

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

(produced by SZGRF/BGR - HANNOVER)

January 2009 UPDATED 04.AUGUST.2009

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
2009/01/01	16:58:12.8	1.510S	98.850E	33.0N	4.6	5.1		SZGRF

Southern Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 17:11:00.2	87.9	94.6	0.8	4	4.7		
BRG	e P	Z 17:11:00.2	88.0	94.9	1.2	6	4.8		
RJOB	e P	Z 17:11:02.1	88.5	93.9	0.8	3	4.6		
WET	e P	Z 17:11:02.4	88.5	94.0	1.1	4	4.7		
CLL	e P	Z 17:11:02.7	88.6	94.2	3.7	736	6.3		
TANN	e P	Z 17:11:03.0	88.9	93.7	0.9	1	4.0		
ROTZ	e P	Z 17:11:05.0	89.0	93.5	0.9	2	4.3		
MOX	e P	Z 17:11:06.7	89.4	93.1	0.9	2	4.3		
GRA1	e P	Z 17:11:08.0	89.6	92.8	1.0	6	4.7		
	e L	Z 18:02:40.9			18.8	647		5.1	
CLZ	e P	Z 17:11:10.5	90.2	92.1	1.0	4	4.6		
UBBA	e P	Z 17:11:11.7	90.4	91.8	0.7	1	3.9		
TNS	e P	Z 17:11:16.1	91.4	90.7	0.7	2	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/02	07:42:49.4	32.500N	139.000E	333.1	5.2			SZGRF

Southeast of Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 07:54:43.1	83.6	44.0	0.6	31	5.6		
CLL	e P	Z 07:54:43.4	83.7	43.4	0.5	51	5.9		
CLZ	e P	Z 07:54:47.5	84.4	41.5	0.6	24	5.5		
TANN	e P	Z 07:54:47.9	84.6	42.9	0.8	9	4.9		
MOX	e P	Z 07:54:48.9	84.8	42.3	0.7	8	5.0		

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IBBN	e P	Z	07:54:50.6	85.1	39.5	0.4	47	5.9
ROTZ	e P	Z	07:54:51.1	85.2	42.7	0.9	9	4.9
GEC2	e P	Z	07:54:50.6	85.2	43.7	0.5	10	5.2
WET	e P	Z	07:54:51.4	85.3	43.1	0.8	4	4.5
GRA1	e P	Z	07:54:54.4	85.7	42.0	0.6	15	5.5
RJOB	e P	Z	07:54:56.7	86.4	43.0	0.6	10	5.3
TNS	e P	Z	07:54:56.4	86.4	39.9	0.5	4	5.0
WLF	e P	Z	07:55:03.5	87.8	38.2	0.8	5	4.8
BFO	e P	Z	07:55:03.7	87.9	39.8	0.6	8	5.1
	e pP	Z	07:56:21.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/02	08:51:4.9	24.113S	162.812W	33.0G				SZGRF
South Pacific Ocean								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e pPKPbc	Z 09:11:06.5	154.0	347.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/02	14:16:55.8	57.270N	153.890W	66.8	5.4			SZGRF
Kodiak Island, Alaska, United States, region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
IBBN	e P	Z 14:28:08.7	69.4	349.5	1.0	49	5.6		
CLZ	e P	Z 14:28:13.7	70.1	351.0	1.0	75	5.8		
BUG	e P	Z 14:28:13.2	70.2	349.3	1.0	61	5.7		
CLL	e P	Z 14:28:17.4	70.9	352.5	1.0	34	5.4		
UBBA	e P	Z 14:28:19.8	71.1	350.9	1.4	24	5.2		
BRG	e P	Z 14:28:20.9	71.4	353.1	1.1	48	5.5		
	e pP	Z 14:28:38.9							
MOX	e P	Z 14:28:21.0	71.4	351.8	1.0	56	5.6		
TNS	e P	Z 14:28:21.8	71.5	350.0	1.2	43	5.5		
TANN	e P	Z 14:28:23.2	71.7	352.3	1.1	32	5.3		
WLF	e P	Z 14:28:23.8	71.8	348.8	1.1	30	5.3		
GRA1	e P	Z 14:28:27.0	72.3	351.6	1.0	39	5.5		
ROTZ	e P	Z 14:28:27.2	72.3	352.2	1.0	39	5.5		
WET	e P	Z 14:28:31.2	73.0	352.6	1.3	35	5.3		
STU	e P	Z 14:28:30.9	73.0	350.5	1.5	52	5.4		
BFO	e P	Z 14:28:32.6	73.4	350.1	1.1	24	5.1		
GEC2	e P	Z 14:28:33.1	73.4	353.0	1.0	19	5.1		
FUR	e P	Z 14:28:35.6	73.9	351.7	1.1	49	5.4		
RJOB	e P	Z 14:28:39.0	74.4	352.6	1.0	31	5.3		

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/02	19:42:23.0	0.397S	26.699W	10.0G	5.2	4.9		SZGRF

Central Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:52:24.5	59.7	225.4	1.3	28	5.2		
	e L	Z 20:15:16.4			20.4	938		4.9	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/02	20:14:30.4	0.003S	26.591W	10.0G	5.2	4.7		SZGRF

Central Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 20:24:29.0	59.3	225.5	1.6	40	5.2		
	e L	Z 20:47:20.9			20.7	590		4.7	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/03								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 03:59:56.9			0.7	2			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/03	07:13: 6.5	38.200N	141.380E	33.0G	4.9			SZGRF

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 07:25:13.0	79.7	39.4	0.9	6	4.6		
CLL	e P	Z 07:25:12.9	79.8	38.8	0.9	10	4.8		
CLZ	e P	Z 07:25:16.8	80.3	37.0	1.0	9	4.8		
MOX	e P	Z 07:25:18.9	80.8	37.7	1.0	4	4.4		
IBBN	e P	Z 07:25:19.4	80.9	35.2	0.9	10	4.9		
ROTZ	e P	Z 07:25:21.7	81.3	38.0	1.4	26	5.2		
GEC2	e P	Z 07:25:21.7	81.4	39.0	1.1	6	4.7		
WET	e P	Z 07:25:22.6	81.5	38.4	0.9	5	4.6		
GRA1	e P	Z 07:25:24.2	81.7	37.4	0.9	12	5.0		
RJOB	e P	Z 07:25:28.6	82.6	38.3	1.0	8	4.9		
FUR	e P	Z 07:25:30.0	82.9	37.3	0.8	18	5.3		
STU	e P	Z 07:25:31.6	83.3	35.9	0.9	11	5.1		
WLF	e P	Z 07:25:34.5	83.7	33.8	1.0	7	4.8		
BFO	e P	Z 07:25:34.8	84.0	35.3	0.9	12	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/03	19:43:53.3	2.770S	132.430E	33.0G		7.6		SZGRF

Irian Jaya, Indonesia, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e Pdiff	Z	19:58:18.2	109.8	68.9					
	e PP	Z	20:02:52.5							
	e SS	T	20:18:03.2							
CLL	e Pdiff	Z	19:58:20.3	110.2	67.9					
	e PP	Z	20:02:55.2							
	e SS	T	20:18:10.2							
BSEG	e Pdiff	Z	19:58:22.5	110.6	64.7					
	e PP	Z	20:02:58.4							
	e SS	T	20:18:18.1							
GEC2	e Pdiff	Z	19:58:23.3	110.6	69.4					
	e PP	Z	20:02:59.2							
	e SS	T	20:18:24.5							
TANN	e Pdiff	Z	19:58:23.1	110.8	67.8					
	e PP	Z	20:03:00.4							
	e SS	T	20:18:23.1							
WET	e Pdiff	Z	19:58:24.1	111.0	68.6					
	e PP	Z	20:03:02.1							
	e SS	T	20:18:28.8							
ROTZ	e Pdiff	Z	19:58:24.7	111.2	67.8					
	e PP	Z	20:03:03.6							
	e SS	T	20:18:28.8							
MOX	e Pdiff	Z	19:58:22.6	111.2	67.0					
	e PP	Z	20:03:03.3							
	e SS	T	20:18:29.0							
CLZ	e Pdiff	Z	19:58:26.5	111.4	65.4					
	e PP	Z	20:03:05.0							
	e SS	T	20:18:27.0							
RJOB	e Pdiff	Z	19:58:26.3	111.6	69.0					
	e PP	Z	20:03:06.4							
	e SS	T	20:18:38.6							
GRA1	e Pdiff	Z	19:58:26.9	111.8	67.0					
	e PP	Z	20:03:07.9							
	e Sdiff	T	20:10:44.0							
	e SS	T	20:18:39.0							
UBBA	e L	Z	20:53:11.1			21.6	161675		7.6	
	e Pdiff	Z	19:58:30.3	112.1	65.5					
	e PP	Z	20:03:10.5							
FUR	e SS	T	20:18:41.3							
	e Pdiff	Z	19:58:30.8	112.4	67.6					
	e PP	Z	20:03:11.7							
IBBN	e SS	T	20:18:46.8							
	e Pdiff	Z	19:58:29.9	112.7	62.9					
	e PP	Z	20:03:13.8							

TNS	e SS	T	20:18:48.9	113.2	64.3
	e Pdiff	Z	19:58:32.0		
	e PP	Z	20:03:18.3		
BUG	e SS	T	20:18:57.7	113.3	62.8
	e Pdiff	Z	19:58:33.8		
	e PP	Z	20:03:18.6		
STU	e SS	T	20:18:55.8	113.4	65.5
	e Pdiff	Z	19:58:35.8		
	e PP	Z	20:03:19.1		
BFO	e SS	T	20:19:00.7	114.1	65.0
	e Pdiff	Z	19:58:37.7		
	e PP	Z	20:03:24.2		
WLF	e SS	T	20:19:04.2	114.8	62.5
	e Pdiff	Z	19:58:39.9		
	e PP	Z	20:03:29.8		
	e SS	T	20:19:20.2		

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/03 20:23:16.7 36.180N 70.970E 186.2 6.0 SZGRF  
 Hindu Kush, Afghanistan, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z 20:30:55.8	42.7	87.3	1.1	298	5.9		
	e PP	Z 20:32:39.1							
GEC2	e P	Z 20:30:58.2	43.0	85.0	1.4	182	5.6		
	e PP	Z 20:32:42.8							
CLL	e P	Z 20:30:59.8	43.2	87.1	1.6	321	5.8		
	e PP	Z 20:32:45.0							
WET	e P	Z 20:31:02.3	43.5	84.7	2.2	472	5.8		
	e PP	Z 20:32:46.4							
TANN	e P	Z 20:31:03.7	43.6	85.7	1.5	269	5.8		
RJOB	e P	Z 20:31:03.5	43.7	83.2	1.1	171	5.7		
	e PP	Z 20:32:50.6							
ROTZ	e P	Z 20:31:06.0	43.9	84.9	1.7	458	5.9		
	e PP	Z 20:32:51.4							
MOX	e P	Z 20:31:07.7	44.2	85.4	1.3	262	5.8		
	e PP	Z 20:32:55.5							
GRA1	e P	Z 20:31:11.2	44.5	84.1	1.1	253	6.1		
	e PP	Z 20:32:58.4							
FUR	e P	Z 20:31:11.6	44.6	82.6	1.0	241	6.1		
BSEG	e P	Z 20:31:12.4	44.8	87.7	1.4	785	6.4		
	e pP	Z 20:31:53.3							
CLZ	e P	Z 20:31:13.1	44.8	85.7	1.1	203	6.0		
UBBA	e P	Z 20:31:16.5	45.2	84.4	1.2	123	5.7		
	e PP	Z 20:33:05.2							
STU	e P	Z 20:31:21.5	45.9	81.8	4.0	5958	7.0		
TNS	e P	Z 20:31:23.9	46.2	82.7	1.3	185	6.0		

IBBN	e P	Z	20:31:25.1	46.4	84.2	1.2	368	6.4
BFO	e P	Z	20:31:26.0	46.6	80.9	1.4	161	6.0
BUG	e P	Z	20:31:28.2	46.8	83.0	1.2	244	6.2
WLF	e P	Z	20:31:36.1	47.8	80.6	1.1	306	6.4

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/03	22:33:47.6	0.488S	131.975E	33.0G		7.3		SZGRF

Irian Jaya, Indonesia, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e Pdiff	Z	22:48:03.5	107.6	67.9					
	e PP	Z	22:52:36.3							
CLL	e Pdiff	Z	22:48:04.3	108.0	66.9					
	e PP	Z	22:52:38.8							
	e PS	Z	23:01:58.7							
	e SS	T	23:07:54.6							
BSEG	e Pdiff	Z	22:48:05.6	108.4	63.8					
	e PP	Z	22:52:41.9							
	e SP	Z	23:02:00.6							
	e SS	T	23:07:59.1							
GEC2	e Pdiff	Z	22:48:09.5	108.5	68.3					
	e PP	Z	22:52:42.9							
	e PS	Z	23:02:03.7							
	e SS	T	23:07:51.5							
TANN	e Pdiff	Z	22:48:06.8	108.7	66.7					
	e PP	Z	22:52:44.0							
	e SS	T	23:08:10.8							
WET	e Pdiff	Z	22:48:08.1	108.9	67.5					
	e PP	Z	22:52:45.9							
	e SS	T	23:08:17.0							
MOX	e Pdiff	Z	22:48:08.8	109.1	65.9					
	e PP	Z	22:52:46.7							
	e PS	Z	23:02:08.9							
	e SS	T	23:08:13.9							
ROTZ	e Pdiff	Z	22:48:08.1	109.1	66.7					
	e PP	Z	22:52:47.1							
	e PS	Z	23:02:08.3							
	e SS	T	23:08:10.8							
CLZ	e Pdiff	Z	22:48:09.3	109.3	64.5					
	e PP	Z	22:52:48.4							
	e PS	Z	23:02:12.0							
	e SS	T	23:08:09.4							
RJOB	e Pdiff	Z	22:48:10.9	109.5	67.9					
	e PP	Z	22:52:50.4							
	e PS	Z	23:02:14.2							
	e SS	T	23:08:14.9							
GRA1	e Pdiff	Z	22:48:13.0	109.7	65.9					

	e PP	Z	22:52:51.3									
	e PS	Z	23:02:14.0									
	e SS	T	23:08:17.0									
	e L	Z	23:40:24.1			20.6	77477		7.3			
UBBA	e PP	Z	22:52:54.2	109.9	64.5							
	e PS	Z	23:02:17.7									
	e SS	T	23:08:22.9									
FUR	e Pdiff	Z	22:48:15.7	110.3	66.5							
	e PP	Z	22:52:55.2									
	e PS	Z	23:02:20.4									
	e SS	T	23:08:26.7									
IBBN	e PP	Z	22:52:57.3	110.5	62.0							
	e SS	T	23:08:19.8									
TNS	e Pdiff	Z	22:48:17.2	111.1	63.3							
	e PP	Z	22:53:01.8									
	e PS	Z	23:02:28.1									
	e SS	T	23:08:37.0									
BUG	e Pdiff	Z	22:48:19.2	111.2	61.8							
	e PP	Z	22:53:01.9									
	e PS	Z	23:02:28.9									
	e SS	T	23:08:32.9									
STU	e Pdiff	Z	22:48:20.4	111.3	64.5							
	e PP	Z	22:53:02.6									
	e PS	Z	23:02:29.0									
	e SS	T	23:08:44.6									
BFO	e Pdiff	Z	22:48:21.7	112.0	63.9							
	e PP	Z	22:53:07.5									
	e PS	Z	23:02:37.0									
	e SS	T	23:08:44.6									
WLF	e PP	Z	22:53:13.4	112.7	61.5							
	e SP	Z	23:02:41.3									
	e SS	T	23:09:08.7									

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/04

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e P Z 10:30:51.3

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/04 20:22:47.8 5.720N 94.070E 33.0G 5.2 4.3 SZGRF  
Northern Sumatera, Indonesia

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
BRG e P Z 20:34:55.9 79.3 94.1 0.9 17 5.1

GEC2	e P	Z	20:34:56.3	79.4	93.5	1.0	34	5.3	
RJOB	e P	Z	20:34:58.6	79.9	92.6	1.3	46	5.3	
WET	e P	Z	20:34:59.3	79.9	92.9	0.9	22	5.1	
CLL	e P	Z	20:34:58.8	80.0	93.4	0.9	13	4.9	
TANN	e P	Z	20:35:00.5	80.3	92.8	1.0	10	4.7	
ROTZ	e P	Z	20:35:01.9	80.4	92.5	0.9	21	5.1	
MOX	e P	Z	20:35:03.7	80.8	92.2	0.9	12	5.0	
FUR	e P	Z	20:35:04.3	80.9	91.5	0.8	21	5.2	
GRA1	e P	Z	20:35:05.4	81.0	91.7	0.9	32	5.3	
	e L	Z	21:15:34.1			19.3	121		4.3
CLZ	e P	Z	20:35:08.0	81.6	91.4	0.8	26	5.4	
BSEG	e P	Z	20:35:08.4	81.7	91.7	0.8	60	5.8	
UBBA	e P	Z	20:35:09.4	81.8	91.0	0.8	2	4.3	
STU	e P	Z	20:35:11.6	82.3	90.1	0.7	14	5.2	
TNS	e P	Z	20:35:14.4	82.8	89.7	0.8	16	5.3	
BFO	e P	Z	20:35:14.5	82.9	89.4	0.8	16	5.3	
IBBN	e P	Z	20:35:16.4	83.2	89.4	0.8	36	5.7	
BUG	e P	Z	20:35:18.0	83.5	88.9	0.9	22	5.4	
WLF	e P	Z	20:35:22.5	84.3	87.9	1.0	19	5.3	

Date 2009/01/04  
 Origin Time 23:12:26.8  
 Lat 35.210N  
 Long 72.300E  
 Depth 195.3  
 mb 5.3  
 Ms  
 ML  
 Source SZGRF  
 Pakistan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	23:20:37.5	44.1	87.4	0.8	41	5.2		
GEC2	e P	Z	23:20:39.5	44.4	85.2	0.9	16	5.0		
	e pP	Z	23:21:22.2							
CLL	e P	Z	23:20:41.5	44.7	87.2	0.9	26	5.2		
WET	e P	Z	23:20:43.6	44.9	84.9	0.9	5	4.4		
TANN	e P	Z	23:20:45.4	45.1	85.9	0.9	24	5.1		
RJOB	e P	Z	23:20:45.6	45.1	83.4	0.8	33	5.3		
ROTZ	e P	Z	23:20:47.7	45.3	85.0	1.1	44	5.3		
MOX	e P	Z	23:20:49.4	45.6	85.5	0.8	28	5.3		
GRA1	e P	Z	23:20:52.9	45.9	84.3	0.9	38	5.5		
FUR	e P	Z	23:20:53.3	46.1	82.8	0.8	42	5.5		
BSEG	e P	Z	23:20:54.0	46.2	87.7	0.9	90	5.8		
CLZ	e P	Z	23:20:54.7	46.3	85.7	0.9	36	5.4		
UBBA	e P	Z	23:20:58.0	46.6	84.5	0.8	15	5.2		
STU	e P	Z	23:21:03.4	47.4	82.0	0.8	29	5.4		
TNS	e P	Z	23:21:05.6	47.7	82.8	1.0	18	5.2		
IBBN	e P	Z	23:21:06.8	47.9	84.2	0.8	56	5.7		
BFO	e P	Z	23:21:07.6	48.0	81.1	0.9	15	5.1		
BUG	e P	Z	23:21:09.9	48.3	83.1	0.9	38	5.5		
WLF	e P	Z	23:21:17.9	49.2	80.8	0.9	44	5.5		



Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/05	10:59:36.6	26.036N	112.586W	33.0G	5.5	5.4		SZGRF

Baja California, Mexico

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:12:29.7	89.4	311.7	1.3	43	5.5		
	e L	Z 11:51:04.4			18.3	1275		5.4	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/05	18:56:55.0	46.311N	24.529W	10.0G	4.0	3.9		SZGRF

Northern Mid-Atlantic Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:02:10.6	23.9	275.7	1.0	5	4.0		
	e L	Z 19:12:35.4			19.3	352		3.9	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/05	23:53:11.2	38.430N	142.930E	29.7	4.8			SZGRF

