	90.2	68.2	1.1	52	5.8		
	e pP	Z 18:56:38.3							
	e sP	Z 18:56:42.3							
	e PP	Z 19:00:09.6							
	e SKSac	R 19:07:01.6							
	e S	T 19:07:22.7							
	e SP	Z 19:08:28.6							
	e SS	T 19:13:19.8							
	e SSSS	T 19:20:15.7							
	e LQ	T 19:24:15.9							
	e LR	Z 19:31:26.4							
	e L	Z 19:44:58.7			18.0	1326		5.4	
BSEG	e P	Z 18:56:33.5	90.7	66.1	0.9	54	5.8		
GEC2	e P	Z 18:56:33.5	90.7	68.8	1.3	59	5.7		
TANN	e P	Z 18:56:34.3	90.9	67.8	1.3	48	5.6		
WERD	e P	Z 18:56:34.9	91.0	67.7	1.2	55	5.6		
WET	e P	Z 18:56:35.7	91.1	68.2	1.5	82	5.7		
MOX	e P	Z 18:56:36.2	91.3	67.2	1.4	71	5.7		
NRDL	e P	Z 18:56:37.1	91.4	65.9	1.8	137	5.9		
CLZ	e P	Z 18:56:37.4	91.5	66.2	1.6	136	6.0		
GRA1	e P	Z 18:56:39.6	91.9	66.9	2.2	270	6.2		
	e PP	Z 19:00:19.6							
	e L	Z 19:41:48.8			20.0	1112		5.3	
TNS	e P	Z 18:56:45.6	93.3	64.7	1.3	54	5.7		
BUG	e P	Z 18:56:46.2	93.5	63.7	1.1	46	5.8		
BFO	e P	Z 18:56:49.2	94.2	64.7	1.6	56	5.7		
WLF	e P	Z 18:56:53.1	94.9	62.9	1.1	74	5.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/12	18:58:32.0	46.958N	151.571E	33.0N	5.1			SZGRF
2003/06/12	18:58:44.2	48.319N	153.338E	140D	4.4			NEIC



Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 19:45:32.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/13								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 22:40:46.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/14								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 02:55:36.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/14	03:10:28.7	5.170S	36.640E	33.0N	4.8			SZGRF
2003/06/14	03:10:21.8	5.580S	35.697E	10G	5.2	4.8		NEIC
Tanzania								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 03:20:14.5	57.7	153.8					
WET	e P	Z 03:20:17.5	58.2	153.0					
GRA1	e P	Z 03:20:24.6	59.2	151.3	1.0	6	4.8		
WERD	e P	Z 03:20:27.2	59.6	152.7					
	e PcP	Z 03:21:14.9							
TNS	e P	Z 03:20:34.7	60.6	148.5					
WLF	e P	Z 03:20:37.0	60.9	145.8					
NRDL	e P	Z 03:20:44.4	62.0	150.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/14	13:45:56.3	22.650S	176.862W	200G	4.6			NEIC
South of the Fiji Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKPbc	Z 14:05:26.2	150.4	18.7	0.9	28			
	i PKPab	Z 14:05:32.9			0.8	10			
	e pPKPbc	Z 14:05:57.5							
GRA1	e PKP	Z 14:05:30.8	152.2	16.2					
	e	14:05:41.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/06/14	14:36:59.6	15.244S	174.097W	88D	4.4			NEIC	
Tonga									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 14:56:29.8	145.3	9.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/06/14	15:40:36.9	21.644S	178.338W	500G	4.1			NEIC	
Fiji Region									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 15:59:35.6	151.0	18.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/06/14	16:54:27.1	35.331N	141.529E	43.5	4.6			SZGRF	
2003/06/14	16:54:32.5	37.155N	140.812E	33N	4.2			NEIC	
Near east coast of eastern Honshu, Japan									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 17:06:54.5	82.4	38.3	0.9	3	4.6		
	e pP	Z 17:07:07.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source	
2003/06/14	18:28:49.8	7.469S	156.656E	405D	5.7			NEIC	
Bougainville - Solomon Islands region									
Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKPdf	+ Z 18:47:08.5	127.0	47.4	0.8	113			
	e PP	Z 18:49:12.4							
	e pPP	Z 18:50:39.8							
	e sPP	Z 18:51:16.8							
	e SP	Z 18:58:35.7							
	e SS	T 19:05:58.7							
	e sSS	T 19:08:22.5							
GRA1	e PKPdf	Z 18:47:11.7	128.9	46.2					
	e	19:00:17.1							

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/14	19:33:53.0	82.480N	11.940E	33.0N	5.0			SZGRF
2003/06/14	19:33:23.8	85.310N	9.316E	10G	4.9	4.2		NEIC

North of Svalbard

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	19:39:48.2	31.4	359.8	1.3	17	4.7		
NRDL	e P	Z	19:40:01.0	32.8	359.9	1.5	37	5.0		
RUE	e P	Z	19:40:00.8	32.9	359.3	1.4	39	5.0		
IBBN	e P	Z	19:40:02.3	33.0	0.2	1.4	17	4.7		
CLZ	e P	Z	19:40:06.8	33.5	359.8	1.3	26	5.0		
BUG	e P	Z	19:40:10.1	33.9	0.3	1.4	33	5.1		
CLL	e P	Z	19:40:10.6	34.0	359.5	1.2	21	4.9		
BRG	e P	Z	19:40:14.6	34.5	359.3	1.6	41	5.1		
MOX	e P	Z	19:40:16.9	34.7	359.7	1.2	27	5.0		
WERD	e P	Z	19:40:18.8	34.9	359.6	1.3	22	4.9		
TANN	e P	Z	19:40:19.0	34.9	359.6	1.3	22	4.9		
TNS	e P	Z	19:40:20.7	35.1	0.1	1.5	18	4.8		
GRA1	e P	Z	19:40:25.5	35.6	359.7	1.2	26	5.0		
GRFO	e P	Z	19:40:25.4	35.6	359.7	1.5	26	5.0		
WLF	e P	Z	19:40:26.3	35.7	0.4	2.5	93	5.3		
WET	e P	Z	19:40:30.4	36.2	359.5	1.5	27	4.9		
GEC2	e P	Z	19:40:33.1	36.5	359.4	1.5	28	5.0		
STU	e P	Z	19:40:33.2	36.5	0.0	1.3	32	5.1		
BFO	e P	Z	19:40:37.0	37.0	0.1	1.3	20	4.9		
FUR	e P	Z	19:40:38.5	37.2	359.7	1.5	34	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/14								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	22:25:50.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15	04:10:24.6	2.468S	33.915W	23.3	4.6			SZGRF

South Atlantic Ocean

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	04:21:02.9	65.0	231.4	1.4	5	4.6		
	e pP	Z	04:21:09.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15	06:23:18.2	17.519S	178.976W	531D	4.4			NEIC

