TABLE DR1. Summary of source parameters for the 30 earthquakes

	Location			Hypocenter information								Source model parameters			Focal mechanism parameters		
Event ID	Latitude (°N)	Latitude (°E)	Depth (km)	Year	Month	Day	Hour	Minute	Second	Magnitude	Group	Corner frequency (Hz)	Source radius (m)	Stress drop (MPa)	Strike	Dip	Rake
33330735	37.91582	139.25754	155.926	2003	11	29	7	35	43.42	3.5	R1	8.5	215.6	9.8	43	25	123
42572101	37.91520	139.25893	155.959	2004	9	14	21	1	32.68	2.7	R1	*19.2*	*95.9*	*7**	–	–	–
63421614	37.91601	139.26117	156.119	2006	12	8	16	14	27.89	3.7	R1	10.2	180.4	33.3	54	36	114
81681528	37.91529	139.26100	156.094	2008	6	17	15	28	41.60	3.2	R1	*10.8*	*170.6*	*7**	45	35	111
93470535	37.91439	139.26172	156.053	2009	12	13	5	35	50.37	2.8	R1	*17.1*	*107.6*	*7**	56	36	134
102391147	37.91381	139.26016	156.029	2010	8	27	11	47	18.46	2.2	R1	*34.1*	*53.9*	*7**	–	–	–
41751814	37.91588	139.25633	156.044	2004	6	24	18	14	21.84	2.4	R2	22.1	83.3	3.8	–	–	–
50391906	37.91503	139.25883	155.989	2005	2	9	19	6	49.14	2.5	R2	26.1	70.5	8.8	–	–	–
61421046	37.91308	139.26144	155.969	2006	5	22	10	46	47.22	2.1	R2	*38.3*	*48.1*	*7**	–	–	–
71231348	37.91430	139.26041	155.946	2007	5	3	13	48	7.52	2.2	R2	*34.1*	*53.9*	*7**	–	–	–
80950824	37.91308	139.26105	155.909	2008	4	5	8	24	26.58	2.9	R2	13.6	135.3	5	220	17	52
81441415	37.91362	139.26192	155.886	2008	5	24	14	15	38.18	2.0	R2	*42.9*	*42.9*	*7**	–	–	–
83321938	37.91218	139.26064	155.767	2008	11	28	19	38	32.30	2.2	R2	*34.1*	*53.9*	*7**	–	–	–
101531125	37.91259	139.26050	155.905	2010	6	2	11	25	21.99	2.3	R2	24.2	76.0	3.5	215	16	53
50922014	37.91332	139.26172	155.398	2005	4	2	20	14	28.56	2.7	R3	20.3	90.6	8.3	10	35	55
80101109	37.91253	139.26357	155.449	2008	1	11	11	9	40.72	3.1	R3	12.9	142.3	8.5	40	24	79
53402301	37.91389	139.26244	154.866	2005	12	6	23	1	25.48	2.7	R4	*19.2*	*95.9*	*7**	266	16	145
60190146	37.91491	139.26097	154.945	2006	1	20	1	46	22.09	2.4	R4	*27.1*	*67.9*	*7**	213	20	90
91840319	37.91516	139.26315	155.016	2009	7	3	3	19	50.40	2.0	R4	*42.9*	*42.9*	*7**	–	–	–
51740513	37.91728	139.25737	155.023	2005	6	23	5	13	14.93	2.2	N1	*34.1*	*53.9*	*7**	–	–	–
103402315	37.91680	139.25674	154.972	2010	12	6	23	15	57.72	3.2	N1	*10.8*	*170.6*	*7**	349	41	-119
61870412	37.91805	139.25960	155.578	2006	7	6	4	12	44.28	2.8	N2	*17.1*	*107.6*	*7**	189	77	-91
71532050	37.91750	139.26010	155.410	2007	6	2	20	50	21.60	2.3	N2	*30.4*	*60.5*	*7**	182	78	-94
100280402	37.91658	139.26022	155.482	2010	1	29	4	2	16.30	2.8	N2	*17.1*	*107.6*	*7**	193	79	-97
92910233	37.91504	139.26070	154.690	2009	10	18	2	33	15.15	2.3	N3	*30.4*	*60.5*	*7**	19	76	-89
102960457	37.91449	139.26114	154.750	2010	10	23	4	57	40.49	2.7	N3	*19.2*	*95.9*	*7**	20	83	-91
72282125	37.91713	139.26073	154.712	2007	8	16	21	25	10.56	2.5	N4	*24.2*	*76.2*	*7**	114	17	-147
101300833	37.91634	139.25928	154.777	2010	5	10	8	33	35.82	2.8	N4	*17.1*	*107.6*	*7**	135	5	-136
30710207	37.91782	139.25792	154.949	2003	3	12	2	7	27.97	2.7	N5	*19.2*	*95.9*	*7**	142	54	-51
42141719	37.91817	139.25923	154.742	2004	8	2	17	19	3.06	2.5	N5	*24.2*	*76.2*	*7**	149	56	-80

*Stress drop of 7 MPa is assumed. Corner frequency and source radius for each eartqhuake (italics) are calculated with the assumed value of stress drop.