Near east coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 00:05:03.2	79.0	36.0	0.9	21	5.2		
	e pP	Z 00:05:11.8							
BRG	e P	Z 00:05:08.8	80.1	38.2	0.9	7	4.6		
CLL	e P	Z 00:05:08.7	80.2	37.6	1.1	18	4.9		
CLZ	e P	Z 00:05:12.3	80.7	35.8	0.9	12	4.9		
TANN	e P	Z 00:05:14.0	81.1	37.1	0.9	2	4.2		
MOX	e P	Z 00:05:14.6	81.2	36.5	0.9	4	4.6		
UBBA	e P	Z 00:05:17.8	81.7	35.4	0.8	2	4.3		
ROTZ	e P	Z 00:05:17.6	81.7	36.9	0.8	3	4.5		
GEC2	e P	Z 00:05:17.6	81.8	37.8	0.9	3	4.5		
WET	e P	Z 00:05:18.5	81.9	37.3	1.0	3	4.4		
GRA1	e P	Z 00:05:19.9	82.1	36.2	0.9	9	4.9		
BUG	e P	Z 00:05:19.5	82.1	33.6	0.9	10	5.0		
TNS	e P	Z 00:05:22.4	82.7	34.3	0.7	3	4.6		
RJOB	e P	Z 00:05:24.5	83.1	37.1	0.9	8	4.9		
FUR	e P	Z 00:05:25.9	83.4	36.1	1.0	16	5.2		
STU	e P	Z 00:05:27.2	83.7	34.7	1.0	12	5.1		
BFO	e P	Z 00:05:30.7	84.3	34.1	0.9	13	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/06	09:20:58.6	16.080S	175.850W	284.6				SZGRF

Tonga Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
MOX	e PKPbc	Z 09:40:31.0	144.9	12.5					
UBBA	e PKPbc	Z 09:40:31.3	144.9	9.8					
TANN	e PKPbc	Z 09:40:31.4	145.0	14.0					
TNS	e PKPbc	Z 09:40:33.6	145.7	7.3					
	e pPKPbc	Z 09:41:44.1							
ROTZ	e PKPbc	Z 09:40:33.7	145.7	13.8					
GRA1	e PKPbc	Z 09:40:35.0	145.9	12.2					
WET	e PKPbc	Z 09:40:35.4	146.2	15.2					
GEC2	e PKPbc	Z 09:40:35.8	146.3	16.7					
WLF	e PKPbc	Z 09:40:36.1	146.4	3.5					
STU	e PKPbc	Z 09:40:37.9	147.0	8.9					
FUR	e PKPbc	Z 09:40:39.0	147.4	12.8					
RJOB	e PKPbc	Z 09:40:39.4	147.6	15.6					
BFO	e PKPbc	Z 09:40:39.3	147.6	7.5					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/07 16:24:17.4 23.680S 178.630W 31.0 4.9  
 South of Fiji Islands SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPdf	Z 16:44:01.6	151.0	22.4					
	e PKPbc	Z 16:44:06.7							
CLZ	e PKPdf	Z 16:44:02.5	151.0	17.2					
	e PKPbc	Z 16:44:07.2							
BRG	e PKPdf	Z 16:44:02.3	151.1	24.4					
	e PKPbc	Z 16:44:07.4							
BUG	e PKPdf	Z 16:44:03.8	151.9	11.5					
	e PKPbc	Z 16:44:08.9							
MOX	e PKPdf	Z 16:44:03.3	151.9	20.2					
	e PKPbc	Z 16:44:09.2							
TANN	e PKPdf	Z 16:44:03.6	151.9	22.0					
	e PKPbc	Z 16:44:09.3							
UBBA	e PKPdf	Z 16:44:03.8	152.0	17.1					
	e PKPbc	Z 16:44:10.0							
ROTZ	e PKPdf	Z 16:44:04.6	152.6	21.9					
	e PKPbc	Z 16:44:11.0							
GRA1	e PKPdf	Z 16:44:04.8	152.9	20.1					
	e PKPbc	Z 16:44:11.4							
	e pPKPbc	Z 16:44:20.6							
	e L	Z 17:39:02.1			20.3	196		4.9	
TNS	e PKPdf	Z 16:44:04.8	152.9	14.3					
	e PKPbc	Z 16:44:11.4							
WET	e PKPdf	Z 16:44:04.9	153.0	23.7					
	e PKPbc	Z 16:44:11.5							

	e pPKPbc	Z	16:44:20.8		
GEC2	e PKPpdf	Z	16:44:05.4	153.0	25.5
	e PKPbc	Z	16:44:11.9		
WLF	e PKPpdf	Z	16:44:07.0	153.7	9.9
	e PKPbc	Z	16:44:13.9		
	e pPKPbc	Z	16:44:23.4		
STU	e PKPpdf	Z	16:44:07.3	154.2	16.6
	e PKPbc	Z	16:44:14.3		
RJOB	e PKPpdf	Z	16:44:06.9	154.3	24.7
	e PKPbc	Z	16:44:14.3		
FUR	e PKPpdf	Z	16:44:06.8	154.3	21.3
	e PKPbc	Z	16:44:14.5		
BFO	e PKPpdf	Z	16:44:07.6	154.7	15.1
	e PKPbc	Z	16:44:15.4		

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/08 12:04: 5.1 41.767N 20.894E 10.0G 4.0  
 Northwestern Balkan Peninsula

Sta	Phase		Time	Dist	Baz	T[s]	A[nm]	mb	MS	ML
OBKA	e Pn	Z	12:05:42.2	6.6	133.9					
ARSA	e Pn	Z	12:05:42.7	6.7	143.2					
KBA	e Pn	Z	12:05:56.1	7.6	131.9					
MOA	e Pn	Z	12:05:57.0	7.7	139.9					
	e Sn	N	12:07:24.3							
RJOB	e Pn	Z	12:06:06.5	8.3	133.2					
WTTA	e Pn	Z	12:06:09.9	8.6	126.5					
	e Sn	N	12:07:48.5							
GEC2	e Pn	Z	12:06:10.2	8.7	141.8					
WET	e Pn	Z	12:06:18.3	9.3	139.8					
FUR	e Pn	Z	12:06:19.5	9.3	129.7					
DAVA	e Sn	E	12:08:12.9	9.6	121.1					
WERN	e Pn	Z	12:06:33.3	10.4	142.1					
GRA1	e Pn	Z	12:06:32.9	10.4	136.0					
STU	e Sn	N	12:08:39.1	10.8	126.1					
MOX	e Pn	Z	12:06:42.3	10.9	140.7					
BFO	e Pn	Z	12:06:41.9	11.0	121.9					
	e L	Z	12:11:28.2			19.2	1762		4.0	
TNS	e Pn	Z	12:06:55.6	12.1	129.7					
	e Sn	N	12:09:09.5							
CLZ	e Sn	Z	12:09:12.3	12.4	140.5					
WLF	e Pn	Z	12:07:09.5	12.9	122.0					
BUG	e Sn	N	12:09:40.0	13.4	130.8					

Date Origin Time Lat Long Depth mb Ms ML Source

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2009/01/08 19:21:33.4 10.400N 84.710W 33.0G 5.2 6.2 SZGRF  
Costa Rica

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 19:33:59.2	82.6	277.4	1.2	51	5.6		
BUG	e P	Z 19:34:02.3	83.1	278.1	1.6	105	5.8		
IBBN	e P	Z 19:34:02.8	83.3	278.3	0.9	25	5.4		
TNS	e P	Z 19:34:06.2	84.0	279.1	1.0	14	5.1		
BFO	e P	Z 19:34:07.2	84.3	279.2	1.1	9	4.9		
BSEG	e P	Z 19:34:08.9	84.5	280.2	1.1	24	5.3		
NRDL	e P	Z 19:34:09.8	84.7	280.1	1.2	27	5.4		
STU	e P	Z 19:34:10.6	84.7	279.8	1.1	28	5.4		
UBBA	e P	Z 19:34:12.7	84.9	280.2	1.1	8	4.9		
CLZ	e P	Z 19:34:11.3	84.9	280.4	1.0	21	5.3		
GRA1	e P	Z 19:34:15.8	85.9	281.2	1.4	72	5.6		
	e S	N 19:44:45.5							
	e L	Z 20:07:58.0			18.8	8684		6.2	
MOX	e P	Z 19:34:15.9	85.9	281.5	1.1	13	5.0		
FUR	e P	Z 19:34:18.2	86.2	281.4	1.1	19	5.1		
ROTZ	e P	Z 19:34:19.1	86.5	282.0	1.2	16	5.0		
TANN	e P	Z 19:34:19.1	86.5	282.1	1.1	37	5.4		
CLL	e P	Z 19:34:19.5	86.7	282.5	0.9	14	5.1		
WET	e P	Z 19:34:21.8	87.0	282.5	1.1	26	5.3		
RJOB	e P	Z 19:34:22.7	87.3	282.5	1.2	23	5.2		
BRG	e P	Z 19:34:22.9	87.3	283.2	1.0	11	5.0		
GEC2	e P	Z 19:34:24.4	87.6	283.1	1.1	19	5.3		

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/09 03:44:45.2 10.290N 54.754E 10.0G 5.2 SZGRF  
Carlsberg Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RJOB	e P	Z 03:53:51.2	51.4	122.6	0.8	19	5.1		
GEC2	e P	Z 03:53:53.2	51.5	124.3	0.8	11	4.8		
FUR	e P	Z 03:53:59.0	52.5	121.4	0.8	74	5.7		
BRG	e P	Z 03:53:58.9	52.5	125.9	0.9	11	4.8		
ROTZ	e P	Z 03:54:01.4	52.8	123.4	1.4	19	4.8		
TANN	e P	Z 03:54:03.1	53.0	124.0	1.8	74	5.3		
CLL	e P	Z 03:54:04.6	53.3	125.1	1.7	72	5.3		
GRA1	e P	Z 03:54:04.4	53.3	122.3	2.1	31	4.9		
MOX	e P	Z 03:54:07.0	53.6	123.3	1.8	52	5.3		
BFO	e P	Z 03:54:13.1	54.2	118.6	1.2	23	5.1		
UBBA	e P	Z 03:54:14.8	54.6	121.8	1.9	40	5.1		
CLZ	e P	Z 03:54:17.1	54.9	122.7	1.7	74	5.5		
TNS	e P	Z 03:54:18.2	55.1	119.8	1.3	16	4.9		
NRDL	e P	Z 03:54:20.6	55.4	122.9	1.6	94	5.6		
WLF	e P	Z 03:54:26.3	56.1	117.3	1.2	46	5.4		

BUG	e P	Z	03:54:27.1	56.3	119.4					
IBBN	e P	Z	03:54:28.5	56.5	120.4	1.5	48	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/09	08:45:23.5	7.330S	148.194E	33.0G				SZGRF
Eastern New Guinea, Papua New Guinea, region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPdf	Z	09:04:25.3	122.4	57.3					
BSEG	e PKPdf	Z	09:04:25.3	122.4	52.0					
CLL	e PKPdf	Z	09:04:25.4	122.6	56.1					
NRDL	e PKPdf	Z	09:04:26.7	123.4	52.5					
TANN	e PKPdf	Z	09:04:27.4	123.4	56.1					
GEC2	e PKPdf	Z	09:04:27.9	123.6	58.2					
CLZ	e PKPdf	Z	09:04:28.0	123.7	53.1					
MOX	e PKPdf	Z	09:04:27.4	123.7	55.1					
WET	e PKPdf	Z	09:04:28.4	123.9	57.2					
GRA1	e pPKPdf	Z	09:04:29.6	124.5	55.2					
RJOB	e PKPdf	Z	09:04:28.8	124.7	57.9					
TNS	e PKPdf	Z	09:04:31.4	125.6	52.0					
STU	e PKPdf	Z	09:04:33.3	126.1	53.6					
BFO	e PKPdf	Z	09:04:33.2	126.8	53.0					
WLF	e pPKPdf	Z	09:04:34.3	127.1	49.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/09	23:52: 9.6	44.303N	10.283E	10.0G			3.2	SZGRF
Northern Italy								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
DAVA	e Pn	Z	23:52:57.2	3.0	174.5					3.2
	e Sn	N	23:53:31.3							
WTTA	e Pn	Z	23:52:58.2	3.1	198.2					3.3
	e Sn	N	23:53:33.9							
KBA	e Pn	Z	23:53:01.7	3.5	218.7					
OBKA	e Pn	Z	23:53:06.1	3.7	235.2					3.2
	e Sn	N	23:53:47.2							
RJOB	e Pn	Z	23:53:08.2	3.9	207.8					
BFO	e Pn	Z	23:53:12.8	4.2	160.8					3.1
	e Sn	N	23:53:56.9							
MOA	e Pn	Z	23:53:16.7	4.5	219.4					3.1
	e Sn	E	23:54:05.1							
GEC2	e Pn	Z	23:53:24.0	5.1	208.6					
	e Sn	N	23:54:17.5							
WET	e Pn	Z	23:53:24.1	5.2	201.1					
	e Sn	N	23:54:17.7							

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ROTZ	e Pn	Z	23:53:29.7	5.6	194.2
TNS	e Sn	N	23:54:41.7	6.0	167.4
MOX	e Sn	N	23:54:48.2	6.4	188.6

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/10	04:29:54.1	21.810S	179.780E	600.0G				SZGRF

South of Fiji Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	04:48:29.7	146.9	18.1					
CLL	e PKPbc	Z	04:48:34.4	148.8	24.2					
CLZ	e PKPbc	Z	04:48:35.0	148.9	19.3					
	e PKPab	Z	04:48:41.0							
BRG	e PKPbc	Z	04:48:34.5	148.9	26.1					
	e PKPab	Z	04:48:41.5							
MOX	e PKPbc	Z	04:48:36.6	149.7	22.2					
TANN	e PKPbc	Z	04:48:36.8	149.7	23.8					
UBBA	e PKPbc	Z	04:48:37.7	149.9	19.2					
ROTZ	e PKPbc	Z	04:48:38.6	150.4	23.8					
GRA1	e PKPab	Z	04:48:49.5	150.7	22.1					
TNS	e PKPbc	Z	04:48:39.0	150.8	16.7					
GEC2	e PKPbc	Z	04:48:39.4	150.8	27.2					
RJOB	e PKPab	Z	04:48:55.8	152.0	26.5					
BFO	e PKPab	Z	04:48:56.6	152.6	17.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/10	18:30: 3.6	36.500N	26.500E	140.0	3.9			GSRC

Dodecanese Islands, Greece

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RJOB	e P	Z	18:33:32.1	15.1	133.1	0.6	2			
GEC2	e P	Z	18:33:35.1	15.5	138.1	1.0	5			
WET	e P	Z	18:33:42.8	16.1	136.8	0.9	4			
FUR	e P	Z	18:33:42.6	16.2	130.6	0.8	12	4.1		
TANN	e P	Z	18:33:55.7	17.2	138.7					
GRA1	e P	Z	18:33:54.1	17.2	134.3	1.1	7			
MOX	e P	Z	18:34:02.7	17.7	137.3	0.9	2			
BFO	e P	Z	18:34:01.3	17.8	124.9	0.9	7	3.8		
TNS	e P	Z	18:34:13.9	18.9	129.7	0.8	6			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/10	22:33:54.4	15.710S	173.900W	33.0G				SZGRF

Tonga Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
TANN	e PKPbc	Z	22:53:26.7	144.9	10.7					
TNS	e PKPbc	Z	22:53:28.6	145.4	4.0					
ROTZ	e PKPbc	Z	22:53:28.7	145.6	10.4					
WET	e PKPbc	Z	22:53:31.9	146.1	11.8					
GEC2	e PKPbc	Z	22:53:30.4	146.3	13.3					
MOA	e PKPbc	Z	22:53:33.1	147.2	14.6					
	e PKPbc	E	22:53:33.9							
BFO	e PKPbc	Z	22:53:34.0	147.3	4.0					
RJOB	e PKPbc	N	22:53:34.6	147.5	12.1					
	e PKPbc	Z	22:53:34.9							
	e PKPbc	E	22:53:36.1							
KBA	e PKPbc	Z	22:53:36.6	148.1	13.3					
WTTA	e PKPbc	Z	22:53:36.2	148.1	10.1					
	e PKPbc	E	22:53:37.4							
	e PKPbc	N	22:53:37.7							
DAVA	e PKPbc	Z	22:53:36.9	148.3	6.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/11	12:53:31.5	43.150N	144.211E	95.4	4.6			SZGRF

Hokkaido, Japan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z	13:05:16.5	76.5	34.4	0.9	9	4.9		
	e pP	Z	13:05:41.0							
BRG	e P	Z	13:05:16.4	76.5	34.9	1.0	3	4.4		
CLZ	e P	Z	13:05:19.9	77.0	32.7	0.8	6	4.8		
	e pP	Z	13:05:44.7							
NEUB	e P	Z	13:05:19.7	77.0	33.5	0.9	11	5.0		
	e pP	Z	13:05:45.0							
IBBN	e P	Z	13:05:22.0	77.4	31.0	0.7	7	4.9		
TANN	e P	Z	13:05:22.3	77.4	33.9	0.7	1	4.2		
MOX	e P	Z	13:05:22.7	77.5	33.4	0.7	3	4.5		
ROTZ	e P	Z	13:05:26.1	78.1	33.6	0.8	3	4.5		
	e pP	Z	13:05:50.9							
GEC2	e P	Z	13:05:26.6	78.3	34.5	0.7	2	4.3		
WET	e P	Z	13:05:27.4	78.3	34.0	0.9	6	4.6		
	e pP	Z	13:05:51.5							
GRA1	e P	Z	13:05:28.4	78.5	33.0	0.8	8	4.8		
	e pP	Z	13:05:52.4							
TNS	e pP	Z	13:05:55.7	79.0	31.2					
RJOB	e P	Z	13:05:34.0	79.5	33.8	0.8	6	4.6		
	e pP	Z	13:05:59.0							
FUR	e P	Z	13:05:34.9	79.7	32.9	1.0	14	4.8		
STU	e P	Z	13:05:36.0	80.0	31.6	0.6	6	4.6		
	e pP	Z	13:06:01.0							

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BFO e P Z 13:05:39.5 80.6 31.0 0.8 2 4.2

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/11 22:54:4.8 18.500S 177.000W 33.0N  
Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 23:13:37.7	145.0	18.0					
CLL	e PKPbc	Z 23:13:41.6	146.3	17.2					
BRG	e PKPbc	Z 23:13:42.3	146.5	19.0					
NEUB	e PKPbc	Z 23:13:42.1	146.6	15.2					
TANN	e PKPbc	Z 23:13:44.6	147.2	16.7					
ROTZ	e PKPbc	Z 23:13:46.7	147.9	16.6					
TNS	e PKPbc	Z 23:13:46.9	148.0	9.8					
GEC2	e PKPbc	Z 23:13:47.7	148.4	19.7					
BFO	e PKPbc	Z 23:13:51.4	149.9	10.1					

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/12 02:04:34.2 33.720N 32.920E 33.0G 4.1  
Eastern Mediterranean Sea

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 02:09:13.8	20.8	129.5	0.6	5	4.0		
WET	e P	Z 02:09:19.5	21.4	128.6	0.5	7	4.2		
WERN	e P	Z 02:09:30.2	22.4	129.9	0.6				
TANN	e P	Z 02:09:30.5	22.4	130.3	0.8	5	4.0		
GUNZ	e P	Z 02:09:30.8	22.4	130.0	0.7				
WERD	e P	Z 02:09:32.1	22.5	130.1	0.7				
MOX	e P	Z 02:09:37.3	23.0	129.3	0.8	8	4.3		
BFO	e P	Z 02:09:41.2	23.4	119.5	0.6	5	4.2		
CLZ	e P	Z 02:09:49.6	24.3	129.3	0.7	5	4.1		

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/12 03:15:12.9 23.090S 170.776W 33.0N  
Tonga Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPbc	Z 03:35:01.8	150.6	1.7					
CLZ	e PKPbc	Z 03:35:04.8	151.2	2.2					
CLL	e PKPbc	Z 03:35:05.0	151.6	7.3					
FBE	e PKPbc	Z 03:35:06.3	152.0	8.1					
WERD	e PKPbc	Z 03:35:07.3	152.5	6.2					
TANN	e PKPbc	Z 03:35:07.4	152.6	6.5					



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GUNZ	e	PKPbc	Z	03:35:07.5	152.6	6.2
WERN	e	PKPbc	Z	03:35:07.7	152.7	6.3
GEC2	e	PKPbc	Z	03:35:10.2	154.0	9.4

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/13	06:12:51.6	36.140N	24.740E	33.0G	4.4			SZGRF
Southern Greece								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 06:16:30.7	15.1	143.5	0.8	41			
WET	e P	Z 06:16:36.8	15.6	141.9	0.9	27			
ROTZ	e P	Z 06:16:46.6	16.4	141.6	0.8	14			
BRG	e P	Z 06:16:48.6	16.6	148.1	1.0	28	4.3		
NKC	e P	Z 06:16:49.1	16.7	143.1	0.8	32			
ROHR	e P	Z 06:16:49.5	16.7	142.8					
WERN	e P	Z 06:16:49.4	16.7	143.1					
GRA1	e P	Z 06:16:50.2	16.7	139.0	0.9	65			
TANN	e P	Z 06:16:50.1	16.8	143.5	0.9	26			
GUNZ	e P	Z 06:16:50.5	16.8	143.1					
WERD	e P	Z 06:16:50.9	16.9	143.2					
FBE	e P	Z 06:16:51.8	16.9	146.7					
PLN	e P	Z 06:16:52.7	17.0	142.9					
MOX	e P	Z 06:16:56.8	17.3	141.9	0.7	20			
CLL	e P	Z 06:16:56.5	17.3	146.5	0.8	23	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/13	07:49:30.3	18.637S	173.975W	33.0G				SZGRF
Tonga Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e pPKPbc	Z 08:09:16.5	146.0	6.9					
CLZ	e pPKPbc	Z 08:09:18.8	146.6	7.5					
CLL	e pPKPbc	Z 08:09:19.1	146.9	12.2					
BRG	e pPKPbc	Z 08:09:19.9	147.2	13.9					
TANN	e pPKPbc	Z 08:09:21.8	147.8	11.5					
TNS	e pPKPbc	Z 08:09:23.6	148.4	4.4					
ROTZ	e pPKPbc	Z 08:09:24.0	148.5	11.3					
GEC2	e pPKPbc	Z 08:09:25.2	149.2	14.3					
BFO	e pPKPbc	Z 08:09:28.1	150.2	4.4					
RJOB	e pPKPbc	Z 08:09:29.0	150.4	13.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/13	19:47:49.8	6.062N	75.185W	58.2	4.8			SZGRF