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z	06:41:55.4	145.0	20.2					
	i PKPbc	- Z	06:41:56.4			0.7	52			
	e pPKPbc	Z	06:44:46.9							
GRA1	e PKP	Z	06:42:02.2	146.8	18.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15	11:12:11.0	41.243N	141.559E	33.0N	4.4			SZGRF
2003/06/15	11:12:15.6	41.983N	142.182E	85*	4.1			NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	11:24:13.0	78.8	34.9	0.9	3	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15	19:24:36.6	51.430N	174.220E	33.0N	6.3	6.2		SZGRF
2003/06/15	19:24:34.8	51.594N	176.923E	33N	5.9	6.4		NEIC

Near Islands, Aleutian Islands, United States

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	19:36:05.3	73.0	10.6	1.5	892	6.7		
HLG	e S	T	19:45:42.0	73.8	7.1					
BSEG	e P	Z	19:36:10.4	73.9	8.6	1.1	317	6.3		
RUE	e P	Z	19:36:16.1	75.0	10.8	1.4	323	6.2		
NRDL	e P	Z	19:36:18.4	75.3	8.4	1.4	291	6.2		
IBBN	e P	Z	19:36:21.0	75.7	6.9	1.6	1642	6.9		
CLZ	e P	Z	19:36:22.2	75.9	8.6	1.5	562	6.5		
CLL	i P	+ Z	19:36:22.8	76.2	10.2	1.6	377	6.3		
	e PP	Z	19:39:19.0							
	e PPP	Z	19:41:13.6							
	e S	T	19:46:02.5							
	e SP	R	19:46:46.6							
	e SS	R	19:51:05.7							
	e SSS	R	19:54:39.2							
	e LR	Z	20:01:23.9							
	e PKPPKPdf	Z	20:03:38.2							
	e L	Z	20:08:29.9			22.0	19502		6.4	
BRG	e P	Z	19:36:24.8	76.5	10.8	1.5	287	6.2		
BUG	e P	Z	19:36:25.4	76.6	6.6	1.5	428	6.4		
MOX	e P	Z	19:36:27.8	77.0	9.3	1.2	226	6.2		
	e S	T	19:46:14.5							
WERD	e P	Z	19:36:28.5	77.1	9.7	1.5	280	6.2		
TANN	e P	Z	19:36:28.8	77.1	9.8	1.6	294	6.2		

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TNS	e P	Z	19:36:31.9	77.7	7.3	1.6	356	6.3
GRA1	e P	Z	19:36:33.9	78.0	9.0	1.6	276	6.1
	e PKPPKP	Z	20:03:22.4					
	e L	Z	20:18:13.4			18.9	11173	6.2
GRFO	e P	Z	19:36:34.0	78.0	9.0	1.6	432	6.3
WET	e P	Z	19:36:35.6	78.3	10.0	1.5	318	6.1
WLF	e P	Z	19:36:36.3	78.4	5.8	1.4	302	6.1
	e S	T	19:46:33.9					
GEC2	e P	Z	19:36:36.4	78.5	10.5	1.5	310	6.1
STU	e P	Z	19:36:39.4	79.1	7.7	1.2	247	6.0
FUR	e P	Z	19:36:41.7	79.5	9.0	1.4	451	6.2
BFO	e P	Z	19:36:42.3	79.6	7.2	1.4	302	6.0
	e S	T	19:46:44.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 23:08:24.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/15								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 23:43:41.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16	09:33:52.3	35.124N	141.814E	33.0N	5.3			SZGRF
2003/06/16	09:34:06.1	37.316N	141.051E	79	4.7			NEIC

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:46:22.7	82.4	38.0	1.4	28	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16	12:01:50.3	31.505S	70.135E	33.0N	4.9			SZGRF

South Indian Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:15:16.8	96.5	132.7	0.8	3	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16	15:17:38.6	18.020S	178.781W	500G	4.1			NEIC

Fiji Region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z 15:36:19.8	145.5	20.1					
	i PKPbc	Z 15:36:20.8			0.8	23			
	e PKiKP	Z 15:36:24.4							
GRA1	e PKP	Z 15:36:26.6	147.3	17.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 18:04:40.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16	18:33:36.5	23.450N	122.050E	33.0N	5.5	5.2		SZGRF
2003/06/16	18:33:39.2	23.472N	121.575E	48*	5.1	5.0		NEIC

Taiwan region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z 18:45:55.3	81.7	62.0					
BRG	e P	Z 18:45:57.8	82.3	61.9					
CLL	i P	+ Z 18:45:59.5	82.6	61.2	0.9	26	5.5		
	e PP	Z 18:49:11.1							
	e	18:49:57.3							
	e PPP	Z 18:51:18.0							
	e S	T 18:56:14.1							
	e SS	Z 19:02:13.8							
	e SSSS	T 19:07:49.9							
	e LQ	T 19:11:45.6							
	e L	Z 19:26:57.0			18.0	1958		5.5	
BSEG	e P	Z 18:46:00.1	82.8	59.5					
TANN	e P	Z 18:46:03.2	83.4	60.8					
GEC2	e P	Z 18:46:03.6	83.4	61.5					
WERD	e P	Z 18:46:03.7	83.4	60.6					
NRDL	e P	Z 18:46:04.8	83.6	59.2					
MOX	e P	Z 18:46:05.0	83.7	60.2					
WET	e P	Z 18:46:05.5	83.7	60.9					
CLZ	e P	Z 18:46:05.8	83.8	59.3					
GRA3	e L	Z 19:27:06.4	84.3	59.9	20.2	959		5.2	



GRA1	e P	Z	18:46:09.0	84.4	59.8	1.0	35	5.5
	e		18:49:25.7					
GRFO	e P	Z	18:46:09.0	84.4	59.8			
IBBN	e P	Z	18:46:11.0	84.9	57.4			
FUR	e P	Z	18:46:12.7	85.2	59.7			
BUG	e P	Z	18:46:14.6	85.6	57.0			
TNS	e P	Z	18:46:15.0	85.7	57.8			
STU	e P	Z	18:46:16.4	86.0	58.2			
WLF	e P	Z	18:46:22.8	87.2	56.0			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/16	22:08:2.5	55.110N	161.200E	201.3	6.7			SZGRF
2003/06/16	22:08:01.6	55.489N	159.942E	174D	6.3			NEIC

Near east coast of Kamchatka Peninsula, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	22:18:37.3	66.6	19.9	1.5	1569	7.0		
BSEG	e P	Z	22:18:44.4	67.8	18.0	1.4	684	6.7		
	e S	T	22:27:31.8							
HLG	e P	Z	22:18:45.4	68.0	16.6	1.3	607	6.7		
RUE	e P	Z	22:18:48.6	68.5	19.8	1.4	1235	7.0		
NRDL	e P	Z	22:18:52.8	69.2	17.7	1.2	366	6.5		
CLL	e P	Z	22:18:55.8	69.7	19.2	1.1	974	6.9		
	e pP	Z	22:19:43.1							
	e sP	Z	22:19:59.5							
	e PP	Z	22:21:27.0							
	e sPP	Z	22:22:34.6							
	e PPP	Z	22:23:16.9							
	e sPPP	Z	22:24:19.9							
	e sPPPP	Z	22:25:19.4							
	e S	T	22:27:48.0							
	e ScS	R	22:28:36.7							
	e sS	T	22:29:06.5							
	e sScS	N	22:30:01.6							
	e SS	T	22:32:18.1							
	e sSS	T	22:33:31.1							
	e SSS	T	22:35:54.7							
	e LR	Z	22:41:56.0							
	e PKPPKP	Z	22:46:53.7							
	e pPKPPKP	Z	22:47:42.8							
CLZ	e P	Z	22:18:56.7	69.8	17.8	1.2	1161	7.0		
	e S	T	22:27:53.9							
IBBN	e P	Z	22:18:56.5	69.8	16.4	1.2	948	6.9		
BRG	e P	Z	22:18:57.3	70.0	19.7	1.2	482	6.6		
MOX	e P	Z	22:19:01.8	70.6	18.4	1.1	519	6.6		
	e S	T	22:28:05.3							
TANN	e P	Z	22:19:02.3	70.7	18.8	2.2	1677	6.8		