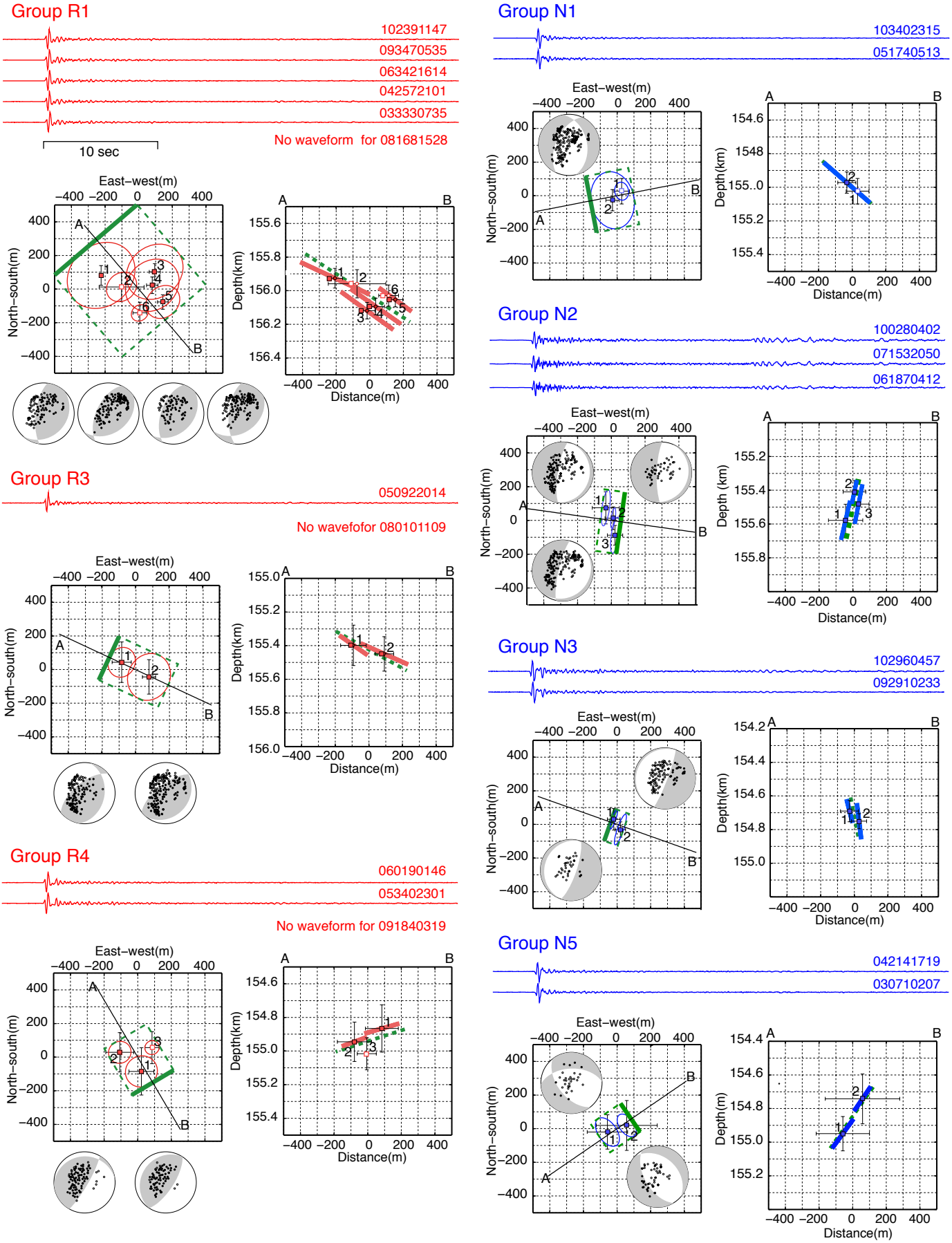

Figure DR1. Examples of analyzed results on other groups that are not shown in the manuscript. (Top) Waveforms at station N.MRMH for 30 seconds. Time scale is shown below waveforms of group R1. (Middle left) Map of rupture areas on a fault plane. Squares and bars denote the hypocenters and their errors, respectively. Colored squares denote earthquakes for which we have focal mechanisms. Ellipses indicate source areas of earthquakes. A series of events in each sub-group are numbered in order of occurrence. A green rectangle represents an apparent fault plane. (Middle right) Cross-sectional view of the distribution of hypocenters along line A-B. Colored lines denote the dip of a fault plane derived from focal mechanism. A dashed green line denotes the average dip of the fault plane. (Bottom) The focal mechanism solutions in the equal-area, lower hemisphere projection.