Northern Colombia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z	20:00:00.0	79.8	267.3	0.8	17	5.0		
BUG	e P	Z	20:00:04.2	80.6	267.9	0.8	6	4.7		
	e pP	Z	20:00:20.3							
IBBN	e P	Z	20:00:05.7	80.9	268.1	0.8	8	4.8		
TNS	e P	Z	20:00:08.0	81.3	269.0	1.2	15	4.9		
NRDL	e P	Z	20:00:13.4	82.3	270.0	0.9	6	4.7		
GRA1	e P	Z	20:00:17.2	83.1	271.2	0.9	6	4.8		
TANN	e P	Z	20:00:21.4	83.8	272.1	0.9	4	4.7		
	e pP	Z	20:00:37.9							
CLL	e P	Z	20:00:22.7	84.1	272.4	0.9	6	4.8		
WET	e P	Z	20:00:23.0	84.2	272.5	0.9	6	4.8		
	e pP	Z	20:00:39.4							
GEC2	e P	Z	20:00:25.4	84.7	273.2	0.9	5	4.8		
	e pP	Z	20:00:41.9							
BRG	e P	Z	20:00:25.8	84.8	273.2	0.9	5	4.8		
	e pP	Z	20:00:42.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/14	01:36: 9.9	47.820N	153.140E	33.0G	4.5			SZGRF

Kuril Islands, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z	01:47:55.4	75.2	26.4	0.9	6	4.6		
CLZ	e P	Z	01:47:57.7	75.4	24.8	1.0	6	4.7		
IBBN	e P	Z	01:47:58.7	75.6	23.2	0.9	7	4.8		
MOX	e P	Z	01:48:01.0	76.1	25.5	0.9	3	4.4		
UBBA	e P	Z	01:48:03.5	76.4	24.5	0.7	1	4.2		
ROTZ	e P	Z	01:48:05.4	76.8	25.8	0.8	3	4.5		
GRA1	e P	Z	01:48:07.5	77.1	25.1	0.9	8	4.8		
WET	e P	Z	01:48:07.4	77.1	26.1	1.0	4	4.5		
GEC2	e P	Z	01:48:07.1	77.2	26.6	0.8	2	4.2		
TNS	e P	Z	01:48:08.6	77.4	23.4	0.7	3	4.6		
BFO	e P	Z	01:48:18.0	79.1	23.2	1.1	5	4.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/14	05:14:31.9	53.040N	157.818E	59.7	5.1			SZGRF

Kamchatka Peninsula, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	05:25:38.7	70.3	22.0	0.9	25	5.3		
NRDL	e P	Z	05:25:43.2	71.1	19.8	0.9	12	5.0		
CLL	e P	Z	05:25:45.8	71.5	21.4	1.0	21	5.2		

	e pP	Z	05:26:02.2						
CLZ	e P	Z	05:25:47.2	71.6	19.9	1.0	33	5.4	
BRG	e P	Z	05:25:47.4	71.7	21.9	1.0	11	4.9	
	e pP	Z	05:26:02.4						
NEUB	e P	Z	05:25:48.1	71.9	20.7	0.8	11	5.1	
MOX	e P	Z	05:25:51.6	72.5	20.5	1.0	11	5.0	
	e pP	Z	05:26:08.1						
TANN	e P	Z	05:25:51.9	72.5	21.0	1.2	10	4.8	
BUG	e pP	Z	05:26:08.8	72.6	18.0				
UBBA	e P	Z	05:25:53.6	72.7	19.6				
ROTZ	e P	Z	05:25:56.2	73.2	20.8	0.9	12	4.9	
GRA1	e P	Z	05:25:58.0	73.5	20.2	0.9	16	5.1	
TNS	e pP	Z	05:26:14.2	73.6	18.6				
WET	e P	Z	05:25:58.7	73.6	21.1	0.9	17	5.1	
	e pP	Z	05:26:15.1						
GEC2	e P	Z	05:25:58.7	73.7	21.5	0.9	8	4.7	
STU	e pP	Z	05:26:21.7	74.8	18.9				
FUR	e P	Z	05:26:05.7	74.9	20.1	1.0	25	5.2	
	e pP	Z	05:26:22.4						
BFO	e P	Z	05:26:08.3	75.4	18.4	1.0	15	5.1	
	e pP	Z	05:26:24.6						

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/14	18:23:55.3	33.262N	102.781E	33.0G	4.9			SZGRF
Sichuan, China								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	18:34:20.8	63.6	68.9	0.8	13	5.2		
BRG	e P	Z	18:34:24.9	64.1	68.3	0.9	6	4.8		
CLL	e P	Z	18:34:28.6	64.5	67.9	0.9	5	4.7		
BSEG	e P	Z	18:34:32.7	65.0	67.2	0.9	13	5.2		
GEC2	e P	Z	18:34:32.4	65.1	67.2	1.0	6	4.8		
TANN	e P	Z	18:34:33.4	65.2	67.1	0.9	4	4.7		
NEUB	e P	Z	18:34:33.0	65.3	67.0	0.8	7	4.9		
WET	e P	Z	18:34:35.0	65.4	66.8	0.9	3	4.5		
ROTZ	e P	Z	18:34:36.4	65.6	66.7	1.0	9	4.9		
NRDL	e P	Z	18:34:37.0	65.7	66.4	0.9	6	4.8		
CLZ	e P	Z	18:34:37.3	65.8	66.3	0.9	12	5.1		
RJOB	e P	Z	18:34:38.7	66.0	66.2	0.9	4	4.6		
GRA1	e P	Z	18:34:40.2	66.2	66.0	0.9	7	4.9		
UBBA	e P	Z	18:34:41.0	66.5	65.7	1.0	2	4.3		
FUR	e P	Z	18:34:43.4	66.8	65.4	1.0	32	5.5		
TNS	e P	Z	18:34:48.7	67.6	64.4	0.9	4	4.6		
BFO	e P	Z	18:34:53.5	68.5	63.6	1.0	7	4.9		
WLF	e P	Z	18:34:57.3	69.2	62.7	1.0	24	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/15	07:27:21.4	22.360S	171.040E	33.0G		6.4		SZGRF

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z	07:46:54.5	145.2	38.8					
HLG	e PKPbc	Z	07:46:56.0	145.7	28.4					
BRG	e PKPbc	Z	07:46:58.4	146.4	40.5					
CLL	e PKPbc	Z	07:46:58.2	146.4	38.7					
NRDL	e PKPbc	Z	07:46:58.6	146.5	33.2					
CLZ	e PKPbc	Z	07:47:00.5	147.0	34.2					
NEUB	e PKPbc	Z	07:47:00.3	147.0	36.9					
TANN	e PKPbc	Z	07:47:01.5	147.3	38.7					
IBBN	e PKPbc	Z	07:47:01.1	147.4	29.6					
MOX	e PKPbc	Z	07:47:01.6	147.5	37.2					
UBBA	e PKPbc	Z	07:47:03.5	147.9	34.5					
ROTZ	e PKPbc	Z	07:47:03.1	147.9	39.0					
GEC2	e PKPbc	Z	07:47:03.0	148.0	42.3					
WET	e PKPbc	Z	07:47:03.7	148.1	40.7					
GRA1	e PKPbc	Z	07:47:04.4	148.4	37.5					
	e L	Z	08:53:58.3			22.0	6443		6.4	
TNS	e PKPbc	Z	07:47:05.9	149.0	32.5					
RJOB	e PKPbc	Z	07:47:05.9	149.2	42.1					
STU	e PKPbc	Z	07:47:08.2	149.9	35.1					
WLF	e PKPbc	Z	07:47:09.4	150.2	29.0					
BFO	e PKPbc	Z	07:47:08.9	150.6	34.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/15	08:00:56.2	22.030S	171.080E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z	08:20:32.4	146.1	40.2					
CLL	e PKPbc	Z	08:20:32.2	146.1	38.4					
NRDL	e PKPbc	Z	08:20:32.6	146.2	32.9					
CLZ	e PKPbc	Z	08:20:34.0	146.7	33.9					
NEUB	e PKPbc	Z	08:20:34.1	146.7	36.6					
TANN	e PKPbc	Z	08:20:34.9	147.0	38.4					
IBBN	e PKPbc	Z	08:20:35.2	147.1	29.3					
MOX	e PKPbc	Z	08:20:35.8	147.2	36.9					
GEC2	e PKPbc	Z	08:20:36.9	147.7	41.9					
WET	e PKPbc	Z	08:20:37.9	147.9	40.3					
TNS	e PKPbc	Z	08:20:39.6	148.7	32.2					
WLF	e PKPbc	Z	08:20:43.1	149.9	28.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/15	13:08:46.5	23.535N	145.290E	33.0G	5.4			SZGRF

North Pacific Ocean

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 13:22:03.4	93.4	40.5	0.8	46	5.9		
BRG	e P	Z 13:22:07.9	94.2	43.6	0.8	13	5.3		
CLL	e P	Z 13:22:07.1	94.2	42.9	0.7	17	5.6		
NEUB	e P	Z 13:22:11.1	94.8	41.9	0.7	17	5.6		
CLZ	e P	Z 13:22:11.1	94.9	40.7	0.9	16	5.4		
TANN	e P	Z 13:22:10.2	95.1	42.5	1.1	14	5.3		
MOX	e P	Z 13:22:12.3	95.3	41.8	0.9	7	5.2		
ROTZ	e P	Z 13:22:15.0	95.7	42.3	0.9	9	5.3		
GEC2	e P	Z 13:22:14.0	95.7	43.6	0.9	7	5.2		
WET	e P	Z 13:22:14.9	95.9	42.9	1.3	24	5.6		
GRA1	e P	Z 13:22:16.3	96.2	41.5	0.8	8	5.3		
RJOB	e P	Z 13:22:18.9	96.9	42.9	0.8	8	5.4		
BFO	e P	Z 13:22:27.1	98.5	39.2	0.8	9	5.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/15	16:14: 8.3	32.897S	178.364E	33.0N				SZGRF

South of Kermadec Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPdf	Z 16:34:04.2	158.6	28.0					
BRG	e PKPdf	Z 16:34:03.4	158.7	38.4					
CLL	e PKPdf	Z 16:34:03.0	158.7	35.8					
CLZ	e PKPdf	Z 16:34:04.7	159.1	29.4					
TANN	e PKPdf	Z 16:34:05.1	159.6	36.0					
ROTZ	e PKPdf	Z 16:34:05.7	160.3	36.5					
GEC2	e PKPdf	Z 16:34:06.0	160.4	41.4					
WET	e PKPdf	Z 16:34:05.6	160.5	39.0					
RJOB	e PKPdf	Z 16:34:07.7	161.6	41.5					
BFO	e PKPdf	Z 16:34:08.0	162.8	29.5					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/15	17:49:47.3	47.960N	154.386E	33.0G	7.0	7.9		SZGRF

Kuril Islands, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 18:01:10.8	72.4	26.2					
HLG	e P	Z 18:01:20.4	74.0	22.6	1.1	1452	6.9		
RUE	e P	Z 18:01:20.7	74.1	26.2	1.4	4269	7.3		
NRDL	e P	Z 18:01:25.9	75.0	23.9	1.3	1214	6.8		

CLL	e P	Z	18:01:27.6	75.4	25.6	1.2	3238	7.3	
BRG	e P	Z	18:01:28.1	75.5	26.1	1.2	1132	6.9	
CLZ	e P	Z	18:01:29.5	75.6	24.0	1.2	2030	7.1	
FBE	e P	Z	18:01:29.3	75.6	25.8	1.3	2501	7.2	
IBBN	e P	Z	18:01:30.1	75.8	22.3	1.3	2733	7.2	
NEUB	e P	Z	18:01:30.1	75.8	24.8	1.2	2062	7.1	
TANN	e P	Z	18:01:33.3	76.3	25.2	1.5	1541	6.9	
WERD	e P	Z	18:01:33.3	76.3	25.1	1.2	1326	6.9	
MOX	e P	Z	18:01:33.3	76.3	24.6	1.3	1568	7.0	
PLN	e P	Z	18:01:33.2	76.3	25.0	1.5	9966	7.7	
GUNZ	e P	Z	18:01:33.8	76.4	25.1	1.6	2061	7.0	
WERN	e P	Z	18:01:33.5	76.5	25.1	1.2	1329	6.9	
UBBA	e P	Z	18:01:35.5	76.6	23.6	1.9	2708	7.1	
BUG	e P	Z	18:01:35.0	76.7	21.9	1.8	3176	7.1	
ROTZ	e P	Z	18:01:37.1	77.0	24.9	1.2	1226	6.9	
GRA1	e P	Z	18:01:39.0	77.3	24.3	1.1	2737	7.3	
	e L	Z	18:40:04.0			20.7	646663		7.9
WET	e P	Z	18:01:39.4	77.4	25.3	1.2	1681	7.1	
GEC2	e P	Z	18:01:39.2	77.4	25.8	1.2	1017	6.8	
TNS	e P	Z	18:01:39.5	77.5	22.6	1.1	1514	7.0	
MOA	e P	Z	18:01:43.5	78.1	26.0	1.6	1632	6.9	
ARSA	e P	Z	18:01:44.1	78.3	26.7	1.2	1031	6.7	
WLF	e P	Z	18:01:45.9	78.6	21.1	1.9	4240	7.1	
RJOB	e P	Z	18:01:46.5	78.7	25.1	1.6	1705	6.8	
STU	e P	Z	18:01:46.4	78.7	22.9	1.5	2452	7.0	
FUR	e P	Z	18:01:46.5	78.7	24.2	1.2	3059	7.2	
KBA	e P	Z	18:01:48.4	79.1	25.4	0.9	2864	7.3	
OBKA	e P	Z	18:01:49.0	79.2	26.1	1.7	2318	6.8	
BFO	e P	Z	18:01:49.7	79.3	22.4	1.4	2080	6.9	
WTTA	e P	Z	18:01:51.0	79.4	24.4	1.3	6026	7.4	
DAVA	e P	Z	18:01:52.7	79.9	23.3	1.1	2478	7.0	

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/15 18:35:48.2 21.730S 170.909E 33.0G  
 Southeast of Loyalty Islands SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e PKPbc	Z 18:55:24.5	144.6	38.5	0.7	19			
BRG	e PKPbc	Z 18:55:27.5	145.8	40.2	0.8	10			
CLL	e PKPbc	Z 18:55:27.6	145.8	38.4	0.7	13			
NRDL	e PKPbc	Z 18:55:28.0	145.9	33.0	0.9	8			
CLZ	e PKPbc	Z 18:55:29.4	146.3	33.9	0.8	7			
NEUB	e PKPbc	Z 18:55:29.5	146.3	36.7	0.7	9			
TANN	e PKPbc	Z 18:55:30.6	146.7	38.4	0.9	7			
IBBN	e PKPbc	Z 18:55:30.6	146.8	29.4	0.8	20			
MOX	e PKPbc	Z 18:55:31.0	146.9	36.9	0.9	6			
UBBA	e PKPbc	Z 18:55:32.8	147.3	34.2	0.9	2			

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GEC2	e	PKPbc	Z	18:55:32.3	147.4	41.9	0.8	3
WET	e	PKPbc	Z	18:55:32.6	147.5	40.3	0.9	4
TNS	e	PKPbc	Z	18:55:35.0	148.3	32.2	0.8	4

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	12:01:42.5	22.073S	173.352W	33.0N				SZGRF

Tonga Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLZ	e	PKPbc	Z	12:21:29.5	150.1	6.9			
CLL	e	PKPbc	Z	12:21:30.3	150.4	12.0			
BRG	e	PKPbc	Z	12:21:31.3	150.6	13.9			
MOX	e	PKPbc	Z	12:21:32.5	151.2	9.6			
GUNZ	e	PKPbc	Z	12:21:33.1	151.4	11.0			
WERN	e	PKPbc	Z	12:21:32.9	151.4	11.2			
GRA1	e	PKPbc	Z	12:21:34.8	152.1	9.1			
GEC2	e	PKPbc	Z	12:21:35.6	152.6	14.3			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	12:35:57.3	40.225N	74.027E	33.0N	4.3			SZGRF

Kyrgyzstan-Xinjiang border region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e	P	Z	12:44:02.6	44.1	77.4	0.8	5	4.3

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	15:40:35.9	35.200N	23.600E	40.0	4.0			GSRC

Crete, Greece

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e	P	Z	15:44:33.0	17.1	143.4	1.1	12	4.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e	PKPab	Z	18:49:10.2					
CLL	e	PKPab	Z	18:49:10.2					
GUNZ	e	PKPab	Z	18:49:14.6					
NKC	e	PKPab	Z	18:49:15.0					
ROHR	e	PKPab	Z	18:49:15.2					

ROTZ	e	PKPab	Z	18:49:16.9
SCHD	e	PKPab	Z	18:49:15.8
SCHF	e	PKPab	Z	18:49:12.5
WERD	e	PKPab	Z	18:49:14.3
WERN	e	PKPab	Z	18:49:14.9

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	19:11:1.2	22.589S	170.968E	33.0N		5.4		SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e	PKPbc	Z 19:30:38.9	146.6	40.8				
CLL	e	PKPbc	Z 19:30:38.8	146.6	39.0				
NRDL	e	PKPbc	Z 19:30:38.9	146.7	33.5				
CLZ	e	PKPbc	Z 19:30:40.8	147.1	34.4				
IBBN	e	PKPbc	Z 19:30:41.8	147.6	29.9				
GEC2	e	PKPbc	Z 19:30:43.1	148.2	42.6				
GRA1	e	L	Z 20:15:26.4	148.6	37.8	18.1	517	5.4	
TNS	e	PKPbc	Z 19:30:46.2	149.2	32.8				
WLF	e	PKPbc	Z 19:30:49.7	150.4	29.3				
BFO	e	PKPbc	Z 19:30:50.0	150.8	34.4				

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	19:55:17.5	22.220S	172.380E	33.0G		5.2		SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e	PKPbc	Z 20:14:56.3	145.6	36.7				
BRG	e	PKPbc	Z 20:15:00.2	146.8	38.4				
CLL	e	PKPbc	Z 20:15:00.1	146.8	36.5				
NRDL	e	PKPbc	Z 20:15:00.6	146.8	31.0				
FBE	e	PKPbc	Z 20:15:01.2	147.0	37.4				
CLZ	e	PKPbc	Z 20:15:02.2	147.3	31.9				
NEUB	e	PKPbc	Z 20:15:01.9	147.3	34.7				
IBBN	e	PKPbc	Z 20:15:03.1	147.7	27.3				
TANN	e	PKPbc	Z 20:15:03.2	147.7	36.5				
WERD	e	PKPbc	Z 20:15:03.2	147.8	36.3				
PLN	e	PKPbc	Z 20:15:04.5	147.8	36.0				
GUNZ	e	PKPbc	Z 20:15:03.5	147.8	36.4				
MOX	e	PKPbc	Z 20:15:04.6	147.9	35.0				
WERN	e	PKPbc	Z 20:15:05.0	147.9	36.5				
UBBA	e	PKPbc	Z 20:15:05.6	148.3	32.2				
ROTZ	e	PKPbc	Z 20:15:05.4	148.3	36.7				
GEC2	e	PKPbc	Z 20:15:04.9	148.5	40.0				
WET	e	PKPbc	Z 20:15:05.5	148.6	38.4				