WERD	e P	Z	22:19:02.2	70.7	18.7	1.0	656	6.7
BUG	e P	Z	22:19:01.8	70.7	16.0	1.2	580	6.6
GRA3	e PP	Z	22:21:49.1	71.5	18.1			
	e PPP	Z	22:23:38.1					
	e		22:46:14.6					
GRA1	e		22:49:50.9					
	e P	Z	22:19:08.2	71.6	18.1	1.0	922	6.8
	e pP	Z	22:19:55.7					
GRFO	e S	T	22:28:16.4					
	e P	Z	22:19:08.2	71.6	18.1	1.1	705	6.7
	e P	Z	22:19:07.9	71.7	16.6	1.3	492	6.5
WET	e P	Z	22:19:09.2	71.8	18.9	1.1	592	6.6
	e S	T	22:28:19.4					
	e P	Z	22:19:09.4	71.9	19.3	1.1	370	6.4
WLF	e P	Z	22:19:13.5	72.6	15.2	1.5	590	6.5
STU	e P	Z	22:19:15.1	72.9	16.8	1.1	442	6.5
	e pP	Z	22:20:02.5					
	e P	Z	22:19:16.3	73.1	17.9	1.2	618	6.6
BFO	e P	Z	22:19:18.4	73.5	16.3	1.1	387	6.5
	e pP	Z	22:20:05.8					
	e S	T	22:28:37.0					

Date 2003/06/17  
 Origin Time 13:09:40.4  
 Lat 23.868S  
 Long 179.108E  
 Depth 500G  
 mb 4.4  
 Ms  
 ML  
 Source NEIC  
 South of the Fiji Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	13:28:53.7	152.5	24.6					

Date 2003/06/17  
 Origin Time 16:08:23.5  
 Lat 23.809S  
 Long 179.717E  
 Depth 563D  
 mb 4.8  
 Ms  
 ML  
 Source NEIC  
 South of the Fiji Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z	16:27:07.4	150.7	25.5	1.2	7			
	i PKPbc	+ Z	16:27:13.7			0.9	42			
	i PKPab	Z	16:27:23.0			0.8	11			
	e pPKPdf	Z	16:29:17.0							
	i pPKPbc	Z	16:29:23.0							
	e pPKPab	Z	16:29:28.4							
GRA1	e PKP	Z	16:27:17.5	152.6	23.4					
	e		16:27:32.1							
	e		16:29:37.7							



Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 03:34:15.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/18	13:42:55.1	38.637N	146.935E	33.0N	5.0			SZGRF

Off east coast of Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 13:55:19.6	83.4	33.3	1.1	11	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/18	21:42:49.2	73.746N	12.241E	33.0N				SZGRF
2003/06/18	21:42:59.7	72.107N	15.517E	10G	4.4			NEIC

Norwegian Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:48:01.0	22.5	3.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/18	22:56:43.4	17.327S	172.995W	33N	4.8			NEIC

Tonga Region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKP	Z 23:16:21.3	145.8	10.2	1.4	27			
GRA1	e PKP	Z 23:16:27.2	147.5	7.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	01:35:36.0	27.977N	127.325E	38.0	4.9			SZGRF

Ryukyu Islands, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:48:02.1	83.9	52.9	1.1	9	4.9		
	e pP	Z 01:48:13.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	03:38:21.3	38.590N	23.650E	20.0	4.6			NEIC

Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:41:52.6	14.2	136.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 04:54:11.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	07:00:44.6	20.948S	178.653W	576D	4.8			NEIC
Fiji Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKPdf	Z 07:19:23.4	148.4	21.1	1.2	15			
	i PKPbc	- Z 07:19:27.7			0.8	74			
	i PKPab	Z 07:19:33.0			0.7	45			
	i pPKPbc	Z 07:21:41.3							
GRA1	e PKPdf	Z 07:19:25.2	150.2	18.8					
	e PKPbc	Z 07:19:32.4							
	e PKPab	Z 07:19:41.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	10:44:42.7	28.528N	126.314E	36.3	5.6	5.7		SZGRF
2003/06/19	10:44:24.5	26.537N	128.517E	33N	5.2	5.0		NEIC
Northwest of Ryukyu Islands, Japan								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	Z 10:56:53.8	84.0	54.4	1.1	36	5.5		
	e pP	Z 10:57:04.1							
	e PP	Z 11:00:11.7							
	e S	R 11:07:12.0							
	e SP	Z 11:08:19.9							
	e SS	R 11:12:33.4							
	e SSS	R 11:16:34.3							
	e LQ	T 11:26:05.1							
	e L	Z 11:38:55.7			18.0	3331		5.8	
GRA1	e P	Z 10:57:04.2	85.7	52.9	1.7	61	5.6		
	e pP	Z 10:57:14.7							
	e L	Z 11:39:41.9			18.0	3070		5.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	12:59:33.1	70.830N	6.210W	33.0N	5.6	4.3		SZGRF
2003/06/19	12:59:24.6	71.126N	7.697W	10G	5.6	5.0		NEIC

Jan Mayen Island region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
IBBN	e P	Z	13:04:00.2	20.1	345.4	1.4	252	5.3		
NRDL	e P	Z	13:04:01.6	20.3	343.4	1.2	216	5.3		
BUG	e P	Z	13:04:07.8	20.8	346.4	1.1	187	5.2		
CLZ	e P	Z	13:04:08.9	20.9	343.7					
CLL	e P	Z	13:04:19.1	21.9	342.2	1.0	248	5.5		
TNS	e P	Z	13:04:22.2	22.2	346.2	0.8	137	5.4		
MOX	e P	Z	13:04:23.3	22.3	343.6	0.9	310	5.7		
WLF	e P	Z	13:04:24.9	22.4	348.3	1.2	187	5.4		
BRG	e P	Z	13:04:25.2	22.5	341.8	1.2	324	5.6		
WERD	e P	Z	13:04:26.6	22.6	343.3	1.0	593	6.0		
TANN	e P	Z	13:04:27.5	22.7	343.2	1.2	790	6.0		
GRA1	e P	Z	13:04:32.7	23.1	344.5	1.1	810	6.2		
	e L	Z	13:14:34.3			19.5	984		4.3	
GRFO	e P	Z	13:04:32.7	23.1	344.5	1.1	614	6.0		
STU	e P	Z	13:04:38.1	23.7	346.5	1.7	298	5.5		
WET	e P	Z	13:04:41.1	24.0	343.7	1.7	449	5.7		
BFO	e P	Z	13:04:41.2	24.0	347.3	0.9	102	5.3		
GEC2	e P	Z	13:04:45.8	24.4	343.4	1.2	404	5.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	15:43: 3.5	1.388S	97.810E	33.0N	4.7			SZGRF
2003/06/19	15:42:51.6	0.553N	98.428E	33N	4.8			NEIC