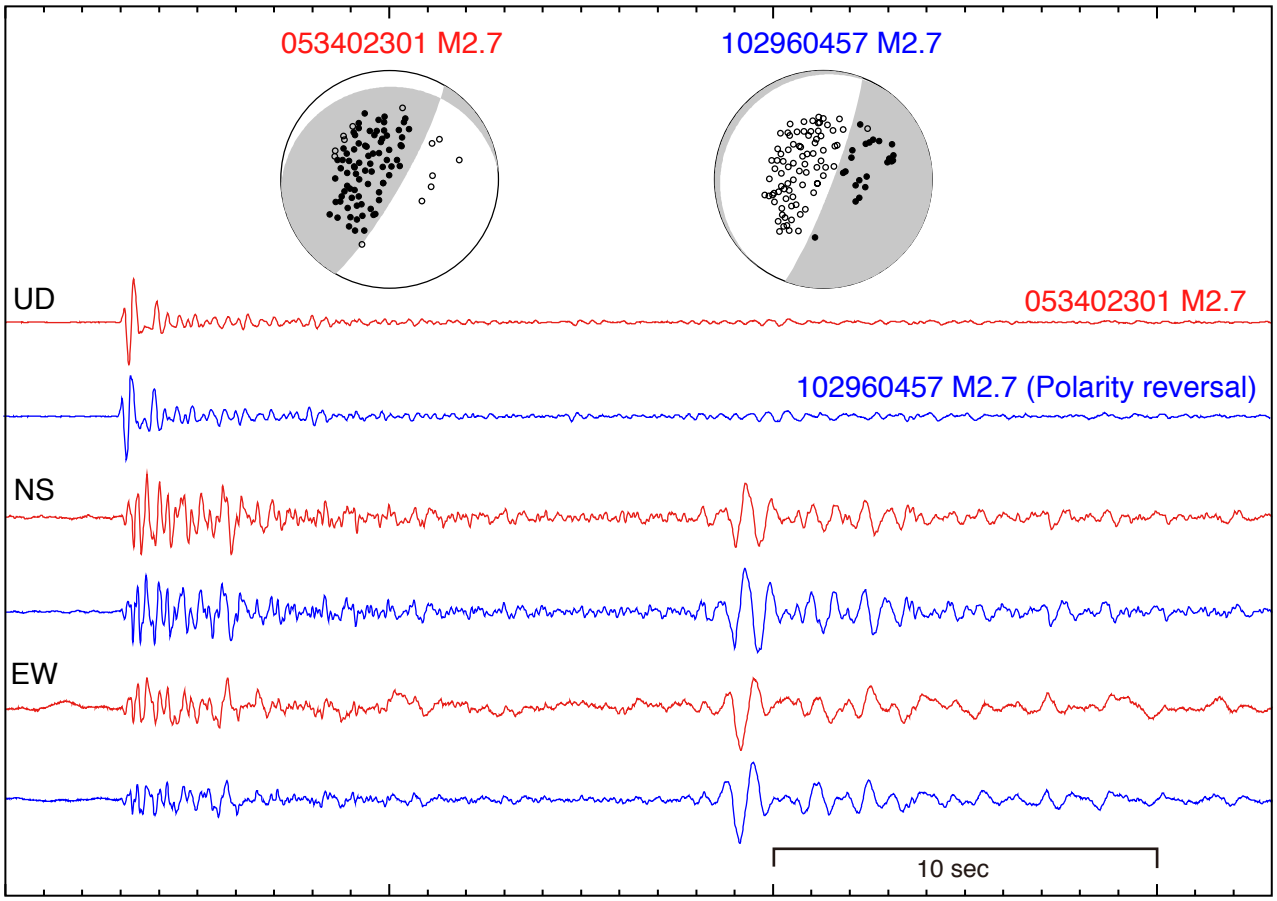

Figure DR2. Three component seismograms for events 053402301 (reverse fault) and 102960457 (normal fault), used in determining relative location using S-P travel-time differences. Waveforms at station M.MRMH are shown. Note that the polarity of seismograms for event 102960457 is reversed. After the reversal of polarity, waveforms of the two events are very similar. Focal mechanism solutions of the both earthquakes are shown in the equal-area, lower hemisphere projection. Solid and open circles indicate compressional and dilatational first motions, respectively.