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	e	PKPab	Z	20:15:09.6							
BUG	e	PKPbc	Z	20:15:05.5	148.6	27.1					
GRA1	e	PKPbc	Z	20:15:06.8	148.8	35.2					
	e	PKPab	Z	20:15:10.4							
	e	L	Z	21:31:13.8			21.4	401		5.2	
TNS	e	PKPbc	Z	20:15:07.6	149.3	30.1					
RJOB	e	PKPbc	Z	20:15:08.1	149.7	39.8					
FUR	e	PKPbc	Z	20:15:09.2	150.0	36.8					
	e	PKPab	Z	20:15:14.7							
STU	e	PKPbc	Z	20:15:09.7	150.3	32.7					
	e	PKPab	Z	20:15:16.1							
WLF	e	PKPbc	Z	20:15:11.0	150.5	26.6					
	e	PKPab	Z	20:15:17.4							
BFO	e	PKPbc	Z	20:15:11.3	151.0	31.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	20:05:22.0	22.230S	171.210E	33.0N				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e	PKPbc	Z 20:24:54.9	145.2	38.4					
BRG	e	PKPbc	Z 20:24:58.8	146.3	40.2					
CLL	e	PKPbc	Z 20:24:58.7	146.4	38.4					
NRDL	e	PKPbc	Z 20:24:59.2	146.4	32.8					
FBE	e	PKPbc	Z 20:24:59.6	146.5	39.2					
CLZ	e	PKPbc	Z 20:25:00.9	146.9	33.8					
TANN	e	PKPbc	Z 20:25:01.7	147.3	38.4					
WERD	e	PKPbc	Z 20:25:01.6	147.3	38.1					
IBBN	e	PKPbc	Z 20:25:01.6	147.3	29.2					
PLN	e	PKPbc	Z 20:25:02.1	147.3	37.8					
GUNZ	e	PKPbc	Z 20:25:01.9	147.4	38.2					
WERN	e	PKPbc	Z 20:25:02.3	147.4	38.4					
MOX	e	PKPbc	Z 20:25:02.0	147.4	36.8					
ROTZ	e	PKPbc	Z 20:25:03.5	147.9	38.6					
GEC2	e	PKPbc	Z 20:25:03.5	148.0	41.9					
WET	e	PKPbc	Z 20:25:03.8	148.1	40.3					
GRA1	e	PKPbc	Z 20:25:04.4	148.3	37.1					
FUR	e	PKPbc	Z 20:25:07.8	149.5	38.8					
STU	e	PKPbc	Z 20:25:08.4	149.9	34.7					
WLF	e	PKPbc	Z 20:25:09.5	150.1	28.6					
BFO	e	PKPbc	Z 20:25:10.4	150.5	33.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/16	22:13:56.1	12.780N	44.470W	33.0N	5.3	4.6		SZGRF
Northern Mid-Atlantic Ridge								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z	22:23:26.8	55.3	246.5	1.1	52	5.5		
	e S	R	22:31:08.9							
BFO	e P	Z	22:23:33.1	56.1	249.3	1.6	56	5.4		
	e S	R	22:31:18.4							
BUG	e P	Z	22:23:36.4	56.7	246.4	1.4	91	5.6		
STU	e P	Z	22:23:37.3	56.8	249.8	1.2	41	5.3		
	e S	R	22:31:28.9							
TNS	e P	Z	22:23:37.0	56.9	248.3	1.6	60	5.4		
	e S	R	22:31:30.0							
IBBN	e P	Z	22:23:40.8	57.3	246.4	1.2	76	5.6		
FUR	e P	Z	22:23:44.5	57.9	252.0	1.3	65	5.5		
	e S	R	22:31:45.8							
UBBA	e P	Z	22:23:47.2	58.0	249.3	1.4	26	5.1		
	e S	R	22:31:46.8							
GRA1	e P	Z	22:23:48.7	58.4	251.1	1.4	37	5.2		
	e S	R	22:31:48.9							
	e L	Z	22:44:09.9			19.3	427		4.6	
CLZ	e P	Z	22:23:51.6	58.6	249.1	1.6	83	5.5		
NRDL	e P	Z	22:23:50.9	58.7	248.5	1.3	86	5.6		
	e S	R	22:31:54.2							
RJOB	e S	R	22:31:54.2	58.8	253.6					
MOX	e P	Z	22:23:52.7	58.9	250.9	1.3	35	5.2		
	e S	R	22:31:57.3							
ROTZ	e P	Z	22:23:52.9	59.0	251.9	1.6	26	5.0		
	e S	R	22:31:57.3							
WET	e P	Z	22:23:54.8	59.2	252.9	1.4	29	5.1		
	e S	R	22:32:00.5							
TANN	e S	R	22:32:03.7	59.4	251.8					
GEC2	e P	Z	22:23:57.9	59.7	253.7	1.4	26	5.1		
	e S	R	22:32:08.9							
CLL	e P	Z	22:23:59.8	60.0	251.8	1.1	33	5.3		
	e S	R	22:32:12.1							
BRG	e P	Z	22:24:02.3	60.4	252.8	1.7	29	5.0		
RUE	e P	Z	22:24:04.2	60.8	251.8					

Date 2009/01/16  
Origin Time 23:02:55.1  
Lat 21.970S  
Long 171.470E  
Depth 33.0G  
mb  
Ms  
ML  
Source SZGRF  
Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z	23:22:36.0	146.2	39.6					
CLL	e PKPbc	Z	23:22:37.4	146.2	37.8					
NRDL	e PKPbc	Z	23:22:36.6	146.3	32.3					
	e PKPab	Z	23:22:38.2							
CLZ	e PKPbc	Z	23:22:38.5	146.7	33.2					

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TANN	e	PKPbc	Z	23:22:38.6	147.1	37.8
IBBN	e	PKPbc	Z	23:22:39.3	147.2	28.7
	e	PKPab	Z	23:22:41.6		
MOX	e	PKPbc	Z	23:22:40.0	147.3	36.2
	e	PKPab	Z	23:22:41.6		
UBBA	e	PKPbc	Z	23:22:40.9	147.7	33.5
ROTZ	e	PKPbc	Z	23:22:40.5	147.8	38.0
GEC2	e	PKPbc	Z	23:22:40.7	147.8	41.2
	e	PKPab	Z	23:22:44.2		
WET	e	PKPbc	Z	23:22:40.8	148.0	39.7
BUG	e	PKPbc	Z	23:22:40.9	148.1	28.5
	e	PKPab	Z	23:22:45.1		
GRA1	e	PKPbc	Z	23:22:43.4	148.2	36.5
RJOB	e	PKPbc	Z	23:22:45.3	149.1	41.0
STU	e	PKPbc	Z	23:22:46.5	149.7	34.0
WLF	e	PKPbc	Z	23:22:47.7	150.0	28.0
	e	PKPab	Z	23:22:52.0		
BFO	e	PKPbc	Z	23:22:47.7	150.4	33.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	02:57:32.4	14.940N	91.620W	184.9	4.7			SZGRF
Guatemala								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 03:09:39.8	83.6	285.6	0.7	8	5.1		
TNS	e P	Z 03:09:45.9	84.8	287.2	0.8	12	5.2		
	e pP	Z 03:10:31.7							
NRDL	e P	Z 03:09:47.1	85.1	288.3	0.8	7	4.9		
	e pP	Z 03:10:32.8							
BFO	e P	Z 03:09:48.7	85.3	287.3	0.7	2	4.5		
CLZ	e P	Z 03:09:49.5	85.5	288.5	0.8	7	4.8		
UBBA	e P	Z 03:09:50.5	85.6	288.3	0.6	2	4.4		
STU	e P	Z 03:09:50.2	85.7	287.9	0.6	10	5.1		
MOX	e P	Z 03:09:54.8	86.6	289.6	0.8	2	4.4		
	e pP	Z 03:10:39.5							
GRA1	e P	Z 03:09:56.3	86.7	289.3	0.9	6	4.8		
CLL	e P	Z 03:09:58.4	87.2	290.6	0.7	2	4.4		
WET	e P	Z 03:10:00.7	87.9	290.6	0.7	2	4.7		
BRG	e P	Z 03:10:00.6	87.9	291.3	0.7	2	4.4		
GEC2	e P	Z 03:10:03.7	88.5	291.2	0.8	1	4.2		
	e pP	Z 03:10:49.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	07:14:48.3	21.500S	170.580E	33.0G				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z	07:34:27.1	145.4	40.5					
CLL	e PKPbc	Z	07:34:27.6	145.5	38.8					
NRDL	e PKPbc	Z	07:34:27.9	145.6	33.4					
CLZ	e PKPbc	Z	07:34:29.2	146.0	34.3					
TANN	e PKPbc	Z	07:34:30.0	146.4	38.8					
IBBN	e PKPbc	Z	07:34:30.4	146.5	29.8					
MOX	e PKPbc	Z	07:34:30.8	146.5	37.3					
ROTZ	e PKPbc	Z	07:34:32.3	147.0	39.0					
UBBA	e PKPbc	Z	07:34:32.3	147.0	34.6					
GEC2	e PKPbc	Z	07:34:32.3	147.0	42.2					
WET	e PKPbc	Z	07:34:32.6	147.2	40.6					
GRA1	e PKPbc	Z	07:34:33.2	147.4	37.5					
TNS	e PKPbc	Z	07:34:35.0	148.0	32.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	07:45:26.8	37.100N	36.300E	6.0	4.3			NEIC

Turkey

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	07:50:20.4	22.0	115.4	2.3	30	4.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	08:38:22.1	44.187N	151.118E	33.0G	5.2	5.2		SZGRF

East of Kuril Islands, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e P	Z	08:50:14.4	77.7	27.5	1.3	23	5.2		
CLL	e P	Z	08:50:16.0	77.9	29.3	0.9	39	5.5		
BRG	e P	Z	08:50:16.6	77.9	29.9	1.2	19	5.1		
CLZ	e P	Z	08:50:18.7	78.2	27.6	1.2	43	5.3		
IBBN	e P	Z	08:50:20.3	78.5	25.9	1.1	34	5.3		
MOX	e P	Z	08:50:22.0	78.9	28.3	1.5	35	5.2		
BUG	e P	Z	08:50:24.8	79.4	25.5	1.0	18	5.0		
ROTZ	e P	Z	08:50:25.7	79.5	28.6	1.2	18	4.9		
GEC2	e P	Z	08:50:26.7	79.8	29.5	1.0	14	4.8		
WET	e P	Z	08:50:27.4	79.8	29.0	1.0	28	5.1		
GRA1	e P	Z	08:50:27.6	79.8	28.0	1.0	35	5.3		
	e L	Z	09:30:19.8			19.0	962		5.2	
TNS	e P	Z	08:50:29.0	80.2	26.2	0.9	15	5.0		
RJOB	e P	Z	08:50:33.8	81.0	28.9	1.0	14	5.0		
FUR	e P	Z	08:50:34.5	81.2	27.9	1.0	26	5.2		
STU	e P	Z	08:50:34.9	81.2	26.6	0.7	16	5.3		
BFO	e P	Z	08:50:39.7	81.9	26.0	0.9	29	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	09:23:0.9	54.659N	160.760E	33.0G	4.8			SZGRF

Near east coast of Kamchatka Peninsula, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e P	Z 09:34:14.6	70.1	17.5	0.9	5	4.7		
CLL	e P	Z 09:34:17.9	70.7	19.1	0.9	13	5.1		
CLZ	e P	Z 09:34:18.7	70.7	17.6	0.9	15	5.1		
IBBN	e P	Z 09:34:18.6	70.7	16.2	0.8	10	5.0		
BRG	e P	Z 09:34:19.3	70.9	19.6	0.9	4	4.6		
MOX	e P	Z 09:34:23.5	71.6	18.2	1.0	10	4.9		
TANN	e P	Z 09:34:24.1	71.6	18.7	1.3	12	4.9		
UBBA	e P	Z 09:34:25.5	71.7	17.3	0.8	2	4.4		
ROTZ	e P	Z 09:34:28.3	72.3	18.5	0.9	4	4.6		
GRA1	e P	Z 09:34:29.9	72.6	17.9	0.9	16	5.2		
TNS	e P	Z 09:34:29.8	72.6	16.4	0.9	5	4.7		
WET	e P	Z 09:34:31.0	72.8	18.8	0.8	7	4.8		
GEC2	e P	Z 09:34:31.2	72.9	19.2	0.8	6	4.7		
FUR	e P	Z 09:34:38.3	74.0	17.8	0.8	9	4.8		
RJOB	e P	Z 09:34:38.9	74.1	18.6	0.8	7	4.7		
BFO	e P	Z 09:34:40.1	74.4	16.1	0.9	4	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BFO	e Pn	Z 10:14:04.5							
	e Sn	N 10:15:26.8							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	11:22:25.3	36.204N	1.560E	10.0G				NEIC

Northern Algeria

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 11:26:06.7	15.2	211.1	0.8	5			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	12:07:34.0	51.200N	178.900E	48.0	4.7			NEIC

Rat Islands, Aleutian Islands, United States

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Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	12:19:34.5	78.6	7.8	1.4	12	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	20:08:32.0	40.763N	73.490E	33.0N	4.5			SZGRF

Kyrgyzstan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	20:16:32.2	43.5	77.1	2.0	21	4.5		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/17	23:18:49.8	36.071N	69.866E	136.7	4.5			SZGRF

Hindu Kush, Afghanistan, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z	23:26:48.9	43.9	85.0	1.2	11	4.5		
	e pP	Z	23:27:19.6			1.5	24			

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/18	11:53:31.3	21.500S	173.500E	33.0G				SZGRF

Vanuatu Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPbc	Z	12:13:09.1	146.5	28.8					
CLL	e PKPbc	Z	12:13:08.6	146.5	34.3					
BRG	e PKPbc	Z	12:13:08.3	146.6	36.1					
IBBN	e PKPbc	Z	12:13:10.4	147.3	25.1					
TANN	e PKPbc	Z	12:13:11.6	147.5	34.2					
MOX	e PKPbc	Z	12:13:12.3	147.6	32.7					
UBBA	e PKPbc	Z	12:13:13.4	148.0	29.9					
ROTZ	e PKPbc	Z	12:13:13.8	148.1	34.4					
GEC2	e PKPbc	Z	12:13:13.8	148.3	37.7					
GRA1	e PKPbc	Z	12:13:14.9	148.5	32.8					
	e PKPab	Z	12:13:18.4							
TNS	e PKPbc	Z	12:13:15.7	149.0	27.7					
	e PKPab	Z	12:13:20.0							
RJOB	e PKPab	Z	12:13:22.4	149.5	37.3					
FUR	e PKPab	Z	12:13:23.1	149.8	34.3					
STU	e PKPbc	Z	12:13:18.3	150.0	30.2					
WLF	e PKPbc	Z	12:13:18.9	150.1	24.1					
BFO	e PKPbc	Z	12:13:19.4	150.7	29.1					
	e PKPab	Z	12:13:26.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/18	12:19:17.6	22.690S	170.560E	33.0N				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z	12:38:55.1	146.5	41.5					
CLL	e PKPbc	Z	12:38:55.1	146.5	39.7					
NRDL	e PKPbc	Z	12:38:55.4	146.7	34.2					
CLZ	e PKPbc	Z	12:38:57.1	147.1	35.1					
	e PKPab	Z	12:38:58.8							
TANN	e PKPbc	Z	12:38:57.7	147.4	39.7					
IBBN	e PKPbc	Z	12:38:58.2	147.6	30.6					
MOX	e PKPbc	Z	12:38:58.1	147.6	38.2					
	e PKPab	Z	12:39:00.6							
ROTZ	e PKPbc	Z	12:38:59.9	148.0	40.0					
	e PKPab	Z	12:39:02.8							
GEC2	e PKPbc	Z	12:38:59.8	148.1	43.3					
WET	e PKPbc	Z	12:39:00.0	148.2	41.7					
	e PKPab	Z	12:39:03.1							
TNS	e PKPbc	Z	12:39:02.3	149.1	33.5					
RJOB	e PKPbc	Z	12:39:03.0	149.3	43.1					
FUR	e PKPbc	Z	12:39:03.6	149.7	40.2					
	e PKPab	Z	12:39:09.3							
STU	e PKPbc	Z	12:39:04.3	150.0	36.2					
WLF	e PKPbc	Z	12:39:06.3	150.4	30.1					
BFO	e PKPbc	Z	12:39:06.4	150.7	35.2					
	e PKPab	Z	12:39:13.3							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/18	14:11:42.1	30.770S	177.150W	33.0G		6.4		SZGRF
Kermadec Islands, New Zealand								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPdf	Z	14:31:39.6	157.6	16.6					
	e PKPab	Z	14:32:10.4							
CLL	e PKPdf	Z	14:31:40.4	158.1	24.0					
	e PKPab	Z	14:32:12.0							
IBBN	e PKPdf	Z	14:31:39.8	158.2	11.4					
	e PKPab	Z	14:32:13.1							
CLZ	e PKPdf	Z	14:31:40.4	158.2	17.6					
	e PKPab	Z	14:32:13.6							
BRG	e PKPdf	Z	14:31:40.7	158.3	26.5					
	e PKPab	Z	14:32:13.2							
FBE	e PKPdf	Z	14:31:41.8	158.4	25.2					
NEUB	e PKPdf	Z	14:31:41.1	158.5	21.3					

BUG	e PKPdf	Z	14:31:42.0	159.1	10.7				
	e PKPab	Z	14:32:16.9						
MOX	e PKPdf	Z	14:31:41.1	159.1	21.5				
	e PKPab	Z	14:32:17.0						
	e L	Z	15:52:28.6			20.6	5724	6.4	
TANN	e PKPdf	Z	14:31:42.0	159.1	23.7				
	e PKPab	Z	14:32:16.7						
WERD	e PKPdf	Z	14:31:41.7	159.1	23.3				
PLN	e PKPdf	Z	14:31:41.4	159.1	22.9				
GUNZ	e PKPdf	Z	14:31:41.8	159.2	23.4				
WERN	e PKPdf	Z	14:31:41.1	159.2	23.6				
NKC	e PKPdf	Z	14:31:40.1	159.3	23.9				
UBBA	e PKPdf	Z	14:31:43.2	159.3	17.6				
	e PKPab	Z	14:32:18.2						
ROHR	e PKPdf	Z	14:31:42.2	159.3	23.6				
ROTZ	e PKPab	Z	14:32:20.2	159.7	23.8				
GRA1	e PKPdf	Z	14:31:42.9	160.1	21.5				
	e PKPab	Z	14:32:21.5						
	e L	Z	15:54:21.5			20.6	4553	6.3	
TNS	e PKPdf	Z	14:31:43.8	160.1	14.3				
	e PKPab	Z	14:32:21.6						
WET	e PKPdf	Z	14:31:42.6	160.1	26.1				
	e PKPab	Z	14:32:21.7						
GEC2	e PKPdf	Z	14:31:42.9	160.1	28.4				
	e PKPab	Z	14:32:21.7						
WLF	e PKPdf	Z	14:31:44.3	160.9	8.7				
	e PKPab	Z	14:32:25.6						
STU	e PKPdf	Z	14:31:44.9	161.4	17.3				
	e PKPab	Z	14:32:27.1						
RJOB	e PKPab	Z	14:32:27.3	161.4	27.7				
FUR	e PKPdf	Z	14:31:44.4	161.5	23.3				
	e PKPab	Z	14:32:27.8						
BFO	e PKPdf	Z	14:31:44.5	162.0	15.4				
	e PKPab	Z	14:32:29.4						

Date 2009/01/18 Origin Time 21:17:19.1 Lat 55.600N Long 166.290W Depth 33.0N mb 5.2 Ms ML Source SZGRF  
 Fox Islands, Aleutian Islands, United States

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 21:28:32.3	70.4	358.0	1.8	107	5.7		
NRDL	e P	Z 21:28:40.3	71.9	357.9	1.3	38	5.4		
IBBN	e P	Z 21:28:41.6	72.0	356.5	0.9	21	5.3		
CLZ	e P	Z 21:28:44.9	72.5	358.0	1.1	32	5.4		
BUG	e P	Z 21:28:45.6	72.8	356.2	1.3	50	5.5		
CLL	e P	Z 21:28:47.8	73.1	359.6	1.4	27	5.2		
BRG	e P	Z 21:28:50.9	73.5	0.1	1.1	20	5.1		



MOX	e P	Z	21:28:52.0	73.7	358.8	1.1	22	5.1
TNS	e P	Z	21:28:53.4	74.1	356.9	1.0	17	5.0
WLF	e P	Z	21:28:57.7	74.5	355.6	1.3	33	5.2
ROTZ	e P	Z	21:28:56.6	74.6	359.1	1.4	17	4.9
GRA1	e P	Z	21:28:57.4	74.7	358.5	1.5	40	5.2
WET	e P	Z	21:29:00.7	75.3	359.5	1.3	10	4.8
GEC2	e P	Z	21:29:02.4	75.6	360.0	1.0	9	4.9
STU	e P	Z	21:29:02.1	75.6	357.4	1.2	24	5.2
BFO	e P	Z	21:29:04.3	76.0	356.9	2.2	74	5.4
RJOB	e P	Z	21:29:08.7	76.7	359.5	0.7	10	5.0