Southwest of Sumatera, Indonesia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	15:55:54.7	87.8	91.8	1.0	5	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	20:58:08.4	31.136S	178.304W	54D	5.3			NEIC

Kermadec Islands Region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z	21:17:59.3	158.2	26.9					
	e		21:18:03.3							
	e PKPdif	Z	21:18:13.5							
	i PKPab	Z	21:18:36.2			0.7	26			
GRA1	e PKP	Z	21:18:42.3	160.1	24.6					
	e		21:18:45.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/19	23:13:36.2	5.111N	41.740W	33.0N	4.8	5.0		SZGRF

North Atlantic Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 23:23:59.3	62.9	243.3	1.7	12	4.8		
	e L	Z 00:06:09.9			21.4	1058		5.0	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/20	00:30:4.3	41.750N	141.730E	33.0N	5.0	5.0		SZGRF
2003/06/20	00:29:55.8	40.978N	143.055E	33N	5.0			NEIC

Hokkaido, Japan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 00:41:54.8	78.0	36.8	1.2	12	4.9		
CLL	e P	Z 00:41:54.5	78.0	36.2	0.9	25	5.4		
NRDL	e P	Z 00:41:55.8	78.1	34.4					
CLZ	e P	Z 00:41:58.0	78.5	34.5	1.0	29	5.3		
TANN	e P	Z 00:42:00.0	78.9	35.7	1.8	19	4.9		
WERD	e P	Z 00:42:00.0	78.9	35.6	1.1	9	4.8		
IBBN	e P	Z 00:42:00.2	79.0	32.8	0.9	34	5.5		
MOX	e P	Z 00:42:00.6	79.0	35.2	1.1	11	4.9		
GEC2	e P	Z 00:42:04.2	79.7	36.4	1.0	7	4.6		
WET	e P	Z 00:42:05.1	79.8	35.9	1.2	19	5.0		
GRA3	e L	Z 01:20:48.3	79.9	34.9	18.8	721		5.0	
BUG	e P	Z 00:42:05.1	79.9	32.3	1.1	23	5.1		
GRA1	e P	Z 00:42:06.2	80.0	34.8	0.9	35	5.4		
	e	00:42:27.5							
TNS	e P	Z 00:42:09.2	80.5	33.0	0.9	7	4.6		
STU	e P	Z 00:42:13.7	81.5	33.4	1.1	23	5.1		
WLF	e P	Z 00:42:16.8	81.8	31.4	1.3	21	5.0		
BFO	e P	Z 00:42:17.1	82.1	32.8	1.1	8	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/20	06:19:40.1	7.830S	71.630W	567.7	6.7			SZGRF
2003/06/20	06:19:38.6	7.537S	71.620W	556D	6.4			NEIC

Western Brazil

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 06:31:30.9	87.9	255.8	1.5	1654	7.1		
BFO	e P	Z 06:31:35.1	89.0	257.5	1.2	192	6.2		
BUG	e P	Z 06:31:35.4	89.1	256.6	1.4	1369	7.0		
TNS	e P	Z 06:31:37.3	89.5	257.6	1.5	595	6.6		

IBBN	e P	Z	06:31:37.8	89.5	257.0	1.6	1777	7.1
STU	e P	Z	06:31:38.1	89.7	258.1	1.3	810	6.8
FUR	e P	Z	06:31:44.9	90.9	259.7	1.4	915	6.9
NRDL	e P	Z	06:31:45.1	91.0	258.9	1.6	639	6.7
CLZ	e P	Z	06:31:45.1	91.0	259.1	1.5	422	6.6
GRA1	e P	Z	06:31:45.6	91.2	259.7	1.6	604	6.7
	e pP	Z	06:33:48.4					
	e PP	Z	06:35:33.1					
	e SKSac	R	06:41:23.4					
	e SP	R	06:43:06.3					
	e PKKPdf	Z	06:49:05.1					
	e SKKPdf	R	06:51:28.4					
MOX	e P	Z	06:31:47.6	91.6	260.0	1.6	448	6.5
WERD	e P	Z	06:31:49.6	92.0	260.5	1.5	341	6.5
TANN	e P	Z	06:31:50.2	92.1	260.6	1.5	453	6.6
CLL	i P	- Z	06:31:52.1	92.5	261.1	1.4	193	6.2
	e pP	Z	06:33:57.5					
	e sP	Z	06:34:53.6					
	e PPP	Z	06:37:39.7					
	e sPP	Z	06:38:30.4					
	e SKSac	R	06:41:32.5					
	e S	T	06:42:05.8					
	e SP	Z	06:43:24.2					
	e (PS)	E	06:44:41.5					
	e sS	T	06:45:46.5					
	e sSP	E	06:46:47.9					
	e SS	R	06:48:37.4					
	e PKKPdf	Z	06:49:02.0					
	e sSS	R	06:51:39.5					
	e SSS	Z	06:52:22.8					
	e SSSS	E	06:55:27.8					
	e PKPPKPdf	Z	06:57:11.0					
GEC2	e P	Z	06:31:52.0	92.6	261.5	1.1	173	6.4
BRG	e P	Z	06:31:54.4	93.1	261.8	1.4	318	6.5
RUE	e P	Z	06:31:54.8	93.2	261.8	1.3	257	6.5
RGN	e P	Z	06:31:55.5	93.2	261.5	1.5	923	7.0

Date  
2003/06/20

Origin Time

Lat

Long

Depth

mb

Ms

ML

Source

Sta  
GRA1

Phase  
e PKP

Time  
Z 12:04:37.2

Dist

BAz

T[s]