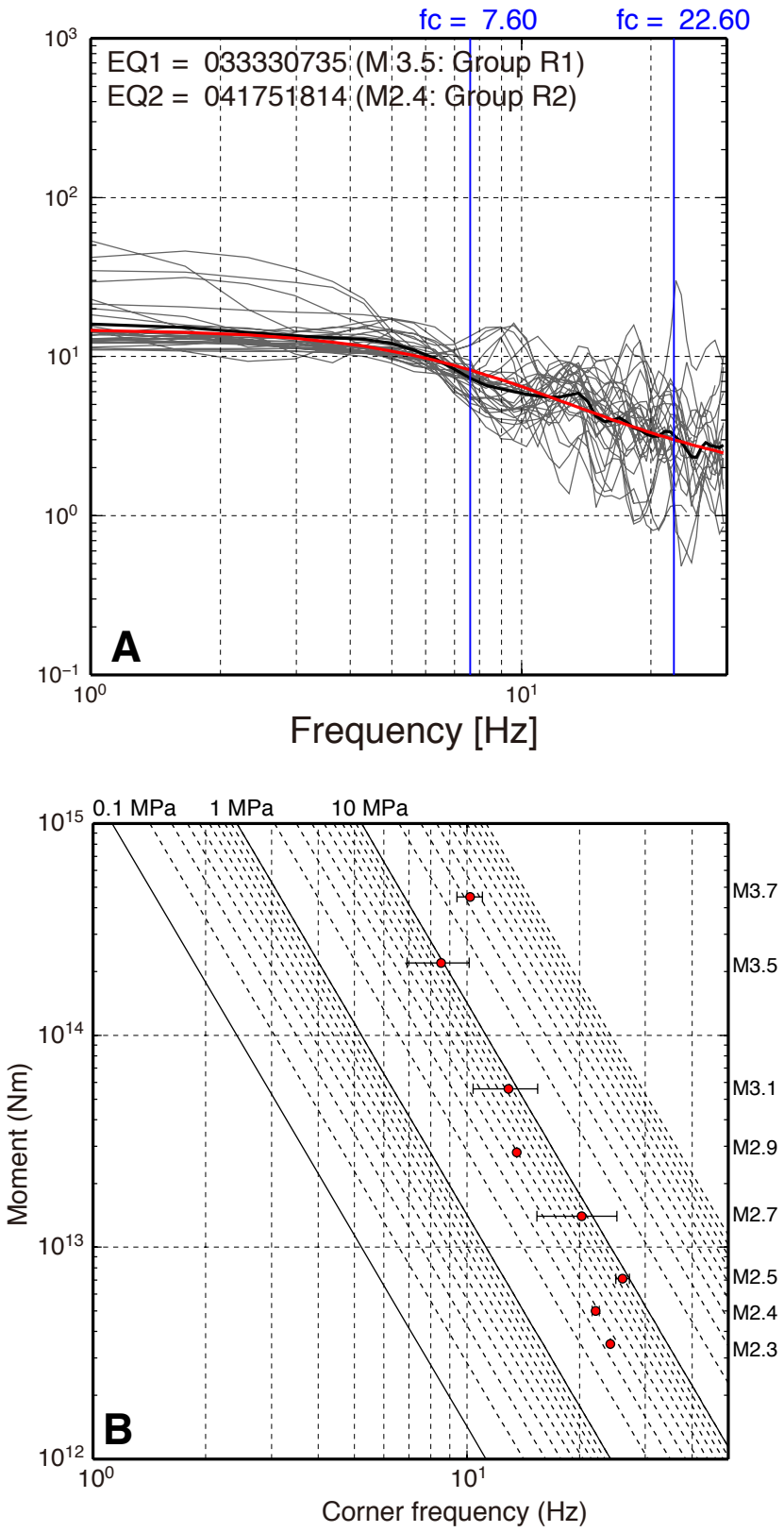

Figure DR3. A: An example of spectral ratios for various stations (gray thin lines) and stacked spectral ratio (black line) for an event pair (event IDs, magnitudes and groups are shown). Red line denotes the theoretical spectral ratio that explains the observation. Estimated corner frequencies for the two earthquakes are shown by blue lines with fc values. B: Plots of corner frequency (*fc*) versus seismic moments (*Mo*) for the 8 earthquakes whose corner frequencies can be estimated. Red circles denote *fc* and bars represent the standard deviation of *fc*. Solid and dashed lines denote values of static stress drop.