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	03:38:53.0	56.241N	158.438E	33.0G	5.4			SZGRF
Kamchatka Peninsula, Russia								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e P	Z	03:49:47.8	68.2	18.3	1.0	18	5.2		
CLL	e P	Z	03:49:50.5	68.7	19.8	1.3	44	5.5		
CLZ	e P	Z	03:49:51.4	68.8	18.4	1.2	45	5.6		
BRG	e P	Z	03:49:51.8	68.9	20.2	1.5	28	5.3		
MOX	e P	Z	03:49:56.3	69.6	18.9	2.0	88	5.5		
UBBA	e P	Z	03:49:58.3	69.8	18.1	1.8	68	5.5		
ROTZ	e P	Z	03:50:01.1	70.3	19.1	1.6	41	5.3		
GRA1	e P	Z	03:50:03.1	70.6	18.6	1.7	140	5.8		
WET	e P	Z	03:50:03.9	70.8	19.4	1.8	79	5.6		
GEC2	e P	Z	03:50:04.2	70.9	19.8	0.7	10	5.1		
STU	e P	Z	03:50:09.8	71.9	17.4	1.4	40	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	03:35:15.4	22.877S	172.707E	33.0G		6.5		SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	03:54:56.1	146.2	30.1	1.4	1039			
	e L	Z	04:57:20.2			21.9	14985		6.7	
BRG	e PKPbc	Z	03:54:58.9	147.5	38.4	2.0	502			
	e L	Z	05:00:17.5			21.4	9206		6.5	
CLL	e PKPbc	Z	03:54:59.7	147.5	36.5	1.2	166			
	e L	Z	05:00:41.2			21.3	9396		6.5	
NRDL	e PKPbc	Z	03:55:00.0	147.5	30.9	2.5	726			
	e L	Z	04:59:26.5			21.1	13153		6.7	
CLZ	e PKPbc	Z	03:55:01.5	148.0	31.8	1.6	316			
	e L	Z	04:59:22.9			21.6	7437		6.4	
IBBN	e PKPbc	Z	03:55:02.3	148.4	27.2	1.0	190			
	e L	Z	05:02:46.7			20.7	9309		6.6	

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MOX	e PKPbc	Z	03:55:02.3	148.6	34.9	1.0	78	
	e L	Z	05:01:19.7			21.1	9247	6.5
UBBA	e PKPbc	Z	03:55:04.7	149.0	32.1	1.8	281	
	e L	Z	05:00:15.0			21.8	6732	6.4
ROTZ	e PKPbc	Z	03:55:04.0	149.1	36.7	1.7	392	
	e L	Z	05:01:30.3			21.9	8716	6.5
GEC2	e L	Z	05:02:21.4	149.2	40.1	21.2	6779	6.4
WET	e L	Z	05:10:02.1	149.3	38.5	20.1	9725	6.6
BUG	e PKPbc	Z	03:55:04.4	149.3	27.0	1.5	256	
	e L	Z	05:00:37.7			21.9	10248	6.6
GRA1	e PKPbc	Z	03:55:05.9	149.5	35.2	1.8	365	
	e L	Z	05:01:05.1			22.0	6522	6.4
TNS	e PKPbc	Z	03:55:06.9	150.0	30.0	1.4	203	
	e L	Z	05:00:09.4			21.8	9445	6.5
FUR	e L	Z	05:01:38.1	150.7	36.9	21.6	8518	6.5
STU	e PKPbc	Z	03:55:08.5	151.0	32.6	1.1	199	
	e L	Z	05:08:47.2			20.6	6968	6.4
WLF	e PKPbc	Z	03:55:10.0	151.2	26.4	1.2	252	
	e L	Z	05:09:10.5			20.5	8989	6.6
BFO	e PKPbc	Z	03:55:09.5	151.7	31.5	2.0	396	
	e L	Z	05:07:45.2			21.0	6367	6.4

Date 2009/01/19 Origin Time 03:47: 6.7 Lat 22.741S Long 172.339E Depth 289.8 mb Ms ML Source SZGRF  
Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	04:06:12.0	146.0	30.6					
	e pPKPbc	Z	04:07:24.2							
BRG	e PKPbc	Z	04:06:15.5	147.2	38.9					
CLL	e PKPbc	Z	04:06:15.4	147.3	37.0					
NRDL	e PKPbc	Z	04:06:15.8	147.3	31.4					
IBBN	e PKPbc	Z	04:06:18.6	148.2	27.7					
MOX	e PKPbc	Z	04:06:18.6	148.3	35.4					
UBBA	e PKPbc	Z	04:06:20.6	148.7	32.6					
ROTZ	e PKPbc	Z	04:06:20.4	148.8	37.2					
GEC2	e PKPbc	Z	04:06:20.1	148.9	40.6					
WET	e PKPbc	Z	04:06:20.6	149.0	38.9					
BUG	e PKPbc	Z	04:06:21.0	149.1	27.5					
GRA1	e PKPbc	Z	04:06:21.4	149.2	35.7					
TNS	e PKPbc	Z	04:06:22.8	149.8	30.5					
FUR	e PKPbc	Z	04:06:24.0	150.4	37.4					
STU	e PKPbc	Z	04:06:25.1	150.7	33.2					
WLF	e PKPbc	Z	04:06:26.4	151.0	27.0					
BFO	e PKPbc	Z	04:06:26.3	151.4	32.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	03:51:27.9	22.041S	172.370E	33.0G				SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 04:11:07.6	145.3	30.1					
BRG	e PKPbc	Z 04:11:11.4	146.6	38.3					
CLL	e PKPbc	Z 04:11:11.1	146.6	36.4					
NRDL	e PKPbc	Z 04:11:11.2	146.6	30.9					
CLZ	e PKPbc	Z 04:11:13.1	147.1	31.8					
IBBN	e PKPbc	Z 04:11:14.3	147.5	27.2					
TANN	e PKPbc	Z 04:11:14.0	147.6	36.4					
GEC2	e PKPbc	Z 04:11:15.5	148.3	39.9					
BUG	e PKPbc	Z 04:11:16.1	148.4	27.1					
STU	e PKPbc	Z 04:11:20.7	150.1	32.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	05:18:31.6	21.157S	169.327E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 05:37:59.4	143.5	34.2					
CLL	e PKPbc	Z 05:38:01.4	144.7	40.3					
NRDL	e PKPbc	Z 05:38:03.6	144.8	35.0					
CLZ	e PKPbc	Z 05:38:05.7	145.2	36.0					
MOX	e PKPbc	Z 05:38:06.7	145.7	38.9					
IBBN	e PKPbc	Z 05:38:07.5	145.7	31.6					
ROTZ	e PKPbc	Z 05:38:07.6	146.2	40.6					
GEC2	e PKPbc	Z 05:38:08.2	146.2	43.7					
WET	e PKPbc	Z 05:38:08.2	146.3	42.2					
GRA1	e PKPbc	Z 05:38:09.3	146.6	39.2					
FUR	e PKPbc	Z 05:38:11.5	147.8	40.8					
WLF	e PKPbc	Z 05:38:14.1	148.5	31.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	05:29: 6.8	20.842S	172.497E	33.0N				SZGRF

Vanuatu Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 05:48:38.2	144.2	29.3					
CLL	e PKPbc	Z 05:48:41.7	145.6	35.4					
BRG	e PKPbc	Z 05:48:41.6	145.6	37.2					
ROTZ	e PKPbc	Z 05:48:46.3	147.1	35.5					
GRA1	e PKPbc	Z 05:48:47.2	147.6	34.0					

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WLF e PKPbc Z 05:48:52.3 149.2 25.5

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/19 11:13:58.3 34.075N 139.477E 33.0G 5.2  
Near south coast of eastern Honshu, Japan

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
GRA1 e P Z 11:26:32.4 84.5 40.8 1.1 18 5.2

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/19 16:41:55.0 23.167S 172.486E 33.0G  
Southeast of Loyalty Islands

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
BRG e PKPbc Z 17:01:39.7 147.7 39.0  
CLL e PKPbc Z 17:01:39.8 147.7 37.1  
CLZ e PKPbc Z 17:01:41.8 148.2 32.4  
IBBN e PKPbc Z 17:01:42.6 148.6 27.7  
MOX e PKPbc Z 17:01:42.8 148.8 35.5  
ROTZ e PKPbc Z 17:01:44.5 149.2 37.3  
GEC2 e PKPbc Z 17:01:44.3 149.3 40.7  
WET e PKPbc Z 17:01:45.0 149.5 39.1  
GRA1 e PKPbc Z 17:01:45.4 149.7 35.8  
STU e PKPbc Z 17:01:49.1 151.2 33.3  
WLF e PKPbc Z 17:01:50.3 151.4 27.0  
BFO e PKPbc Z 17:01:50.4 151.9 32.2

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/19 22:26:50.5 23.468S 171.546E 33.0G  
Southeast of Loyalty Islands

Sta Phase Time Dist BAz T[s] A[nm] mb MS ML  
BSEG e PKPbc Z 22:46:32.1 146.4 32.3  
BRG e PKPbc Z 22:46:35.5 147.6 40.7  
CLL e PKPbc Z 22:46:35.4 147.6 38.8  
NRDL e PKPbc Z 22:46:35.9 147.7 33.1  
CLZ e PKPbc Z 22:46:37.4 148.2 34.1  
IBBN e PKPbc Z 22:46:39.8 148.6 29.5  
MOX e PKPbc Z 22:46:38.4 148.7 37.3  
ROTZ e PKPbc Z 22:46:40.0 149.1 39.1  
UBBA e PKPbc Z 22:46:40.7 149.1 34.5  
GEC2 e PKPbc Z 22:46:40.2 149.2 42.5  
WET e PKPbc Z 22:46:40.5 149.3 40.9

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BUG	e	PKPbc	Z	22:46:40.4	149.5	29.3
GRA1	e	PKPbc	Z	22:46:41.3	149.6	37.6
TNS	e	PKPbc	Z	22:46:42.7	150.2	32.4
RJOB	e	PKPbc	Z	22:46:42.7	150.4	42.3
FUR	e	PKPbc	Z	22:46:43.9	150.8	39.3
STU	e	PKPbc	Z	22:46:44.7	151.1	35.1
WLF	e	PKPbc	Z	22:46:46.1	151.4	28.9
BFO	e	PKPbc	Z	22:46:46.1	151.8	34.1

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19	23:01:51.4	34.085N	26.689E	33.0G	4.4			SZGRF
Crete, Greece								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 23:05:58.4	17.6	142.1	0.8	18	4.2		
WET	e P	Z 23:06:04.5	18.2	140.7	1.1	32	4.4		
GRA1	e P	Z 23:06:18.0	19.3	138.1	1.0	22	4.4		
UBBA	e P	Z 23:06:34.6	20.7	137.6	1.1	10	4.0		
BSEG	e P	Z 23:06:55.6	23.0	143.2	0.8	37	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/19								SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 23:36:21.1							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/20	04:25:30.6	21.945S	172.139E	33.0G				SZGRF
Southeast of Loyalty Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 04:45:09.8	145.2	30.4					
BRG	e PKPbc	Z 04:45:13.3	146.4	38.6					
CLL	e PKPbc	Z 04:45:13.3	146.5	36.7					
CLZ	e PKPbc	Z 04:45:15.2	146.9	32.1					
NEUB	e PKPbc	Z 04:45:15.1	147.0	34.9					
WERD	e PKPbc	Z 04:45:16.2	147.4	36.4					
GEC2	e PKPbc	Z 04:45:17.9	148.1	40.2					
GRB3	e PKPbc	Z 04:45:19.0	148.5	36.7					
STU	e PKPbc	Z 04:45:22.7	149.9	32.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	02:19:14.2	22.583S	172.384E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	02:38:49.7	145.9	30.4					
BRG	e PKPbc	Z	02:38:53.2	147.1	38.7					
CLL	e PKPbc	Z	02:38:52.9	147.1	36.8					
NRDL	e PKPbc	Z	02:38:53.4	147.2	31.2					
CLZ	e PKPbc	Z	02:38:55.2	147.6	32.2					
IBBN	e PKPbc	Z	02:38:55.8	148.0	27.5					
TANN	e PKPbc	Z	02:38:55.9	148.1	36.8					
MOX	e PKPbc	Z	02:38:55.8	148.2	35.2					
UBBA	e PKPbc	Z	02:38:58.3	148.6	32.4					
ROTZ	e PKPbc	Z	02:38:57.9	148.7	37.0					
GEC2	e PKPbc	Z	02:38:57.9	148.8	40.4					
WET	e PKPbc	Z	02:38:58.2	148.9	38.7					
BUG	e PKPbc	Z	02:38:58.4	148.9	27.4					
GRA1	e PKPbc	Z	02:38:58.9	149.1	35.5					
TNS	e PKPbc	Z	02:39:00.3	149.6	30.4					
RJOB	e PKPbc	Z	02:39:00.7	150.0	40.1					
STU	e PKPbc	Z	02:39:02.7	150.6	33.0					
WLF	e PKPbc	Z	02:39:03.8	150.8	26.8					
BFO	e PKPbc	Z	02:39:03.7	151.3	31.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	02:30:13.1	22.732S	172.577E	33.0G				SZGRF

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	02:49:54.0	146.0	30.2					
BRG	e PKPbc	Z	02:49:57.7	147.3	38.5					
CLL	e PKPbc	Z	02:49:57.5	147.3	36.6					
CLZ	e PKPbc	Z	02:49:59.5	147.8	32.0					
IBBN	e PKPbc	Z	02:50:00.4	148.2	27.3					
TANN	e PKPbc	Z	02:50:00.4	148.3	36.6					
MOX	e PKPbc	Z	02:50:00.6	148.4	35.0					
ROTZ	e PKPbc	Z	02:50:02.2	148.9	36.8					
GEC2	e PKPbc	Z	02:50:02.0	149.0	40.2					
WET	e PKPbc	Z	02:50:02.6	149.1	38.6					
GRA1	e PKPbc	Z	02:50:03.2	149.3	35.3					
RJOB	e PKPbc	Z	02:50:05.0	150.2	39.9					
STU	e PKPbc	Z	02:50:07.1	150.8	32.8					
WLF	e PKPbc	Z	02:50:08.1	151.0	26.5					
BFO	e PKPbc	Z	02:50:08.3	151.5	31.7					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	02:40:12.3	20.739S	172.948E	33.0G				SZGRF

Vanuatu Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	02:58:35.6	144.3	28.6					
CLL	e PKPbc	Z	02:58:39.1	145.6	34.6					
BRG	e PKPbc	Z	02:58:39.3	145.7	36.4					
CLZ	e PKPbc	Z	02:58:41.0	146.1	30.1					
IBBN	e PKPbc	Z	02:58:42.0	146.4	25.6					
TANN	e PKPbc	Z	02:58:42.1	146.6	34.5					
UBBA	e PKPbc	Z	02:58:44.4	147.1	30.3					
ROTZ	e PKPbc	Z	02:58:43.8	147.2	34.7					
BUG	e PKPbc	Z	02:58:44.1	147.3	25.4					
GEC2	e PKPbc	Z	02:58:43.7	147.4	37.9					
WET	e PKPbc	Z	02:58:44.3	147.5	36.3					
GRA1	e PKPbc	Z	02:58:44.8	147.6	33.2					
TNS	e PKPbc	Z	02:58:46.2	148.1	28.2					
STU	e PKPbc	Z	02:58:48.5	149.1	30.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	17:08:37.6	23.069S	173.217E	33.0G		6.0		SZGRF

Southeast of Loyalty Islands

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	17:28:19.9	146.6	29.4					
	e L	Z	18:30:56.1			21.6	4120		6.2	
NRDL	e PKPbc	Z	17:28:23.7	147.9	30.2					
	e L	Z	18:37:17.3			20.7	2975		6.1	
BRG	e PKPbc	Z	17:28:23.5	147.9	37.8					
	e L	Z	18:31:22.3			21.8	2603		6.0	
CLL	e PKPbc	Z	17:28:23.4	147.9	35.9					
	e L	Z	18:33:00.5			21.9	2492		6.0	
CLZ	e PKPbc	Z	17:28:25.3	148.3	31.1					
	e L	Z	18:37:31.6			19.0	2864		6.1	
IBBN	e PKPbc	Z	17:28:26.1	148.7	26.4					
	e L	Z	18:32:17.0			21.4	3155		6.1	
TANN	e PKPbc	Z	17:28:26.3	148.8	35.8					
	e L	Z	18:33:51.0			22.0	1939		5.9	
MOX	e PKPbc	Z	17:28:26.5	148.9	34.2					
	e L	Z	18:34:11.6			22.0	2518		6.0	
UBBA	e PKPbc	Z	17:28:28.5	149.3	31.4					
	e L	Z	18:38:03.4			20.0	1786		5.9	
ROTZ	e PKPbc	Z	17:28:28.1	149.4	36.1					
	e L	Z	18:34:01.3			21.3	2455		6.0	
GEC2	e PKPbc	Z	17:28:28.0	149.6	39.5					

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	e L	Z	18:35:03.0			21.7	2866	6.0
BUG	e PKPbc	Z	17:28:28.3	149.6	26.2			
	e L	Z	18:33:06.0			21.2	2716	6.0
WET	e PKPbc	Z	17:28:28.4	149.7	37.8			
	e L	Z	18:37:16.0			20.5	2236	5.9
GRA1	e PKPbc	Z	17:28:29.0	149.9	34.5			
	e L	Z	18:34:40.2			21.5	2176	5.9
TNS	e PKPbc	Z	17:28:30.5	150.4	29.3			
	e L	Z	18:39:03.2			20.2	2879	6.1
RJOB	e PKPbc	Z	17:28:30.8	150.8	39.2			
	e L	Z	18:36:04.6			20.2	2511	6.0
FUR	e PKPbc	Z	17:28:31.9	151.1	36.2			
	e L	Z	18:34:50.8			21.6	2241	5.9
STU	e PKPbc	Z	17:28:32.7	151.4	31.9			
	e L	Z	18:43:59.6			18.3	1946	5.9
BFO	e PKPbc	Z	17:28:34.0	152.0	30.8			
	e L	Z	18:32:57.6			21.0	2581	6.0

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/21 18:46: 3.3 21.182S 171.652E 33.0N  
 Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 19:05:34.5	144.3	30.8					
BRG	e PKPbc	Z 19:05:38.2	145.6	38.7					
CLL	e PKPbc	Z 19:05:38.0	145.6	36.9					
NRDL	e PKPbc	Z 19:05:38.3	145.6	31.5					
CLZ	e PKPbc	Z 19:05:40.0	146.1	32.4					
IBBN	e PKPbc	Z 19:05:41.0	146.5	27.9					
TANN	e PKPbc	Z 19:05:41.0	146.5	36.9					
MOX	e PKPbc	Z 19:05:41.1	146.6	35.4					
GEC2	e PKPbc	Z 19:05:42.5	147.2	40.3					
WET	e PKPbc	Z 19:05:43.2	147.3	38.7					
GRA1	e PKPbc	Z 19:05:43.7	147.6	35.6					
TNS	e PKPbc	Z 19:05:45.3	148.1	30.6					

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/21 19:46:14.8 22.778S 173.200E 33.0G  
 Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 20:05:55.7	146.3	29.3					
NRDL	e PKPbc	Z 20:05:59.5	147.6	30.0					
BRG	e PKPbc	Z 20:05:59.3	147.6	37.6					
CLL	e PKPbc	Z 20:05:59.2	147.6	35.7					



CLZ	e	PKPbc	Z	20:06:01.1	148.1	31.0
TANN	e	PKPbc	Z	20:06:02.2	148.5	35.6
ROTZ	e	PKPbc	Z	20:06:03.9	149.2	35.9
GEC2	e	PKPbc	Z	20:06:03.8	149.3	39.2
BUG	e	PKPbc	Z	20:06:04.2	149.3	26.1
WET	e	PKPbc	Z	20:06:04.3	149.4	37.6
GRA1	e	PKPbc	Z	20:06:05.0	149.6	34.3
RJOB	e	PKPbc	Z	20:06:06.7	150.5	39.0
STU	e	PKPbc	Z	20:06:08.8	151.1	31.7
BFO	e	PKPbc	Z	20:06:09.8	151.8	30.6

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	21:31:32.2	22.796S	172.366E	33.0N				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e	PKPbc	Z 21:51:08.3	146.0	30.6					
BRG	e	PKPbc	Z 21:51:11.9	147.3	38.9					
CLL	e	PKPbc	Z 21:51:11.8	147.3	37.0					
CLZ	e	PKPbc	Z 21:51:13.7	147.8	32.3					
TANN	e	PKPbc	Z 21:51:14.7	148.2	37.0					
MOX	e	PKPbc	Z 21:51:14.7	148.4	35.4					
ROTZ	e	PKPbc	Z 21:51:16.4	148.9	37.2					
GEC2	e	PKPbc	Z 21:51:16.3	149.0	40.6					
GRA1	e	PKPbc	Z 21:51:17.4	149.3	35.7					
RJOB	e	PKPbc	Z 21:51:19.1	150.2	40.4					
STU	e	PKPbc	Z 21:51:21.0	150.8	33.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/21	21:39:37.4	22.379S	171.917E	33.0N				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e	PKPbc	Z 21:59:12.0	145.5	31.0					
BRG	e	PKPbc	Z 21:59:15.5	146.7	39.2					
CLL	e	PKPbc	Z 21:59:15.4	146.8	37.4					
NRDL	e	PKPbc	Z 21:59:15.7	146.8	31.8					
CLZ	e	PKPbc	Z 21:59:17.3	147.3	32.8					
TANN	e	PKPbc	Z 21:59:18.3	147.7	37.4					
IBBN	e	PKPbc	Z 21:59:18.3	147.7	28.2					
MOX	e	PKPbc	Z 21:59:18.5	147.8	35.8					
ROTZ	e	PKPbc	Z 21:59:20.1	148.3	37.6					
GEC2	e	PKPbc	Z 21:59:20.1	148.4	40.9					
WET	e	PKPbc	Z 21:59:20.4	148.5	39.3					
GRA1	e	PKPbc	Z 21:59:21.1	148.7	36.1					