A[nm]

mb

MS

ML

Date  
2003/06/20

Origin Time  
13:30:41.4

Lat  
30.532S

Long  
71.371W

Depth  
32G

mb  
6.4

Ms  
6.8

ML

Source  
NEIC



Near coast of central Chile

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e Pdiff	Z 13:44:49.8	105.5	240.8					
BFO	e Pdiff	Z 13:44:54.6	106.1	241.9					
STU	e Pdiff	Z 13:44:54.4	106.8	242.6					
TNS	e Pdiff	Z 13:44:59.8	107.0	242.5					
	e PP	Z 13:49:22.7							
FUR	e Pdiff	Z 13:45:00.2	107.8	243.8					
GRA1	e Pdiff	Z 13:45:05.9	108.4	244.2					
	e PP	Z 13:49:28.7							
	e SKSac	R 13:55:59.2							
	e SP	R 13:58:49.0							
	e PKKPdf	Z 14:00:31.5							
	e L	Z 14:31:55.4			21.6	58593		7.1	
MOX	e Pdiff	Z 13:45:04.6	109.0	244.7					
WET	e Pdiff	Z 13:45:05.2	109.1	245.1					
	e PP	Z 13:49:36.4							
WERD	e Pdiff	Z 13:45:04.3	109.3	245.1					
TANN	e Pdiff	Z 13:45:10.6	109.4	245.2					
	e PKKPdf	Z 14:00:29.5							
GEC2	e Pdiff	Z 13:45:09.2	109.5	245.6					
CLL	e Pdiff	Z 13:45:13.3							
	e sPdiff	Z 13:45:23.7	110.1	245.9					
	e PP	Z 13:49:44.9							
	e sPP	Z 13:49:56.9							
	e PPP	Z 13:52:12.7							
	e SKSac	E 13:56:00.0							
	e PS	Z 13:59:12.4							
	e PKKPdf	Z 14:00:28.8							
	e PPS	Z 14:00:32.4							
	e SS	E 14:05:36.9							
	e SKKSdf	E 14:07:29.9							
	e SSS	E 14:09:44.4							
	e LR	Z 14:22:54.8							
	e L	Z 14:35:03.1			20.0	76180		7.3	
BRG	e Pdiff	Z 13:45:12.6	110.5	246.4					
	e PP	Z 13:49:48.1							
RUE	e PKKPdf	Z 14:00:31.5	111.0	246.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/20	21:48:52.8	51.612N	179.985E	33.0N	4.7			SZGRF
2003/06/20	21:49:09.5	52.270N	179.673E	174D	5.2			NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:00:49.7	77.6	7.2	0.9	7	4.7		



GEC2 e Pn Z 10:17:57.1  
e Sn N 10:19:04.5

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/21	11:59: 3.8	56.827N	153.827W	33.0N	4.7			SZGRF
2003/06/21	11:59:01.5	57.090N	153.306W	33N	4.4			NEIC

Kodiak Island, Alaska, United States, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:10:29.3	72.5	351.3	1.3	9	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/21	15:00: 7.7	35.577N	53.019E	33.0N	4.2			SZGRF
2003/06/21	15:00:07.4	35.705N	52.966E	33N	4.5			NEIC

Northern and central Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 15:06:42.6	33.2	98.9	0.9	3	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/21								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 20:04:00.0							
	e Sn	N 20:05:06.2							
WET	e Pn	Z 20:04:05.3							
	e Sn	N 20:05:14.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/21	20:05:57.5	47.378N	20.072E	10.0G			3.6	SZGRF
2003/06/21	20:05:58.8	47.565N	19.839E	10G				NEIC

Hungary

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 20:07:05.6	4.3	105.1					3.6
	e Sn	N 20:07:57.7							
WET	e Pn	Z 20:07:13.5	4.9	106.2					
BRG	e Pn	Z 20:07:15.5	5.1	128.4					
WERD	e Pn	Z 20:07:24.8	5.7	117.4					
CLL	e Pn	Z 20:07:25.9	5.8	127.5					
MOX	e Pn	Z 20:07:31.8	6.2	116.6					

CLZ	e Pn	Z	20:07:50.9	7.5	121.3
BFO	e Pn	Z	20:07:52.8	7.7	91.4
	e Sn	N	20:09:17.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/22	03:39:46.7	37.680N	49.799E	33.0N	4.0			SZGRF

Caspian Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:45:52.3	30.0	98.8	1.0	2	4.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/22	15:48:44.1	52.709N	166.360W	33.0N	4.6			SZGRF
2003/06/22	15:48:50.7	53.391N	168.244W	96*	4.4			NEIC

Fox Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:00:37.3	76.9	359.7	1.1	5	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/22	23:46:20.7	38.992N	28.030E	10G	4.5			NEIC

Hungary

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
ARSA	e P	Z 23:49:17.6	12.3	127.7					
MOA	e P	Z 23:49:31.9	13.3	126.6					
KBA	e P	Z 23:49:36.4	13.4	121.8					
WTTA	e P	Z 23:49:52.0	14.5	118.8					
BRG	e P	Z 23:50:04.9	15.5	134.8					
MOX	e P	Z 23:50:16.2	16.4	128.9					
BFO	e P	Z 23:50:22.5	17.0	116.1					
CLZ	e P	Z 23:50:31.4	17.8	129.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/23	12:12:43.1	52.082N	176.348E	33.0N	6.6	6.8		SZGRF
2003/06/23	12:12:34.2	51.421N	176.794E	18D	6.3	7.0		NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 12:24:07.6	73.1	10.7	1.4	1698	6.9		
	e PP	Z 12:27:36.8							

HLG	e P	Z	12:24:12.0	74.0	7.2	2.0	3192	7.0
RUE	e P	Z	12:24:18.2	75.1	10.9	1.5	1014	6.7
NRDL	e P	Z	12:24:20.0	75.5	8.5	1.4	570	6.5
IBBN	e P	Z	12:24:22.8	75.9	7.0	1.4	2210	7.1
CLZ	e P	Z	12:24:24.0	76.1	8.7	1.3	922	6.8
CLL	i P	+ Z	12:24:24.5	76.4	10.3	2.0	1042	6.6
	e PP	Z	12:27:21.5					
	e PPP	Z	12:29:14.9					
	e S	T	12:34:11.0					
	e PS	R	12:34:50.4					
	e SS	R	12:39:14.5					
	e SSS	T	12:42:31.2					
	e LR	Z	12:49:22.4					
	e PKPPKPdf	Z	12:51:39.8					
	e L	Z	12:56:31.1			22.0	99351	7.1
BRG	e P	Z	12:24:26.4	76.7	10.9	1.9	703	6.5
BUG	e P	Z	12:24:27.1	76.8	6.7	1.3	564	6.6
MOX	e P	Z	12:24:29.4	77.2	9.4	1.6	776	6.6
WERD	e P	Z	12:24:30.3	77.3	9.8	1.5	455	6.3
TANN	e P	Z	12:24:30.3	77.3	9.9	1.8	744	6.4
TNS	e P	Z	12:24:33.6	77.9	7.4	1.4	503	6.3
GRA1	e P	Z	12:24:35.5	78.1	9.1	2.5	3228	6.9
	e PP	Z	12:27:32.0					
	e S	E	12:34:24.6					
	e SS	N	12:39:35.5					
	e L	E	12:58:42.4			20.5	43768	6.8
WET	e P	Z	12:24:37.2	78.5	10.2	1.5	504	6.2
WLF	e P	Z	12:24:38.1	78.6	5.9	1.5	740	6.4
	e PP	Z	12:27:37.2					
GEC2	e P	Z	12:24:38.1	78.7	10.7	1.3	408	6.2
STU	e P	Z	12:24:41.2	79.2	7.8	1.1	595	6.5
BFO	e P	Z	12:24:44.0	79.8	7.3	1.4	678	6.5
	e PP	Z	12:27:40.5					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2003/06/23 14:06:21.2 8.855S 160.308E 33N 5.0  
 Solomon Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 14:29:21.3	138.7	347.3					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2003/06/23