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TNS	e	PKPbc	Z	21:59:22.5	149.3	31.0
RJOB	e	PKPbc	Z	21:59:22.8	149.6	40.7
STU	e	PKPbc	Z	21:59:24.9	150.3	33.6
WLF	e	PKPbc	Z	21:59:25.9	150.5	27.5
BFO	e	PKPbc	Z	21:59:26.0	150.9	32.5

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	00:09:34.9	41.215N	140.825E	33.0G	5.0			SZGRF
Hokkaido, Japan, region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z 00:21:03.9	75.8	36.2	0.8	27	5.4		
BRG	e P	Z 00:21:09.6	76.9	38.1	0.8	7	4.9		
CLL	e P	Z 00:21:09.5	76.9	37.6	0.6	14	5.2		
CLZ	e P	Z 00:21:13.3	77.5	35.9	0.7	14	5.2		
MOX	e P	Z 00:21:15.7	78.0	36.6	1.3	15	5.0		
IBBN	e P	Z 00:21:16.0	78.0	34.2	1.6	45	5.4		
UBBA	e P	Z 00:21:18.9	78.5	35.5	0.7	5	4.7		
ROTZ	e P	Z 00:21:18.7	78.5	36.9	0.8	7	4.7		
GEC2	e P	Z 00:21:18.8	78.6	37.7	0.8	5	4.6		
WET	e P	Z 00:21:19.7	78.7	37.2	1.0	9	4.7		
GRA1	e P	Z 00:21:21.2	78.9	36.2	0.9	25	5.3		
BUG	e P	Z 00:21:20.7	78.9	33.7	1.0	11	4.9		
TNS	e P	Z 00:21:24.0	79.5	34.4	2.0	72	5.2		
RJOB	e P	Z 00:21:26.1	79.9	37.0	0.9	15	4.9		
FUR	e P	Z 00:21:27.6	80.1	36.1	1.0	29	5.1		
STU	e P	Z 00:21:29.0	80.4	34.8	0.7	19	5.2		
WLF	e P	Z 00:21:30.9	80.8	32.8	1.2	22	5.1		
BFO	e P	Z 00:21:32.5	81.1	34.2	1.7	36	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	04:39:18.9	21.428S	173.433E	33.0G				SZGRF
Vanuatu Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 04:58:56.3	145.1	28.2					
NRDL	e PKPbc	Z 04:59:00.4	146.4	28.8					
CLL	e PKPbc	Z 04:59:00.0	146.5	34.4					
BRG	e PKPbc	Z 04:59:00.2	146.5	36.2					
CLZ	e PKPbc	Z 04:59:02.1	146.9	29.8					
IBBN	e PKPbc	Z 04:59:03.3	147.2	25.2					
TANN	e PKPbc	Z 04:59:03.1	147.4	34.3					
MOX	e PKPbc	Z 04:59:03.1	147.5	32.7					
ROTZ	e PKPbc	Z 04:59:04.8	148.0	34.4					
BUG	e PKPbc	Z 04:59:05.1	148.1	24.9					

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GEC2	e	PKPbc	Z	04:59:04.8	148.2	37.7
GRA1	e	PKPbc	Z	04:59:05.9	148.4	32.9
TNS	e	PKPbc	Z	04:59:07.2	148.9	27.8
STU	e	PKPbc	Z	04:59:09.7	149.9	30.3
WLF	e	PKPbc	Z	04:59:10.9	150.0	24.2

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	05:09:51.2	48.021N	155.616E	33.0G	5.2			SZGRF
Kuril Islands, Russia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 05:21:32.5	75.6	24.8	1.2	32	5.3		
CLZ	e P	Z 05:21:34.6	75.8	23.2	1.4	35	5.3		
ROTZ	e P	Z 05:21:42.4	77.3	24.1	2.1	74	5.4		
GRA1	e P	Z 05:21:44.4	77.6	23.5	1.2	24	5.2		
WET	e P	Z 05:21:44.7	77.6	24.5	1.4	31	5.2		
BFO	e P	Z 05:21:54.8	79.6	21.6	1.5	33	5.0		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	05:14:28.5	47.675N	154.552E	33.0G	5.2			SZGRF
Kuril Islands, Russia								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:26:21.9	77.6	24.3	1.4	32	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKP	Z 07:40:21.6							
CLL	e PKP	Z 07:40:21.0							
CLZ	e PKP	Z 07:40:21.5							
FBE	e PKP	Z 07:40:22.2							
GUNZ	e PKP	Z 07:40:23.7							
NEUB	e PKP	Z 07:40:22.1							
PLN	e PKP	Z 07:40:23.4							
WERD	e PKP	Z 07:40:23.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	08:12: 7.5	22.373S	172.648E	33.0N				SZGRF
Southeast of Loyalty Islands								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z	08:31:42.8	145.7	29.9					
BRG	e PKPbc	Z	08:31:46.4	147.0	38.1					
NRDL	e PKPbc	Z	08:31:46.4	147.0	30.7					
CLL	e PKPbc	Z	08:31:46.2	147.0	36.2					
CLZ	e PKPbc	Z	08:31:48.3	147.5	31.6					
IBBN	e PKPbc	Z	08:31:49.1	147.9	27.0					
TANN	e PKPbc	Z	08:31:49.2	148.0	36.2					
MOX	e PKPbc	Z	08:31:49.4	148.1	34.7					
UBBA	e PKPbc	Z	08:31:51.3	148.5	31.9					
ROTZ	e PKPbc	Z	08:31:50.7	148.6	36.4					
GEC2	e PKPbc	Z	08:31:50.8	148.7	39.8					
GRA1	e PKPbc	Z	08:31:52.0	149.0	34.9					
TNS	e PKPbc	Z	08:31:53.5	149.5	29.8					
STU	e PKPbc	Z	08:31:55.9	150.5	32.3					
WLF	e PKPbc	Z	08:31:56.6	150.7	26.2					
BFO	e PKPbc	Z	08:31:56.9	151.2	31.2					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	12:21:2.1	34.884N	141.001E	33.0G	5.2			SZGRF

Off east coast of Honshu, Japan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e P	Z	12:33:04.1	81.5	39.0	1.0	18	5.2		
CLL	e P	Z	12:33:08.6	82.5	40.7	0.7	11	5.2		
ROTZ	e P	Z	12:33:16.9	84.0	40.0	0.8	8	5.0		
GEC2	e P	Z	12:33:16.5	84.1	41.0	0.9	9	5.0		
GRA1	e P	Z	12:33:19.3	84.5	39.3	0.9	29	5.5		
TNS	e P	Z	12:33:22.4	85.1	37.3	0.9	11	5.1		
STU	e P	Z	12:33:26.6	86.0	37.8	0.8	14	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22	20:16:34.1	7.300S	128.600E	141.0				NEIC

Banda Sea

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKiKP	Z	20:34:50.9	111.1	75.0					
	e PP	Z	20:35:38.0							
CLL	e PKiKP	Z	20:34:51.5	111.5	74.1					
	e PP	Z	20:35:40.7							
GEC2	e PP	Z	20:35:41.6	111.7	75.6					
TANN	e PKiKP	Z	20:34:52.8	112.1	74.0					
	e PP	Z	20:35:45.4							
WET	e PKiKP	Z	20:34:53.1	112.2	74.8					

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BSEG	e PKiKP	Z	20:34:53.6	112.3	70.7
	e PP	Z	20:35:44.2		
MOX	e PKiKP	Z	20:34:53.6	112.6	73.2
	e PP	Z	20:35:48.8		
NRDL	e PKiKP	Z	20:34:54.6	112.9	71.1
CLZ	e PKiKP	Z	20:34:54.7	112.9	71.6
	e PP	Z	20:35:50.7		
GRA1	e PKiKP	Z	20:34:54.6	113.1	73.2
FUR	e PKiKP	Z	20:34:55.3	113.5	73.9
IBBN	e PP	Z	20:35:58.3	114.3	69.1
TNS	e PKiKP	Z	20:34:57.7	114.6	70.6
STU	e PKiKP	Z	20:34:57.4	114.6	71.9
BUG	e PKiKP	Z	20:34:58.1	114.9	69.1
BFO	e PKiKP	Z	20:34:58.2	115.3	71.4
WLF	e PKiKP	Z	20:35:01.3	116.2	68.9
	e PP	Z	20:36:12.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPab	Z 20:46:00.5							
BSEG	e PKPab	Z 20:45:54.7							
BUG	e PKPab	Z 20:45:43.2							
CLL	e PKPab	Z 20:45:58.4							
CLZ	e PKPab	Z 20:45:52.3							
DREG	e PKPab	Z 20:45:39.2							
FUR	e PKPab	Z 20:45:49.8							
GEC2	e PKPab	Z 20:45:57.3							
GRA1	e PKPab	Z 20:45:51.6							
GTTG	e PKPab	Z 20:45:50.7							
IBBN	e PKPab	Z 20:45:45.9							
NRDL	e PKPab	Z 20:45:52.5							
ROTZ	e PKPab	Z 20:45:54.3							
STU	e PKPab	Z 20:45:44.5							
TNS	e PKPab	Z 20:45:44.7							
WET	e PKPab	Z 20:45:55.4							
WLF	e PKPab	Z 20:45:37.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/22								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPbc	Z 21:22:27.4							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/23	01:50:20.2	15.200S	167.500E	146.0				NEIC
Vanuatu Islands								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKPdf	Z 02:09:28.3	140.5	37.6					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/23	02:16:50.5	30.718S	16.719W	33.0N	5.2			SZGRF
Southern Mid-Atlantic Ridge								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BFO	e P	Z 02:29:08.5	82.2	201.6	1.8	47	5.3		
FUR	e P	Z 02:29:11.6	82.8	204.0	1.9	71	5.5		
STU	e P	Z 02:29:11.7	82.8	202.3	1.1	15	5.0		
WET	e P	Z 02:29:17.8	84.1	205.3	1.6	29	5.3		
GRA1	e P	Z 02:29:18.7	84.2	203.9	1.4	35	5.4		
ROTZ	e P	Z 02:29:19.9	84.5	204.7	1.4	22	5.2		
ROHR	e P	Z 02:29:21.5	84.9	204.8					
WERD	e P	Z 02:29:23.4	85.1	204.7	1.6	25	5.2		
TANN	e P	Z 02:29:23.6	85.1	204.9	1.4	16	5.1		
NEUB	e P	Z 02:29:26.6	85.7	204.3	1.5	35	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/23	03:34:31.6	21.123S	178.336W	33.0N				SZGRF
Fiji Islands region								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPbc	Z 03:54:14.9	148.5	20.6					
FBE	e PKPbc	Z 03:54:16.2	148.8	21.4					
MOX	e PKPbc	Z 03:54:17.2	149.5	18.5					
TANN	e PKPbc	Z 03:54:17.7	149.5	20.1					
WERD	e PKPbc	Z 03:54:17.6	149.5	19.8					
GUNZ	e PKPbc	Z 03:54:17.8	149.6	19.9					
WERN	e PKPbc	Z 03:54:18.2	149.6	20.1					
NKC	e PKPbc	Z 03:54:18.2	149.7	20.2					
ROTZ	e PKPbc	Z 03:54:19.4	150.2	20.1					
TNS	e PKPbc	Z 03:54:19.7	150.4	12.9					
GEC2	e PKPbc	Z 03:54:20.5	150.7	23.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2009/01/23 12:38:16.2 20.785N 121.379E 33.0G 5.3 5.3 SZGRF  
 Philippine Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	12:50:45.8	84.3	63.7	1.5	40	5.4		
FBE	e P	Z	12:50:47.5	84.7	63.2	1.3	44	5.5		
CLL	e P	Z	12:50:47.3	84.7	63.0	1.3	32	5.4		
GEC2	e P	Z	12:50:51.1	85.4	63.3	1.3	18	5.0		
WERN	e P	Z	12:50:52.8	85.5	62.5	1.6	20	5.0		
WET	e P	Z	12:50:54.2	85.7	62.8	1.7	34	5.2		
CLZ	e P	Z	12:50:54.9	85.9	61.1	1.4	52	5.5		
GRA1	e P	Z	12:50:55.8	86.4	61.6	1.5	20	5.0		
	e PP	Z	12:54:17.2							
	e L	Z	13:32:35.1			18.8	1190		5.3	

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/24 01:28:43.2 28.200S 176.700W 43.7 6.1 NEIC  
 Kermadec Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPab	Z	01:48:59.5	155.8	21.2					
	e pPKPab	Z	01:49:12.3							
	e PP	Z	01:52:40.5							
BRG	e pPKPab	Z	01:49:13.5	155.9	23.5					
FBE	e pPKPab	Z	01:49:13.9	156.0	22.3					
NEUB	e PKPab	Z	01:49:01.6	156.1	18.7					
	e pPKPab	Z	01:49:14.0							
MOX	e PKPab	Z	01:49:04.0	156.7	18.8					
	e pPKPab	Z	01:49:16.4							
	e PP	Z	01:52:38.9							
	e L	Z	02:59:31.5			21.7	2525		6.0	
TANN	e PKPab	Z	01:49:04.1	156.7	20.8					
	e pPKPab	Z	01:49:17.0							
PLN	e pPKPab	Z	01:49:16.8	156.7	20.1					
WERD	e pPKPab	Z	01:49:17.0	156.7	20.4					
	e PP	Z	01:52:39.4							
GUNZ	e PKPab	Z	01:49:04.5	156.8	20.6					
	e pPKPab	Z	01:49:17.5							
	e PP	Z	01:52:39.8							
WERN	e PKPab	Z	01:49:04.7	156.9	20.7					
	e pPKPab	Z	01:49:17.6							
	e PP	Z	01:52:43.5							
NKC	e PKPab	Z	01:49:04.9	156.9	20.9					
	e pPKPab	Z	01:49:17.8							
ROTZ	e PKPab	Z	01:49:07.0	157.4	20.8					
	e pPKPab	Z	01:49:20.0							
GRA1	e PKPab	Z	01:49:08.2	157.7	18.6					

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	e pPKPab	Z	01:49:21.2							
	e L	Z	03:06:00.0			19.1	2723	6.1		
WET	e PKPab	Z	01:49:08.8	157.8	22.8					
	e pPKPab	Z	01:49:22.0							
GEC2	e PKPab	Z	01:49:09.0	157.9	25.0					
	e pPKPab	Z	01:49:22.0							
	e PP	Z	01:52:48.7							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/24	02:38:59.9	24.543N	124.624E	48.7	5.2			SZGRF
Southwestern Ryukyu Islands, Japan								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	02:51:18.9	82.4	59.1	0.9	21	5.4		
BSEG	e P	Z	02:51:24.3	83.4	56.6	1.1	51	5.7		
FBE	e P	Z	02:51:24.6	83.4	58.6	1.3	26	5.3		
GUNZ	e P	Z	02:51:28.4	84.3	57.8	0.9	12	5.1		
WERN	e P	Z	02:51:28.8	84.3	57.8	1.1	12	5.1		
GEC2	e P	Z	02:51:28.6	84.3	58.6	0.9	10	5.0		
ROTZ	e P	Z	02:51:30.6	84.7	57.6	0.8	7	4.9		
GRA1	e P	Z	02:51:33.1	85.2	56.9	0.9	9	5.0		
	e pP	Z	02:51:47.3							
RJOB	e P	Z	02:51:35.6	85.4	57.9	0.9	12	5.0		
IBBN	e P	Z	02:51:35.7	85.6	54.5	1.0	26	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/24	09:01:56.8	20.130S	179.330W	669.0				SZGRF
Fiji Islands region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKP	Z	09:20:21.3	145.4	16.1					
RUE	e PKPbc	Z	09:20:23.8	146.1	22.4					
NRDL	e PKPdf	Z	09:20:23.7	146.8	16.3					
	e PKPbc	Z	09:20:25.4							
CLL	e PKPdf	Z	09:20:24.2	147.4	21.8					
	e PKPbc	Z	09:20:26.9							
	e PKPab	Z	09:20:30.9							
	e pPKPbc	Z	09:22:57.2							
IBBN	e PKPdf	Z	09:20:24.1	147.4	12.4					
	e PKPbc	Z	09:20:27.2							
	e PKPab	Z	09:20:31.0							
CLZ	e PKPdf	Z	09:20:24.1	147.4	17.1					
	e PKPbc	Z	09:20:27.4							
	e PKPab	Z	09:20:31.3							
BRG	e PKPdf	Z	09:20:24.2	147.5	23.7					



	e	PKPbc	Z	09:20:27.5		
	e	PKPab	Z	09:20:32.1		
FBE	e	PKPdf	Z	09:20:24.8	147.6	22.6
	e	PKPbc	Z	09:20:28.2		
	e	PKPab	Z	09:20:32.6		
	e	pPKPbc	Z	09:22:59.8		
NEUB	e	PKPdf	Z	09:20:24.8	147.7	19.8
	e	PKPbc	Z	09:20:28.0		
BUG	e	PKPdf	Z	09:20:25.4	148.3	11.8
	e	PKPbc	Z	09:20:29.8		
MOX	e	PKPdf	Z	09:20:25.4	148.3	19.8
	e	PKPbc	Z	09:20:29.5		
	e	PKPab	Z	09:20:34.5		
TANN	e	PKPdf	Z	09:20:25.7	148.3	21.4
	e	PKPbc	Z	09:20:29.6		
PLN	e	PKPdf	Z	09:20:25.5	148.3	20.9
	e	PKPbc	Z	09:20:29.7		
WERD	e	PKPdf	Z	09:20:25.7	148.3	21.1
	e	PKPbc	Z	09:20:29.7		
	e	PKPab	Z	09:20:35.3		
	e	pPKPbc	Z	09:23:00.2		
GUNZ	e	PKPdf	Z	09:20:25.3	148.4	21.2
	e	PKPbc	Z	09:20:30.1		
	e	PKPab	Z	09:20:35.4		
	e	pPKPbc	Z	09:23:00.2		
UBBA	e	PKPbc	Z	09:20:30.0	148.4	16.9
WERN	e	PKPbc	Z	09:20:30.3	148.4	21.3
	e	PKPab	Z	09:20:35.9		
ROTZ	e	PKPdf	Z	09:20:26.3	149.0	21.4
	e	PKPbc	Z	09:20:31.3		
GRA1	e	PKPbc	Z	09:20:32.0	149.3	19.7
	e	PKPab	Z	09:20:38.9		
TNS	e	PKPdf	Z	09:20:27.1	149.3	14.4
	e	PKPbc	Z	09:20:31.8		
	e	PKPab	Z	09:20:38.8		
WET	e	PKPdf	Z	09:20:27.0	149.4	22.9
	e	PKPbc	Z	09:20:32.3		
	e	PKPab	Z	09:20:39.9		
GEC2	e	PKPdf	Z	09:20:27.2	149.4	24.6
	e	PKPbc	Z	09:20:32.4		
	e	pPKPbc	Z	09:23:01.8		
WLF	e	PKPdf	Z	09:20:29.0	150.1	10.4
	e	PKPbc	Z	09:20:34.3		
STU	e	PKPdf	Z	09:20:29.2	150.6	16.4
	e	PKPbc	Z	09:20:34.8		
	e	PKPab	Z	09:20:44.1		
FUR	e	PKPbc	Z	09:20:35.0	150.7	20.7
	e	PKPab	Z	09:20:45.3		
RJOB	e	PKPbc	Z	09:20:34.9	150.7	23.8

BFO e PKPbc Z 09:20:35.9 151.1 15.0

Date Origin Time Lat Long Depth mb Ms ML Source  
 2009/01/24 18:09:53.3 59.681N 153.012W 103.7 6.2  
 Southern Alaska, United States SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
HLG	e P	Z 18:20:23.6	65.1	349.5	1.1	302	6.4		
RGN	e P	Z 18:20:24.0	65.2	352.5	1.2	343	6.5		
BSEG	e P	Z 18:20:26.0	65.6	350.8	1.1	368	6.5		
IBBN	e P	Z 18:20:34.5	66.9	349.6	1.2	261	6.3		
NRDL	e P	Z 18:20:34.7	67.0	350.8	1.3	275	6.3		
RUE	e P	Z 18:20:37.0	67.3	352.8	1.1	288	6.4		
	e pP	Z 18:21:02.4							
CLZ	e P	Z 18:20:39.4	67.7	351.0	1.1	295	6.4		
BUG	e P	Z 18:20:39.1	67.7	349.4	1.0	269	6.4		
NEUB	e P	Z 18:20:43.7	68.4	351.8	1.2	255	6.3		
CLL	e P	Z 18:20:43.4	68.4	352.5	1.3	160	6.1		
	e sP	Z 18:21:21.8							
UBBA	e P	Z 18:20:46.0	68.6	350.9	1.5	180	6.1		
FBE	e P	Z 18:20:46.4	68.8	352.7	1.4	264	6.3		
BRG	e P	Z 18:20:46.8	68.9	353.0	1.3	186	6.1		
	e sP	Z 18:21:25.3							
MOX	e P	Z 18:20:47.0	69.0	351.8	1.1	207	6.3		
	e pP	Z 18:21:13.1							
TNS	e P	Z 18:20:47.8	69.1	350.1	1.1	168	6.2		
PLN	e P	Z 18:20:48.4	69.2	352.1	1.2	701	6.7		
WERD	e P	Z 18:20:48.7	69.2	352.1	1.4	140	5.9		
	e pP	Z 18:21:14.8							
TANN	e P	Z 18:20:49.2	69.3	352.2	1.4	178	6.0		
GUNZ	e P	Z 18:20:49.3	69.3	352.2	1.4	168	6.0		
WLF	e P	Z 18:20:49.8	69.4	348.9	1.3	348	6.3		
WERN	e P	Z 18:20:49.9	69.4	352.2	1.4	219	6.1		
GRA1	e P	Z 18:20:52.9	69.9	351.6	1.2	170	6.1		
	e pP	Z 18:21:19.0							
	e sP	Z 18:21:30.4							
ROTZ	e P	Z 18:20:53.1	69.9	352.1	1.1	152	6.0		
WET	e P	Z 18:20:57.3	70.6	352.5	1.5	236	6.1		
STU	e P	Z 18:20:56.8	70.6	350.6	1.1	134	6.0		
	e pP	Z 18:21:23.0							
BFO	e P	Z 18:20:58.9	70.9	350.2	1.1	147	6.0		
	e pP	Z 18:21:25.2							
GEC2	e P	Z 18:20:59.2	70.9	352.9	1.4	132	5.9		
	e pP	Z 18:21:25.2							
FUR	e P	Z 18:21:01.8	71.4	351.7	1.1	231	6.2		
RJOB	e P	Z 18:21:05.1	72.0	352.5	1.0	110	5.9		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	01:47:58.1	44.410N	79.900E	24.0	5.3	4.6		SZGRF

Eastern Kazakhstan

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RUE	e P	Z	01:55:56.3	43.0	73.2	1.3	33	4.9		
BRG	e P	Z	01:56:00.5	43.4	71.7	1.3	28	4.8		
CLL	e P	Z	01:56:03.0	43.8	71.6	0.6	23	5.1		
	e pP	Z	01:56:09.6							
GEC2	e P	Z	01:56:06.7	44.2	69.6	1.7	53	5.0		
TANN	e P	Z	01:56:08.6	44.4	70.4	2.0	82	5.3		
WERD	e P	Z	01:56:08.8	44.5	70.4	1.9	48	5.1		
	e pP	Z	01:56:15.2							
WERN	e P	Z	01:56:09.2	44.5	70.2	1.4	24	4.9		
GUNZ	e P	Z	01:56:09.1	44.5	70.3	0.8	19	5.1		
	e pP	Z	01:56:15.3							
BSEG	e P	Z	01:56:09.6	44.6	72.5	1.5	73	5.4		
NEUB	e P	Z	01:56:09.2	44.6	70.8	0.6	26	5.3		
	e pP	Z	01:56:15.6							
PLN	e P	Z	01:56:09.8	44.6	70.3	1.8	246	5.8		
WET	e P	Z	01:56:09.9	44.6	69.4	1.5	33	5.0		
ROTZ	e P	Z	01:56:11.5	44.8	69.7	1.6	36	5.0		
MOX	e P	Z	01:56:11.7	44.9	70.2	1.5	47	5.2		
RJOB	e P	Z	01:56:14.5	45.2	68.1	2.0	60	5.2		
CLZ	e P	Z	01:56:15.0	45.2	70.6	1.6	35	5.0		
GRA1	e P	Z	01:56:16.7	45.4	69.1	0.9	26	5.2		
	e pP	Z	01:56:23.2							
	e L	Z	02:16:49.5			20.0	647		4.6	
UBBA	e P	Z	01:56:19.8	45.8	69.4	1.8	55	5.3		
HLG	e pP	Z	01:56:25.4	45.9	71.2					
FUR	e P	Z	01:56:20.6	46.0	67.7	2.0	223	5.9		
IBBN	e P	Z	01:56:25.1	46.6	69.5	0.7	14	5.2		
STU	e P	Z	01:56:28.4	47.0	67.2	1.2	39	5.4		
BUG	e P	Z	01:56:29.9	47.1	68.4	1.7	74	5.5		
BFO	e P	Z	01:56:33.7	47.7	66.4	2.2	157	5.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	09:15:39.4	30.100S	177.700W	38.0				NEIC

Kermadec Islands, New Zealand

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPab	Z	09:36:01.6	157.3	24.7					
IBBN	e PKPab	Z	09:36:02.3	157.4	12.4					
BRG	e PKPab	Z	09:36:02.8	157.5	27.1					
FBE	e PKPab	Z	09:36:03.4	157.6	25.8					

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WERN	e	PKPab	Z	09:36:07.3	158.4	24.3
GRA1	e	PKPab	Z	09:36:09.8	159.3	22.3
FUR	e	PKPab	Z	09:36:17.1	160.7	24.1

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	10:45:38.9	39.802N	144.444E	33.0N	4.6			SZGRF

Off east coast of Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 10:57:53.4	81.5	34.5	1.1	5	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	15:05:33.4	19.626S	177.131W	33.0N				SZGRF

Fiji Islands region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
NRDL	e PKPbc	Z 15:25:11.7	146.7	12.5					
CLL	e PKPbc	Z 15:25:13.7	147.3	17.9					
BRG	e PKPbc	Z 15:25:14.2	147.6	19.7					
FBE	e PKPbc	Z 15:25:14.7	147.6	18.7					
WERD	e PKPbc	Z 15:25:16.5	148.3	17.1					
TANN	e PKPbc	Z 15:25:16.5	148.3	17.4					
GUNZ	e PKPbc	Z 15:25:16.7	148.4	17.2					
GEC2	e PKPbc	Z 15:25:19.2	149.5	20.4					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	18:21: 2.5	21.000S	168.181E	33.0N				SZGRF

Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 18:40:28.9	143.0	35.8					
BRG	e PKPbc	Z 18:40:32.4	144.0	43.6					
CLL	e PKPbc	Z 18:40:32.2	144.0	41.9					
NRDL	e PKPbc	Z 18:40:33.1	144.3	36.6					
NEUB	e PKPbc	Z 18:40:34.6	144.6	40.2					
TANN	e PKPbc	Z 18:40:35.5	144.9	41.9					
WERD	e PKPbc	Z 18:40:35.6	145.0	41.7					
GUNZ	e PKPbc	Z 18:40:36.1	145.0	41.8					
NKC	e PKPbc	Z 18:40:36.2	145.1	42.1					
MOX	e PKPbc	Z 18:40:35.7	145.1	40.5					
GEC2	e PKPbc	Z 18:40:36.5	145.5	45.3					
ROTZ	e PKPbc	Z 18:40:37.3	145.5	42.2					
WET	e PKPbc	Z 18:40:37.7	145.7	43.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/25	21:16:22.4	38.089N	72.049E	33.0G	4.6			SZGRF

Tajikistan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 21:24:27.5	44.1	81.2	1.1	12	4.6		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	05:23:14.4	0.126N	100.384E	33.0N	4.8			SZGRF

Northern Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 05:36:07.9	89.4	90.6	1.2	7	4.8		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26								

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPab	Z 07:31:02.7							
CLL	e PKPab	Z 07:31:01.6							
CLZ	e PKPab	Z 07:31:01.0							
FBE	e PKPab	Z 07:31:03.1							
GRA1	e PKPab	Z 07:31:09.3							
GTTG	e PKPab	Z 07:31:01.6							
IBBN	e PKPab	Z 07:30:59.7							
NEUB	e PKPab	Z 07:31:02.6							
SCHF	e PKPab	Z 07:31:04.1							
TAUT	e PKPab	Z 07:31:03.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	08:54:20.9	35.981N	139.328E	129.6N	5.2			SZGRF

Near south coast of eastern Honshu, Japan

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 09:06:30.7	82.8	39.9	1.1	17	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	11:54:40.6	17.800S	178.600W	590.0				NEIC

Fiji Islands region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e PKPbc	Z	12:13:14.2	145.3	19.6					
BRG	e PKPbc	Z	12:13:15.1	145.5	21.4					
FBE	e PKPbc	Z	12:13:15.6	145.5	20.4					
NEUB	e PKPdf	Z	12:13:13.3	145.6	17.7					
MOX	e PKPdf	Z	12:13:14.2	146.2	17.7					
PLN	e PKPdf	Z	12:13:14.4	146.2	18.6					
	e PKPbc	Z	12:13:17.0							
TANN	e PKPdf	Z	12:13:14.4	146.2	19.2					
WERD	e PKPdf	Z	12:13:14.5	146.2	18.9					
	e PKPbc	Z	12:13:17.1							
UBBA	e PKPbc	Z	12:13:17.4	146.3	14.9					
WERN	e PKPbc	Z	12:13:17.8	146.3	19.1					
ROTZ	e PKPbc	Z	12:13:19.0	146.9	19.1					
TNS	e PKPab	Z	12:13:22.6	147.1	12.4					
GRA1	e PKPab	Z	12:13:23.5	147.1	17.4					
WET	e PKPbc	Z	12:13:19.7	147.3	20.5					
GEC2	e PKPbc	Z	12:13:19.7	147.4	22.1					
WLF	e PKPbc	Z	12:13:21.6	147.9	8.5					
	e pPKPab	Z	12:15:45.2							
STU	e PKPbc	Z	12:13:22.4	148.4	14.3					
FUR	e PKPbc	Z	12:13:23.2	148.6	18.3					
	e PKPab	Z	12:13:29.2							
RJOB	e PKPbc	Z	12:13:23.0	148.6	21.2					
BFO	e PKPbc	Z	12:13:24.0	149.0	12.9					
	e pPKPab	Z	12:15:50.6							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	19:11:50.3	52.600N	171.120W	33.0G	5.8	5.4		SZGRF

Fox Islands, Aleutian Islands, United States

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z	19:23:18.4	72.8	2.8	1.1	199	6.2		
BSEG	e P	Z	19:23:22.1	73.5	0.9	1.0	131	6.0		
RUE	e P	Z	19:23:30.0	74.8	3.1	1.1	123	5.8		
NRDL	e P	Z	19:23:30.1	74.9	0.8	1.0	48	5.5		
IBBN	e P	Z	19:23:31.5	75.1	359.3	1.1	169	6.0		
CLZ	e P	Z	19:23:34.4	75.6	0.9	1.0	91	5.7		
BUG	e P	Z	19:23:36.1	76.0	359.0	1.0	66	5.7		
CLL	e P	Z	19:23:36.3	76.0	2.6	1.0	59	5.7		
NEUB	e P	Z	19:23:37.5	76.2	1.8	1.0	133	6.0		
FBE	e P	Z	19:23:39.1	76.4	2.8	1.1	124	5.9		
BRG	e P	Z	19:23:38.8	76.4	3.2	1.1	92	5.8		
UBBA	e P	Z	19:23:40.8	76.6	0.7	4.1	697	6.1		
MOX	e P	Z	19:23:40.7	76.7	1.7	1.0	81	5.8		

	e L	Z	20:03:34.5				20.8	1752		5.4
PLN	e P	Z	19:23:41.5	76.9	2.0	1.0		169	6.1	
WERD	e P	Z	19:23:41.7	76.9	2.1	1.2		45	5.5	
TANN	e P	Z	19:23:42.1	76.9	2.2	1.2		47	5.5	
GUNZ	e P	Z	19:23:42.3	77.0	2.2	1.2		49	5.5	
WERN	e P	Z	19:23:42.9	77.1	2.2	1.1		79	5.8	
TNS	e P	Z	19:23:43.2	77.2	359.7	0.9		50	5.6	
ROTZ	e P	Z	19:23:45.9	77.6	2.1	1.2		59	5.6	
GRA1	e P	Z	19:23:46.5	77.7	1.5	1.0		148	6.0	
	e L	Z	20:04:24.8				20.8	1456		5.3
WLF	e P	Z	19:23:46.5	77.7	358.3	1.0		46	5.6	
WET	e P	Z	19:23:49.1	78.2	2.5	1.2		56	5.6	
GEC2	e P	Z	19:23:50.4	78.5	3.0	1.1		61	5.7	
STU	e P	Z	19:23:51.2	78.6	0.2	1.2		89	5.8	
BFO	e P	Z	19:23:53.6	79.1	359.7	1.2		66	5.6	
FUR	e P	Z	19:23:54.6	79.2	1.5	1.3		128	5.8	
RJOB	e P	Z	19:23:56.6	79.6	2.4	1.0		54	5.5	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	19:33:21.0	0.293S	97.831E	33.0N	5.3			SZGRF

Southwest of Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 19:46:08.2	88.0	92.8	1.3	20	5.3		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	21:30:49.5	58.460N	119.150E	33.0G	5.3	5.1		SZGRF

East of Lake Baykal, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
RGN	e P	Z 21:40:00.6	52.3	39.5	0.7	55	5.6		
RUE	e P	Z 21:40:10.6	53.7	38.7	0.7	34	5.5		
BSEG	e P	Z 21:40:12.1	53.9	37.8	1.1	26	5.1		
BRG	e P	Z 21:40:19.2	54.9	38.1	0.8	20	5.2		
CLL	e P	Z 21:40:19.1	55.0	37.9	0.6	32	5.5		
NRDL	e P	Z 21:40:20.7	55.1	37.1	1.1	16	5.0		
FBE	e P	Z 21:40:20.7	55.1	37.8	0.9	23	5.2		
NEUB	e P	Z 21:40:22.9	55.5	37.3	0.7	30	5.5		
CLZ	e P	Z 21:40:23.9	55.5	36.9	0.8	18	5.1		
TANN	e P	Z 21:40:26.1	55.9	37.3	0.7	10	4.9		
WERD	e P	Z 21:40:26.4	55.9	37.2	1.0	19	5.1		
PLN	e P	Z 21:40:26.6	55.9	37.2	0.7	159	6.2		
GUNZ	e P	Z 21:40:26.8	56.0	37.2	0.7	16	5.2		
WERN	e P	Z 21:40:27.2	56.0	37.2	0.8	22	5.3		
MOX	e P	Z 21:40:27.2	56.0	37.0	0.7	36	5.5		

	e L	Z	22:07:31.7			20.2	1275		5.0
UBBA	e P	Z	21:40:30.7	56.5	36.4	2.0	54	5.2	
ROTZ	e P	Z	21:40:30.7	56.5	36.9	0.8	17	5.2	
GEC2	e P	Z	21:40:31.6	56.6	37.1	0.9	21	5.2	
WET	e P	Z	21:40:32.6	56.7	36.9	0.7	30	5.4	
GRA1	e P	Z	21:40:33.7	56.9	36.4	0.7	18	5.2	
	e PP	Z	21:42:41.0						
	e L	Z	22:08:08.2			18.4	1720		5.2
BUG	e P	Z	21:40:34.0	57.0	35.4	0.8	13	5.0	
TNS	e P	Z	21:40:38.0	57.5	35.4	0.9	10	4.8	
RJOB	e P	Z	21:40:40.7	57.9	36.3	0.9	19	5.1	
FUR	e P	Z	21:40:42.3	58.1	35.9	0.7	44	5.6	
BFO	e P	Z	21:40:48.9	59.1	34.7	1.1	16	5.0	

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/26	21:54:43.5	57.800N	119.600E	10.0	4.8			GSRC

East of Lake Baykal, Russia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z 22:04:27.2	55.6	38.2	0.6	7	4.9		
WERN	e P	Z 22:04:35.7	56.6	37.6	0.8	9	4.9		
MOX	e P	Z 22:04:35.5	56.6	37.4	0.7	8	4.9		
NKC	e P	Z 22:04:35.2	56.6	37.6					
GEC2	e P	Z 22:04:39.9	57.2	37.5	0.9	5	4.6		
WET	e P	Z 22:04:40.8	57.3	37.3	1.2	9	4.7		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/27	00:57:34.8	11.455S	117.472E	10.0G				NEIC

South of Sumbawa, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e PKiKP	Z 01:14:34.9	107.6	87.3					
TANN	e PKiKP	Z 01:14:32.3	108.3	85.8					
ROTZ	e PKiKP	Z 01:14:33.7	108.6	85.8					
MOX	e PKiKP	Z 01:14:32.4	108.9	85.1					
GRA1	e PKiKP	Z 01:14:34.3	109.2	85.1					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/27	01:23:51.4	22.360S	169.530E	33.0N				SZGRF

Southeast of Loyalty Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e PKPbc	Z 01:43:26.6	145.7	42.8					



CLL	e	PKPbc	Z	01:43:26.4	145.8	41.0
FBE	e	PKPbc	Z	01:43:27.5	146.0	41.9
NEUB	e	PKPbc	Z	01:43:28.5	146.4	39.2
GUNZ	e	PKPbc	Z	01:43:30.3	146.8	40.9
WERN	e	PKPbc	Z	01:43:30.5	146.8	41.0
GEC2	e	PKPbc	Z	01:43:30.7	147.3	44.5
GRA1	e	PKPbc	Z	01:43:32.2	147.8	39.9

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/27	06:29:14.2	17.630S	178.480W	600.0G				SZGRF
Fiji Islands region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e	PKP	Z 06:47:37.9	143.1	14.0					
HLG	e	PKP	Z 06:47:38.6	143.1	10.1					
RUE	e	PKP	Z 06:47:40.6	143.8	20.1					
NRDL	e	PKP	Z 06:47:42.2	144.5	14.2					
IBBN	e	PKP	Z 06:47:44.0	145.0	10.4					
CLZ	e	PKPbc	Z 06:47:44.5	145.1	14.8					
CLL	e	PKPbc	Z 06:47:44.1	145.1	19.4					
BRG	e	PKPbc	Z 06:47:45.0	145.3	21.1					
FBE	e	PKPbc	Z 06:47:45.7	145.4	20.1					
NEUB	e	PKPbc	Z 06:47:45.6	145.4	17.4					
BUG	e	PKPbc	Z 06:47:46.6	145.9	9.8					
MOX	e	PKPbc	Z 06:47:46.9	146.0	17.4					
PLN	e	PKPbc	Z 06:47:47.3	146.1	18.4					
TANN	e	PKPbc	Z 06:47:47.3	146.1	18.9					
WERD	e	PKPbc	Z 06:47:47.1	146.1	18.6					
UBBA	e	PKPbc	Z 06:47:48.1	146.1	14.6					
GUNZ	e	PKPbc	Z 06:47:47.6	146.1	18.7					
	e	PKPab	Z 06:47:50.4							
WERN	e	PKPbc	Z 06:47:47.7	146.2	18.8					
	e	PKPab	Z 06:47:50.7							
ROTZ	e	PKPbc	Z 06:47:49.3	146.7	18.8					
TNS	e	PKPbc	Z 06:47:49.4	146.9	12.2					
	e	PKPab	Z 06:47:53.5							
GRA1	e	PKPbc	Z 06:47:50.1	147.0	17.2					
	e	PKPab	Z 06:47:53.9							
WET	e	PKPbc	Z 06:47:50.6	147.2	20.3					
	e	PKPab	Z 06:47:54.8							
GEC2	e	PKPbc	Z 06:47:50.9	147.3	21.8					
	e	PKPab	Z 06:47:55.3							
WLF	e	PKPbc	Z 06:47:52.6	147.7	8.3					
	e	PKPab	Z 06:47:57.3							
STU	e	PKPbc	Z 06:47:53.4	148.2	14.0					
	e	PKPab	Z 06:47:58.6							
FUR	e	PKPbc	Z 06:47:54.0	148.4	18.0					

	e PKPab	Z	06:47:59.5						
BFO	e PKPbc	Z	06:47:54.4	148.8	12.6				
	e PKPab	Z	06:48:00.7						

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/27	20:31:31.4	0.500N	97.400E	30.0	5.0			NEIC