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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GRA1 e PKP Z 18:51:43.8

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24	01:46:43.6	18.430S	168.173E	33N	4.7	4.5		NEIC

Vanuatu Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 02:06:13.1	143.7	38.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24	06:52:57.4	27.920N	60.319E	33.0N	5.3			SZGRF
2003/06/24	06:52:48.1	27.265N	61.075E	30?	5.6			NEIC

Southern Iran

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 07:00:39.7	42.2	103.1	1.9	101	5.2		
	e PcP	Z 07:02:34.1							
BRG	e P	Z 07:00:42.3	42.5	105.4	1.3	18	4.6		
WET	e P	Z 07:00:44.0	42.8	102.6	2.2	64	5.0		
	e PcP	Z 07:02:36.0							
RUE	e P	Z 07:00:47.4	43.1	107.0	1.3	100	5.4		
CLL	i P	+ Z 07:00:48.5	43.2	105.0	1.3	75	5.3		
	i PcP	Z 07:02:37.1							
	e PP	Z 07:02:39.6							
	e S	E 07:07:10.6							
	e SS	E 07:10:31.4							
	e SSS	N 07:11:07.1							
	e L	Z 07:20:30.9			22.0	684		4.5	
MOX	e P	Z 07:00:53.9	43.9	103.0	2.0	45	4.9		
	e PcP	Z 07:02:39.6							
GRA1	e P	Z 07:00:53.9	43.9	101.7	1.9	121	5.3		
	e PcP	Z 07:02:40.3							
CLZ	e P	Z 07:01:02.9	44.9	103.1	1.0	52	5.2		
	e PcP	Z 07:02:43.1							
NRDL	e P	Z 07:01:05.3	45.2	103.5	1.1	68	5.3		
TNS	e P	Z 07:01:09.1	45.8	99.8	1.5	77	5.4		
	e PcP	Z 07:02:46.6							
IBBN	e P	Z 07:01:16.0	46.6	101.1	1.2	105	5.8		
BUG	e P	Z 07:01:17.2	46.7	99.9	1.1	63	5.6		
	e PcP	Z 07:02:49.4							
WLF	e P	Z 07:01:20.1	47.2	97.3	0.8	25	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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./2003/bul0306.txt

Thu Apr 23 08:38:25 2020

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2003/06/24	08:33:38.9	43.052N	144.438E	33.0N	5.1				SZGRF
2003/06/24	08:33:26.2	43.000N	149.563E	33N	5.1	4.6			NEIC

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i P	+ Z	08:45:26.7	77.0	34.3	1.2	28	5.2		
	e pP	Z	08:45:38.1							
	e PP	Z	08:48:28.9							
	e S	Z	08:55:21.8							
	e SS	Z	09:00:41.7							
	e LR	Z	09:11:02.6							
	e L	Z	09:21:49.1			22.0	370		4.7	
GRA1	e P	Z	08:45:37.9	80.4	29.5	1.4	27	5.1		
	e		08:45:48.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24	10:28:40.7	51.610N	178.394E	33.0N	5.1			SZGRF
2003/06/24	10:28:36.9	51.534N	176.577E	33N	4.9	4.4		NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	10:40:36.8	78.0	9.3	1.2	20	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z	13:05:07.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24	13:01:20.7	31.204N	50.409E	33.0N	4.7			SZGRF
2003/06/24	13:01:35.4	33.206N	49.157E	33N	4.7	4.2		NEIC

Northern and central Iran

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	13:08:06.2	32.4	106.2	1.2	13	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/24	16:00:57.9	51.621N	175.837E	33.0N	4.8			SZGRF
2003/06/24	16:00:55.6	51.484N	179.746W	64D	4.8			NEIC

Rat Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:12:52.5	78.4	6.9	1.3	9	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/25	01:35:11.6	29.219N	42.774W	33.0N	4.6			SZGRF
2003/06/25	01:34:57.0	28.480N	43.537W	10G	4.8			NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:43:26.1	46.2	263.8	1.1	9	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/25	01:38:45.9	28.529N	43.386W	33.0N	5.7	5.3		SZGRF
2003/06/25	01:38:41.1	28.692N	43.500W	10G	5.1	5.5		NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 01:47:07.1	46.1	264.0	2.6	194	5.7		
	e PP	Z 01:48:57.8							
	e S	E 01:53:59.5							
	e L	Z 02:02:33.3			21.2	3857		5.3	
CLL	e P	Z 01:47:18.2	47.5	263.7	2.8	246	5.8		
	e PP	Z 01:49:09.3							
	e S	E 01:54:14.6							
	e SS	E 01:57:46.7							
	e L	Z 02:03:14.1			22.0	3308		5.3	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/25	02:31:47.6	32.121N	39.326W	22.4	4.9	4.9		SZGRF
2003/06/25	02:31:02.2	28.565N	43.542W	10G	5.0	5.0		NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:39:29.9	46.2	263.9	1.6	39	4.9		
	e pP	Z 02:39:35.9							
	e L	Z 02:55:04.7			20.3	1514		4.9	
CLL	i P	- Z 02:39:40.1	47.6	263.9	2.0	50	5.3		
	e	02:39:46.3							
	e PP	Z 02:41:31.5							
	e S	E 02:46:36.5							
	e SS	N 02:50:10.0							
	e L	Z 02:55:57.8			22.0	1234		4.8	



Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source			
2003/06/25											
		Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
		GRA1	e PKP	Z 07:52:50.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source			
2003/06/25	09:32:15.5	41.200N	49.710E	33.0N	4.6			SZGRF			
2003/06/25	09:31:56.3	40.961N	51.946E	10G	4.5			NEIC			
Caspian Sea											
		Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
		BRG	e P	Z 09:37:49.3	27.9	95.9	1.1	27	4.8		
		GEC2	e P	Z 09:37:48.5	27.9	91.9	1.3	9	4.2		
		WET	e P	Z 09:37:53.9	28.4	91.8	1.3	5	4.0		
		CLL	e P	Z 09:37:54.8	28.5	95.8	1.2	12	4.5		
		WERD	e P	Z 09:37:57.7	28.9	93.7	0.9	8	4.4		
		MOX	e P	Z 09:38:02.2	29.3	93.4	1.0	22	5.0		
		CLZ	e P	Z 09:38:09.7	30.2	94.5	0.9	10	4.6		
		TNS	e P	Z 09:38:19.9	31.3	90.2	1.1	13	4.7		
		BFO	e P	Z 09:38:20.2	31.4	87.0	0.9	5	4.4		
		IBBN	e P	Z 09:38:24.5	31.8	93.0	1.3	48	5.2		
		WLF	e P	Z 09:38:33.2	32.8	87.6	1.1	17	4.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source			
2003/06/25	11:43:13.3	17.926S	178.209W	400G	4.5			NEIC			
Fiji Region											
		Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
		CLL	e PKPdf	Z 12:02:06.2	145.5	19.1					
			i PKPbc	- Z 12:02:06.9			0.7	35			
		GRA1	e PKPbc	Z 12:02:12.1	147.3	16.8					
			e pPKPbc	Z 12:03:59.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source			
2003/06/26	07:17:14.4	4.171N	96.082E	10.0G	5.0			SZGRF			
Northern Sumatera, Indonesia											
		Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
		GRA1	e P	Z 13:17:19.2	83.5	91.2	1.0	9	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/26	13:45:57.0	37.261N	22.288E	10.0G	4.1			SZGRF
2003/06/26	13:45:57.5	38.610N	23.650E	19	4.6			NEIC