Northern Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 20:44:06.9	85.5	94.4	1.2	12	5.0		
BRG	e P	Z 20:44:07.0	85.5	94.8	1.0	7	4.8		
RUE	e P	Z 20:44:08.5	85.7	94.8	1.3	28	5.2		
FBE	e P	Z 20:44:09.2	85.9	94.3	1.1	11	4.9		
WET	e P	Z 20:44:09.6	86.0	93.8	1.2	9	4.8		
CLL	e P	Z 20:44:09.9	86.1	94.1	1.3	12	4.9		
TANN	e P	Z 20:44:11.7	86.4	93.6	1.3	9	4.8		
ROTZ	e P	Z 20:44:12.7	86.5	93.4	1.1	7	4.7		
NEUB	e P	Z 20:44:13.9	86.9	93.1	1.1	10	4.9		
GRA1	e P	Z 20:44:15.4	87.1	92.6	1.3	7	4.6		
CLZ	e P	Z 20:44:18.5	87.8	92.0	1.5	20	5.2		
BSEG	e P	Z 20:44:18.9	87.9	92.1	1.2	31	5.5		
NRDL	e P	Z 20:44:19.8	88.0	91.8	1.0	9	5.1		
TNS	e P	Z 20:44:24.6	88.9	90.5	1.7	24	5.1		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/27	23:57:24.0	56.854N	164.781E	33.0G	5.2			SZGRF

Komandorsky Islands, Russia, region

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 00:08:40.3	71.2	14.9	1.1	25	5.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/28	00:01:17.6	0.834S	96.948E	33.0G	5.6	5.4		SZGRF

Southwest of Sumatera, Indonesia

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z 00:13:55.8	86.2	95.6	1.5	88	5.7		
BRG	e P	Z 00:13:55.7	86.2	96.0	1.7	73	5.5		
RJOB	e P	Z 00:13:57.5	86.7	94.9	1.2	20	5.1		
WET	e P	Z 00:13:58.4	86.8	95.0	1.5	57	5.5		
CLL	e P	Z 00:13:58.3	86.9	95.3	1.5	42	5.4		
TANN	e P	Z 00:14:00.1	87.1	94.8	1.6	34	5.2		
ROTZ	e P	Z 00:14:01.1	87.2	94.6	1.8	66	5.5		

MOX	e P	Z	00:14:02.8	87.7	94.1	1.4	46	5.6	
FUR	e P	Z	00:14:02.8	87.7	93.8	1.7	104	5.9	
GRA1	e P	Z	00:14:04.1	87.9	93.8	1.6	86	5.8	
	e L	Z	01:01:32.5			19.6	1533		5.4
CLZ	e P	Z	00:14:06.9	88.5	93.2	1.4	86	5.8	
BSEG	e P	Z	00:14:07.4	88.7	93.2	1.4	179	6.1	
UBBA	e P	Z	00:14:08.5	88.7	92.9	1.5	36	5.4	
NRDL	e P	Z	00:14:07.9	88.7	93.0	1.4	111	5.9	
STU	e P	Z	00:14:09.8	89.1	92.2	1.7	78	5.7	
TNS	e P	Z	00:14:12.5	89.7	91.7	1.4	73	5.7	
BFO	e P	Z	00:14:12.1	89.7	91.6	1.6	45	5.4	
IBBN	e P	Z	00:14:14.5	90.2	91.2	1.7	139	5.9	
BUG	e P	Z	00:14:15.8	90.5	90.8	1.2	46	5.6	
WLF	e P	Z	00:14:19.6	91.2	89.9	1.4	51	5.7	

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/28

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 01:53:40.6							

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/28 07:53:35.2  
Timor, Indonesia, region  
NEIC

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PP	Z 08:12:30.1	111.6	78.0					
	e pPP	Z 08:12:43.5							

Date Origin Time Lat Long Depth mb Ms ML Source  
2009/01/28 12:39:40.2  
Tonga Islands region  
SZGRF

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BSEG	e PKPbc	Z 12:59:13.0	144.9	4.3					
IBBN	e PKPbc	Z 12:59:18.4	146.6	0.1					
CLZ	e PKPbc	Z 12:59:19.8	147.0	4.6					
CLL	e PKPbc	Z 12:59:20.6	147.4	9.3					
BUG	e PKPbc	Z 12:59:21.2	147.5	359.2					
	e pPKPbc	Z 12:59:29.0							
BRG	e PKPbc	Z 12:59:21.8	147.7	11.1					
MOX	e PKPbc	Z 12:59:22.8	148.1	7.0					
	e pPKPbc	Z 12:59:30.9							

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TANN	e	PKPbc	Z	12:59:23.6	148.3	8.6					
ROTZ	e	PKPbc	Z	12:59:26.3	149.0	8.3					
	e	pPKPbc	Z	12:59:33.9							
GRA1	e	L	Z	14:09:11.0	149.1	6.5	21.0	521		5.3	
WLF	e	PKPbc	Z	12:59:27.4	149.2	357.1					
WET	e	PKPdf	Z	12:59:25.1	149.5	9.7					
	e	PKPbc	Z	12:59:27.6							
GEC2	e	pPKPbc	Z	12:59:35.8	149.7	11.3					
STU	e	PKPdf	Z	12:59:26.7	150.1	2.8					
	e	PKPbc	Z	12:59:29.4							
BFO	e	PKPbc	Z	12:59:30.5	150.6	1.2					
	e	pPKPbc	Z	12:59:38.5							
FUR	e	PKPbc	Z	12:59:30.9	150.6	6.9					
RJOB	e	PKPbc	Z	12:59:31.5	150.9	9.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/28	20:29:45.3	12.010N	92.900E	33.0G	5.4			SZGRF
Andaman Islands, India, region								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	20:41:20.8	73.8	90.8	0.9	34	5.4		
GEC2	e P	Z	20:41:21.9	73.9	90.1	0.8	41	5.5		
CLL	e P	Z	20:41:23.9	74.4	90.2	1.0	20	5.1		
WET	e P	Z	20:41:25.0	74.4	89.5	1.1	34	5.3		
RJOB	e P	Z	20:41:24.9	74.5	89.1	1.2	25	5.1		
TANN	e P	Z	20:41:26.4	74.7	89.6	1.2	24	5.1		
ROTZ	e P	Z	20:41:28.0	74.9	89.2	1.0	40	5.4		
MOX	e P	Z	20:41:29.4	75.2	89.0	0.9	23	5.2		
GRA1	e P	Z	20:41:31.5	75.5	88.4	0.9	33	5.4		
FUR	e P	Z	20:41:30.9	75.5	88.1	0.8	30	5.5		
BSEG	e P	Z	20:41:33.6	76.0	88.8	0.9	80	5.8		
CLZ	e P	Z	20:41:33.8	76.0	88.3	1.1	46	5.5		
NRDL	e P	Z	20:41:34.8	76.1	88.3	1.3	44	5.4		
STU	e P	Z	20:41:38.7	76.9	86.7	0.8	22	5.3		
TNS	e P	Z	20:41:41.2	77.3	86.4	0.9	24	5.3		
IBBN	e P	Z	20:41:42.8	77.6	86.4	1.2	63	5.6		
BUG	e P	Z	20:41:44.8	77.9	85.8	1.0	35	5.4		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/28	23:58:49.9	34.988N	29.762E	10.0G	4.9			SZGRF
Eastern Mediterranean Sea								

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GEC2	e P	Z	00:03:01.4	18.2	133.5	1.2	108	4.8		
WET	e P	Z	00:03:08.9	18.8	132.5	1.6	136	4.9		

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FUR	e P	Z	00:03:10.2	19.0	127.1	1.2	132	5.0
BRG	e P	Z	00:03:15.9	19.6	138.2	1.7	111	4.8
TANN	e P	Z	00:03:20.8	19.9	134.3	1.0	28	4.4
GRA1	e P	Z	00:03:22.4	20.0	130.4	1.5	148	5.0
CLL	e P	Z	00:03:25.5	20.3	137.1	1.4	126	5.0
MOX	e P	Z	00:03:27.8	20.4	133.1	1.2	58	4.7
STU	e P	Z	00:03:26.7	20.5	124.7	0.9	78	5.1
BFO	e P	Z	00:03:29.6	20.7	122.2	0.8	50	4.9
TNS	e P	Z	00:03:41.2	21.7	126.4	1.3	170	5.3
CLZ	e P	Z	00:03:41.0	21.8	133.0	1.0	22	4.5
WLF	e P	Z	00:03:50.4	22.6	121.5	0.8	33	4.9

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
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2009/01/29

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e PKP	Z 06:07:16.7							
	e pPKP	Z 06:07:30.9							

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/29	22:28:17.1	6.310S	69.780W	601.5	5.5			SZGRF

Western Brazil

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
WLF	e P	Z 22:39:54.3	85.8	255.2	1.0	114	5.9		
BFO	e P	Z 22:39:58.8	86.9	256.9	1.1	23	5.4		
BUG	e P	Z 22:39:59.1	87.0	255.9	1.4	87	5.9		
TNS	e P	Z 22:40:01.3	87.4	256.9	1.1	30	5.4		
IBBN	e P	Z 22:40:01.5	87.5	256.3	1.5	81	5.7		
UBBA	e P	Z 22:40:06.9	88.5	258.1	1.7	47	5.4		
FUR	e P	Z 22:40:07.8	88.8	259.1	1.2	67	5.8		
NRDL	e P	Z 22:40:08.5	88.9	258.1	1.2	28	5.4		
CLZ	e P	Z 22:40:08.7	88.9	258.4	1.5	52	5.5		
GRA1	e P	Z 22:40:09.3	89.0	259.1	1.4	43	5.5		
	e pP	Z 22:42:18.9							
MOX	e P	Z 22:40:11.3	89.5	259.4	1.5	20	5.2		
ROTZ	e P	Z 22:40:12.3	89.7	259.8	1.3	33	5.5		
TANN	e P	Z 22:40:13.4	90.0	260.0	1.4	31	5.4		
WET	e P	Z 22:40:13.5	90.0	260.3	1.5	53	5.7		
CLL	e P	Z 22:40:15.4	90.4	260.4	1.9	58	5.6		
GEC2	e P	Z 22:40:15.5	90.5	261.0	1.0	19	5.4		
BRG	e P	Z 22:40:18.0	91.0	261.2	1.3	28	5.4		

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Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/30	03:47:13.9	15.987S	174.288W	33.0N		5.5		SZGRF

Tonga Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
TANN	e PKPbc	Z 04:06:46.4	145.1	11.4					
TNS	e PKPbc	Z 04:06:48.4	145.7	4.7					
ROTZ	e PKPbc	Z 04:06:49.1	145.8	11.2					
GRA1	e PKPbc	Z 04:06:49.7	146.0	9.5					
	e L	Z 05:16:35.0			18.9	833		5.5	
WLF	e PKPbc	Z 04:06:51.0	146.3	0.8					
WET	e PKPbc	Z 04:06:50.8	146.3	12.5					
GEC2	e PKPbc	Z 04:06:51.1	146.5	14.0					
STU	e PKPbc	Z 04:06:53.0	147.1	6.2					
BFO	e PKPbc	Z 04:06:54.6	147.6	4.7					
RJOB	e PKPbc	Z 04:06:54.9	147.7	12.8					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/30	14:52:0.8	20.740S	169.150E	33.0N				SZGRF

Vanuatu Islands

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
TANN	e PKPbc	Z 15:11:34.0	145.1	40.3					
WERD	e PKPbc	Z 15:11:33.6	145.1	40.1					
GUNZ	e PKPbc	Z 15:11:34.1	145.2	40.2					
WERN	e PKPbc	Z 15:11:34.3	145.2	40.3					
NKC	e PKPbc	Z 15:11:34.3	145.2	40.5					
IBBN	e PKPbc	Z 15:11:34.2	145.3	31.6					
ROTZ	e PKPbc	Z 15:11:35.9	145.7	40.5					
GRA1	e PKPbc	Z 15:11:37.7	146.2	39.1					
BUG	e PKPbc	Z 15:11:36.8	146.2	31.5					
TNS	e PKPbc	Z 15:11:39.6	146.8	34.4					
RJOB	e PKPbc	Z 15:11:39.9	147.0	43.5					
STU	e PKPbc	Z 15:11:42.3	147.7	36.9					
WLF	e PKPbc	Z 15:11:43.5	148.1	31.1					
BFO	e PKPbc	Z 15:11:43.8	148.4	35.9					

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/30	16:38:3.2	38.139N	17.632W	33.0G	4.2			SZGRF

Azores-Cape St. Vincent Ridge

Sta	Phase	Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
GRA1	e P	Z 16:43:11.3	23.6	251.7	0.9	7	4.2		

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/31	04:27:37.7	11.762N	94.606E	28.4	5.2	4.4		SZGRF

Andaman Islands, India, region

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
BRG	e P	Z	04:39:16.9	75.0	89.7	0.9	18	5.1		
RUE	e P	Z	04:39:17.2	75.1	90.0	0.9	54	5.6		
	e pP	Z	04:39:25.6							
GEC2	e P	Z	04:39:17.9	75.2	89.0	0.8	21	5.2		
	e pP	Z	04:39:26.1							
FBE	e P	Z	04:39:19.3	75.4	89.2	0.8	32	5.4		
	e pP	Z	04:39:27.3							
CLL	e P	Z	04:39:19.7	75.6	89.1	0.9	10	5.0		
	e pP	Z	04:39:28.1							
WET	e P	Z	04:39:20.9	75.7	88.4	0.9	11	5.0		
RJOB	e P	Z	04:39:21.3	75.8	88.0	0.9	14	5.1		
TANN	e P	Z	04:39:22.2	76.0	88.4	0.9	7	4.8		
	e pP	Z	04:39:30.3							
WERN	e P	Z	04:39:22.7	76.0	88.3	0.9	8	4.9		
	e pP	Z	04:39:30.9							
GUNZ	e P	Z	04:39:22.8	76.1	88.3	0.9	15	5.1		
	e pP	Z	04:39:31.0							
WERD	e P	Z	04:39:22.8	76.1	88.3	0.9	14	5.1		
	e pP	Z	04:39:30.9							
ROTZ	e P	Z	04:39:23.9	76.2	88.1	1.0	14	5.0		
	e pP	Z	04:39:31.9							
PLN	e P	Z	04:39:23.3	76.2	88.2	0.8	38	5.6		
NEUB	e P	Z	04:39:24.4	76.4	88.1	1.0	19	5.2		
MOX	e P	Z	04:39:25.1	76.5	87.8	0.8	11	5.1		
	e pP	Z	04:39:33.4							
GRA1	e P	Z	04:39:27.1	76.8	87.3	2.7	121	5.6		
	e pP	Z	04:39:35.4							
	e L	Z	05:17:29.3			20.9	214		4.4	
FUR	e P	Z	04:39:27.1	76.8	87.0	0.8	16	5.2		
BSEG	e P	Z	04:39:29.1	77.2	87.6	0.8	45	5.6		
	e pP	Z	04:39:37.2							
CLZ	e P	Z	04:39:29.5	77.2	87.1	0.8	29	5.5		
	e pP	Z	04:39:37.6							
NRDL	e P	Z	04:39:30.3	77.4	87.1	1.0	20	5.2		
	e pP	Z	04:39:38.2							
UBBA	e P	Z	04:39:31.0	77.5	86.6	1.6	17	4.9		
STU	e P	Z	04:39:34.9	78.2	85.6	0.9	12	5.0		
TNS	e P	Z	04:39:36.8	78.5	85.3	0.8	11	5.0		
IBBN	e P	Z	04:39:38.1	78.8	85.2	0.9	44	5.5		
	e pP	Z	04:39:46.3							
BUG	e P	Z	04:39:40.2	79.2	84.7	0.9	34	5.4		
	e pP	Z	04:39:48.2							





RUE	e P	Z	22:03:58.5	79.6	39.7	1.1	74	5.5
	e pP	Z	22:04:10.9					
	e S	T	22:13:56.3					
HLG	e P	Z	22:04:03.0	80.4	35.6	1.1	145	5.9
	e pP	Z	22:04:15.4					
BRG	e P	Z	22:04:04.6	80.8	39.6	2.2	220	5.8
	e pP	Z	22:04:17.0					
CLL	e P	Z	22:04:04.5	80.8	39.0	0.9	66	5.7
	e pP	Z	22:04:16.9					
	e S	T	22:14:08.8					
FBE	e P	Z	22:04:05.9	81.0	39.2	0.9	83	5.8
	e pP	Z	22:04:18.3					
NRDL	e P	Z	22:04:05.6	81.0	37.1	1.0	32	5.3
	e pP	Z	22:04:18.1					
NEUB	e P	Z	22:04:07.6	81.4	38.1	0.9	68	5.8
	e pP	Z	22:04:20.1					
CLZ	e P	Z	22:04:08.3	81.4	37.2	0.9	55	5.7
	e pP	Z	22:04:20.7					
	e S	T	22:14:15.0					
TANN	e P	Z	22:04:09.8	81.7	38.5	1.0	14	5.1
	e pP	Z	22:04:22.2					
WERD	e P	Z	22:04:09.9	81.8	38.4	0.9	20	5.2
	e pP	Z	22:04:22.3					
PLN	e P	Z	22:04:10.3	81.8	38.3	1.1	116	5.9
	e pP	Z	22:04:22.7					
GUNZ	e P	Z	22:04:10.2	81.8	38.4	1.3	35	5.3
	e pP	Z	22:04:22.6					
WERN	e P	Z	22:04:10.5	81.8	38.5	1.0	19	5.2
	e pP	Z	22:04:23.0					
MOX	e P	Z	22:04:10.4	81.9	38.0	1.4	28	5.2
	e pP	Z	22:04:22.9					
	e L	Z	22:45:08.1			19.0	3511	5.7
IBBN	e P	Z	22:04:10.9	82.0	35.4	0.8	64	5.8
	e pP	Z	22:04:23.3					
ROTZ	e P	Z	22:04:13.4	82.3	38.3	1.7	52	5.5
	e pP	Z	22:04:25.8					
	e S	T	22:14:25.6					
UBBA	e P	Z	22:04:13.8	82.3	36.8	0.8	18	5.3
	e pP	Z	22:04:26.2					
GEC2	e P	Z	22:04:13.1	82.4	39.2	1.4	26	5.3
	e pP	Z	22:04:25.6					
WET	e P	Z	22:04:14.2	82.5	38.7	1.4	23	5.2
	e pP	Z	22:04:26.6					
GRA1	e P	Z	22:04:15.6	82.8	37.6	2.3	218	6.0
	e pP	Z	22:04:28.0					
	e L	Z	22:44:15.1			19.9	3134	5.7
BUG	e P	Z	22:04:15.3	82.9	34.9	1.2	17	5.2
	e pP	Z	22:04:27.7					
TNS	e P	Z	22:04:18.6	83.4	35.7	0.7	8	5.1

	e pP	Z	22:04:31.0						
RJOB	e P	Z	22:04:20.0	83.7	38.5	1.4		37	5.4
	e pP	Z	22:04:32.4						
FUR	e P	Z	22:04:21.3	84.0	37.5	1.0		46	5.6
	e pP	Z	22:04:33.8						
STU	e P	Z	22:04:22.9	84.3	36.1	1.1		37	5.5
	e pP	Z	22:04:35.4						
WLF	e P	Z	22:04:25.6	84.7	34.0	2.1		342	6.2
	e pP	Z	22:04:38.0						
BFO	e P	Z	22:04:26.3	85.0	35.5	1.1		53	5.7
	e pP	Z	22:04:38.7						

Date	Origin Time	Lat	Long	Depth	mb	Ms	ML	Source
2009/01/31	23:21: 9.8	52.290N	159.825E	33.0G	4.8	4.4		SZGRF

Off east coast of Kamchatka Peninsula, Russia

Sta	Phase		Time	Dist	BAz	T[s]	A[nm]	mb	MS	ML
CLL	e P	Z	23:32:33.7	72.7	20.5	0.9	8	4.8		
CLZ	e P	Z	23:32:34.8	72.7	19.0	0.9	8	4.9		
MOX	e P	Z	23:32:39.6	73.6	19.6	1.0	4	4.4		
WERN	e P	Z	23:32:41.0	73.8	20.0	1.2	7	4.6		
GRA1	e P	Z	23:32:46.0	74.6	19.3	0.7	12	5.1		
WET	e P	Z	23:32:46.4	74.8	20.2	1.3	8	4.6		
GRA1	e L	Z	00:14:13.0	74.6	19.3	21.6	233		4.4	

## Format description

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(T. Plenefisch, Email: plene@szgrf.bgr.de)

In general all regional and teleseismic events clearly recorded with stations of the Gräfenberg-Array (GRF) and stronger events recorded with stations of the German Regional Seismological Network (GRSN) are included in this bulletin. Each event is reported by an EPICENTER LINE, a REGION LINE and a block of PHASE LINES.

## EPICENTER LINE:

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, SED, MAD)

## REGION LINE:

The region name of the epicenter location.

## 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  
Component where the phase was picked

Time Arrival time of the reported phase  
Dist Distance from the epicenter location to the station in degree  
BAz Backazimuth from the epicenter location 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