Southern Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 13:48:59.6	12.5	141.4					
WET	e P	Z 13:49:10.1	13.1	139.7					
BRG	e P	Z 13:49:24.7	14.0	147.1					
WERD	e P	Z 13:49:26.5	14.3	141.5					
	e S	E 13:52:17.7							
BFO	e P	Z 13:49:26.5	14.7	125.7					
CLL	e P	Z 13:49:34.5	14.7	145.4	1.0	26	4.3		
MOX	e P	Z 13:49:33.3	14.7	140.2					
TNS	e P	Z 13:49:47.0	15.8	131.3	0.9	16	4.1		
CLZ	e P	Z 13:49:50.5	16.1	139.8	1.7	36	4.2		
WLF	e P	Z 13:49:53.5	16.7	124.9	1.6	32	4.2		
NRDL	e P	Z 13:49:57.3	16.8	140.6	1.3	14	3.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/26	14:11:56.9	12.445N	121.425E	33.0N	5.3	6.0		SZGRF
2003/06/26	14:11:47.7	12.284N	123.763E	33N	5.3	5.6		NEIC

Mindoro, Philippine Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 14:24:59.6	91.6	68.0	1.6	25	5.4		
	e PP	Z 14:28:48.4							
	e SKSac	R 14:35:32.6							
	e S	T 14:36:04.3							
	e PS	T 14:37:19.3							
	e PPS	R 14:37:57.2							
	e SS	T 14:42:17.0							
	e SSS	T 14:45:52.7							
	e SSSS	T 14:49:18.5							
	e LQ	T 14:53:40.7							
	e LR	Z 14:58:51.0							
	e L	Z 15:08:11.3			22.0	8054		6.1	
GRA1	e P	Z 14:25:07.6	94.6	64.9	1.1	13	5.3		
	e L	Z 15:10:56.9			20.9	5408		6.0	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/27	00:07:33.3	39.909N	151.417E	33.0N	4.7			SZGRF

## North Pacific Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 00:19:50.7	81.8	31.0					
BRG	e P	Z 00:19:51.7	81.9	31.6					
CLZ	e P	Z 00:19:51.4	82.2	29.1					
MOX	e P	Z 00:19:54.8	82.8	29.9					
WET	e P	Z 00:20:00.1	83.7	30.7					
GRA1	e P	Z 00:19:59.7	83.8	29.6	1.0	5	4.7		
TNS	e P	Z 00:19:59.3	84.2	27.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/27	15:51:18.5	20.747N	43.227W	33.0N	4.5			SZGRF
2003/06/27	15:50:24.3	16.147N	48.484W	10G	4.7			NEIC

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:00:21.6	58.3	257.1	1.2	8	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/27	15:52:16.9	20.310S	176.300E	497.3				GRSN

South of Fiji Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	i PKPbc	+ Z 16:11:00.5	146.4	29.1	0.7	32			
	e sPKPbc	Z 16:13:44.5							
GRA1	e PKP	Z 16:11:06.5	146.4	29.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	02:12:0.3	71.059N	9.051W	33.0N	4.2			SZGRF

Jan Mayen Island region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 02:17:06.7	23.3	343.5	1.0	8	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	04:49:39.9	20.569S	177.958W	400G	4.3			NEIC

Fiji Region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
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CLL	i PKPbc	+ Z	05:08:41.2	148.1	19.7	0.7	27
	e pPKPbc	Z	05:10:15.4				
GRA1	e PKP	Z	05:08:45.6	150.0	17.4		
	e		05:08:53.4				

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	07:36:59.9	5.520N	94.280E	33.0	4.9			SZGRF
2003/06/28	07:36:41.3	2.733N	95.702E	33N	5.2	4.8		NEIC

Northern Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 07:49:03.8	82.7	94.2	1.5	25	4.9		
BRG	e P	Z 07:49:04.5	82.7	94.7	0.9	6	4.5		
WET	e P	Z 07:49:06.9	83.2	93.6	1.5	16	4.7		
CLL	e P	Z 07:49:06.4	83.3	94.0	1.5	13	4.6		
TANN	e P	Z 07:49:08.1	83.6	93.5	2.4	20	4.7		
WERD	e P	Z 07:49:09.8	83.7	93.4	1.3	5	4.4		
MOX	e P	Z 07:49:11.7	84.1	92.8	1.7	16	4.8		
GRA1	e P	Z 07:49:13.0	84.3	92.4	1.3	18	5.0		
CLZ	e P	Z 07:49:16.0	85.0	92.0	1.3	11	4.8		
NRDL	e P	Z 07:49:17.5	85.2	91.8	1.5	19	5.0		
TNS	e P	Z 07:49:22.0	86.1	90.4	0.9	6	4.9		
BFO	e P	Z 07:49:23.2	86.2	90.1	1.8	21	5.1		
IBBN	e P	Z 07:49:24.2	86.6	90.0	1.0	15	5.2		
BUG	e P	Z 07:49:26.1	86.9	89.5	1.6	33	5.3		
WLF	e P	Z 07:49:29.8	87.6	88.6	1.1	11	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	15:29:45.8	3.312S	146.002E	33N	5.6	6.3		NEIC

Bismarck Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e Pdiff	Z 15:44:49.0	118.2	55.9					
	e PKPdf	Z 15:48:29.7			1.1	7			
	e PP	Z 15:49:52.2							
	e PPP	Z 15:52:23.9							
	e Sdiff	T 15:57:33.9							
	e PS	R 15:59:31.0							
	e	16:01:21.5							
	e SS	R 16:06:09.6							
	e SSS	T 16:10:21.0							
	e SSSS	T 16:14:02.0							
	e LQ	T 16:19:03.7							
	e LR	Z 16:26:19.7							
	e L	Z 16:40:48.4			20.0	16964		6.7	

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	e G2	T	17:09:20.7									
	e R2	Z	17:28:01.3									
GRA1	e PKP	Z	15:48:40.0	119.9	54.9							
	e PP	Z	15:50:03.8									
	e SP	E	15:59:49.2									
	e SS	N	16:06:47.3									
	e L	Z	16:43:16.2			19.5		11868		6.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	19:09:48.6	18.774N	145.238E	584D	4.6			NEIC
Mariana Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PP	Z 19:26:51.3	100.4	43.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/28	21:53:10.2	39.550N	147.485E	33.0N	5.1			SZGRF
Off east coast of Honshu, Japan								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 22:05:31.6	82.8	32.5	1.4	19	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/29	00:02:22.6	33.145N	87.254E	33.0N	4.3			SZGRF
Xizang								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:12:03.9	56.8	76.2	1.1	4	4.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/29	04:31:35.6	15.425S	173.490W	33N	4.6			NEIC
Tonga								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 04:51:13.3	145.5	8.0					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/29	09:49:23.1	34.374N	26.532E	33N	4.1			NEIC
Crete, Greece								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e Pn	Z 09:53:25.4	17.3	142.0					
WERD	e Pn	Z 09:53:44.9	19.1	141.8					
MOX	e Pn	Z 09:53:51.7	19.6	140.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	00:07:27.9	16.800N	61.450W	59.7	5.7	5.4		SZGRF
2003/06/30	00:07:27.3	17.316N	61.182W	33N	5.1	5.4		NEIC

Leeward Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 00:17:48.4	62.3	264.3	1.9	85	5.6		
	e S	T 00:26:14.0							
BUG	e P	Z 00:17:53.6	63.2	264.3	1.9	75	5.6		
IBBN	e P	Z 00:17:56.4	63.6	264.3	2.0	141	5.8		
BFO	e P	Z 00:17:56.3	63.6	266.7	2.6	114	5.6		
	e S	T 00:26:29.8							
TNS	e P	Z 00:17:57.7	63.8	265.8	2.7	183	5.8		
	e pP	Z 00:18:14.4							
STU	e P	Z 00:18:00.3	64.2	267.1	1.4	38	5.4		
NRDL	e P	Z 00:18:06.0	65.0	266.1	3.0	286	6.0		
CLZ	e P	Z 00:18:06.4	65.1	266.6	1.9	77	5.6		
	e S	T 00:26:49.3							
GRFO	e P	Z 00:18:09.1	65.6	268.3	2.4	126	5.7		
GRA1	e P	Z 00:18:08.9	65.6	268.3	2.4	172	5.8		
	e S	T 00:26:55.0							
	e L	Z 00:43:18.9			19.3	2560		5.4	
MOX	e P	Z 00:18:10.8	65.8	268.1	2.0	37	5.3		
WET	e P	Z 00:18:16.3	66.6	269.8	2.1	71	5.5		
	e pP	Z 00:18:32.2							
CLL	e P	Z 00:18:16.9	66.7	268.9	1.0	18	5.2		
	e S	T 00:27:08.8							
	e PS	T 00:27:36.0							
	e SS	T 00:31:33.3							
	e LQ	T 00:35:06.5							
	e LR	Z 00:38:47.1							
	e L	Z 00:43:52.0			18.0	2967		5.5	
GEC2	e P	Z 00:18:19.5	67.2	270.5	2.0	54	5.4		
BRG	e P	Z 00:18:20.8	67.3	269.9	1.8	50	5.5		
	e pP	Z 00:18:36.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	00:30:25.0	43.749N	20.111E	10.0G			3.5	SZGRF
2003/06/30	00:30:21.1	43.347N	19.766E	12				NEIC

Northwestern Balkan Peninsula

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
ARSA	e Pn	Z 00:31:35.7	4.9	141.1					3.5
	e Sn	N 00:32:29.7							
KBA	e Pn	Z 00:31:49.9	5.9	127.2					3.5
	e Sn	N 00:32:55.2							
MOA	e Pn	Z 00:31:50.4	5.9	137.5					
GEC2	e Pn	Z 00:32:04.0	6.9	140.4					
WTTA	e Pn	Z 00:32:06.0	6.9	121.5					
	e Sn	N 00:33:21.0							
DAVA	e Pn	E 00:32:21.5	8.0	116.0					
BFO	e Pn	Z 00:32:38.1	9.4	117.8					
TNS	e Pn	Z 00:32:51.6	10.3	127.3					
	e Sn	N 00:34:41.5							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 00:47:10.2							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	00:40:53.3	29.987N	73.100E	11.8	4.4			SZGRF
2003/06/30	00:41:15.2	32.785N	71.445E	33N	4.5			NEIC

India-Pakistan border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:49:46.2	46.9	87.5	0.9	5	4.4		
	e pP	Z 00:49:49.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	01:12:46.4	17.941S	178.529W	600G	4.5			NEIC

Fiji Region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 01:31:25.9	147.3	17.3					
	e PKPab	Z 01:31:29.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	07:03:43.1	43.683N	10.177E	10.0G			4.1	SZGRF
2003/06/30	07:03:39.3	43.644N	10.257E	10G	4.3			NEIC

## Central Italy

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BFO	e Pn	Z 07:04:54.9	4.9	163.4					4.1
	e Sn	N 07:05:50.1							
GEC2	e Pn	Z 07:05:07.0	5.7	205.9					
WET	e Pn	Z 07:05:08.1	5.8	199.2					
TNS	e Pn	Z 07:05:20.0	6.7	168.7					
	e Sn	E 07:06:32.7							
MOX	e Pn	Z 07:05:26.4	7.1	188.0					
BRG	e Pn	Z 07:05:33.1	7.6	200.5					
CLL	e Pn	Z 07:05:36.5	7.9	194.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	12:17:21.3	45.044N	153.744E	33.0N	4.8			SZGRF
2003/06/30	12:17:29.5	46.616N	152.572E	53D	4.5			NEIC

## East of Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 12:29:26.8	78.0	26.0	1.0	12	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	14:18:39.5	12.057N	143.627E	33N	5.3	5.0		NEIC

## Guam Region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PP	Z 14:36:59.3	103.8	49.9					
	e SKSac	R 14:43:20.5							
	e PS	Z 14:46:03.1							
	e PPS	R 14:46:58.8							
	e SS	R 14:51:55.9							
	e SSS	R 14:55:49.5							
	e LR	Z 15:09:03.2							
	e L	Z 15:24:10.8				18.0	1584		5.6

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2003/06/30	20:42: 4.9	7.710S	30.014E	25.6	4.9			SZGRF
2003/06/30	20:42:10.1	6.849S	29.813E	27D	4.7	4.1		NEIC

## Lake Tanganyika region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:52:07.6	58.8	158.3	0.9	11	4.9		
	e pP	Z 20:52:14.7							



## Format description

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

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

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

## EPICENTER LINES:

The epicenter locations of several authorities can be reported. The epicenter location with the highest priority (i.e. the most reliable one) is written in the undermost EPICENTER LINE. The REGION LINE and all origin related parameter in the PHASE LINES (i.e. Def, Dist, EvAz) are determined regarding this epicenter location with the highest priority.

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

## COMMENT LINE:

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

## REGION LINE:

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

## PHASE LINE:

Sta	Station code of the reported phase
Phase	Preceded flag for the sharpness of the onset of the phase
	e - emergent
	i - impulsive
	w - weak

ISC phase code  
Flag for the direction of the first motion  
  '+' - compression  
  '-' - dilatation  
Component where the phase was picked

Time           Arrival time of the reported phase  
Dist           Distance from the epicenter location with the highest priority to the station in kilometer  
BAz            Backazimuth from the epicenter location with the highest priority to the station in degree  
T[s]           Phase Period  
A[nm]          Phase Amplitude  
mb             Body wave magnitude  
MS             Surface wave magnitude  
ML             Local Richter magnitude