

Data Repository item 2007129**Table DR1: Events summary used in the splitting analysis**

Events	Mo.	Day	Time	Lat.	Long.	Depth	Mag.	Region
			GMT	(°N)	(°E)	km		
2003	7	27	114127	-20.13	-65.18	345	6	Bolivia
2003	7	27	20411	-21.08	-176.59	212	6.6	Tonga
2003	8	14	182306	-19.9	-177.98	563	5.9	Tonga
2003	8	21	121249	-45.1	167.14	28	7.5	New Zealand
2003	8	11	134019	-56.91	147.61	10	6	Macquarie
2003	9	2	182800	-15.23	-173.22	10	6.6	Samoa
2003	9	30	140837	-30.44	-177.4	10	6.5	Kermadec
2003	9	22	44536	19.78	-70.67	10	6.6	Dom. Rep.
2003	10	15	21943	-17.82	-178.7	582	6	Tonga
2003	10	7	45528	-16.53	-170.19	10	6.2	Samoa
2003	11	23	180605	-15.88	-173.85	976	5.7	Samoa
2003	11	6	103804	-19.26	168.89	113	6.6	New Caledonia
2003	11	2	53215	-45.19	166.54	10	6.4	New Zealand
2003	11	13	24902	-54.21	143.82	10	6	Macquarie
2003	12	16	200819	-18.91	-177.34	381	5.6	Tonga
2003	12	27	160059	-22.01	169.77	10	7.3	New Caledonia
2003	12	22	191556	35.71	-121.1	7	6.6	West coast US
2004	1	11	80705	-16.24	-176.18	366	5.9	Samoa
2004	1	11	92910	-20.14	-179.15	673	6	Tonga

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2004	1	25	114312	-16.83	-174.2	129	6.7	Samoa
2004	1	23	50030	-23.05	-69.89	71	5.9	Argentina
2004	2	25	165232	-20.67	-175.03	55	5.8	Tonga
2004	2	4	51844	-26.13	-63.46	558	5.8	Bolivia
2004	3	12	221314	-15.58	-175.1	271	6	Samoa
2004	3	17	32107	-21.12	-65.59	289	6.1	Bolivia
2004	3	9	225642	-32.26	-178.36	18	6.4	Kermadec
2004	5	6	151622	-15.75	-175.08	267	5.7	Samoa
2004	6	2	85037	-32.88	-179.45	43	6.2	Kermadec
2004	6	2	85037	-32.88	-179.45	43	6.2	Kermadec
2004	7	15	42714	-17.66	-178.76	565	7.1	Tonga
2004	9	28	152953	-52.51	28.02	10	6.4	south of South Africa
2004	9	11	215238	-57.98	-25.34	63	6.1	Sandwich Is.
2004	9	17	213447	-21.47	-68.32	127	5.9	Bolivia

Table DR2: Summary of the splitting measurements

Stations	Latitude (°)	Longitude (°)	ϕ (°) from N	σ_ϕ (°)	δt (s)	σ_t (s)	# Events
ES01	31.26	92.09	86	6	1.06	0.12	15
ES01	31.26	92.09	65	2	0.85	0.11	4
ES02	30.99	92.54	100.3	6	1.2	0.20	6
ES02	30.99	92.54	79.5	1	0.96	0.35	2
ES03	30.75	92.86	84	10	0.8	0.02	2

ES04	30.64	93.25	87	0	0.6	0	1
ES05	31.68	92.40	66.2	8	0.73	0.20	12
ES06	31.66	93.20	74	3	1.18	0.20	3
ES07	31.48	93.7	92.3	7	1.18	0.27	7
ES08	31.28	93.84	85.3	7	0.77	0.20	6
ES09	31.91	93.06	88.9	4	0.91	0.21	12
ES10	31.84	93.79	91	8	1.06	0.12	6
ES11	31.91	94.13	93	9	1.39	0.34	8
ES12	31.58	94.70	86	3	1.06	0.37	5
ES13	31.54	95.28	104	10	1.36	0.4	6
ES14	31.25	95.90	103	8	1.10	0.26	6
ES15	31.19	96.50	119.8	8	0.8	0.18	12
ES16	31.18	97.02	137.4	19	0.92	0.29	10
ES17	31.27	97.54	148.3	10	0.68	0.13	6
ES18	31.30	97.96	142	12	0.81	0.16	17
ES19 [*]	30.81	95.71	Null				
ES20 [*]	30.73	96.10	Null				
ES21 [*]	30.91	96.34	Null				
ES22 [*]	30.81	96.70	Null				
ES23 ⁺	30.69	97.26	125	1	0.5	0.04	23
ES24 ⁺	30.50	97.14	130	7	0.7	0.17	4
ES25	30.12	97.3	115.3	13	0.75	0.09	8
ES26	29.95	97.51	135.7	11	0.86	0.17	13

ES27	29.64	97.89	165.9	4	0.83	0.16	11
ES28	29.72	98.42	143.2	7	0.72	0.22	10
ES30	29.32	97.19	117	0	0.95	0	1
ES31 ⁺	29.51	96.75	120	5	0.3	0.04	9
ES32	29.76	96.10	Null				
ES33	29.77	95.70	Null				
ES34	29.91	95.47	Null				
ES36	29.81	93.91	87	10	1	0.4	5
ES37	29.90	93.51	99	8	1	0.17	4
ES38	30.02	92.96	89	8	1.15	0.1	2
ES38	29.87	92.62	45	0	0.85	0	1
ES39	29.87	92.62	44	13	1.13	0.3	12
ES40	29.71	92.15	45	10	0.9	0.2	9
ES41	29.19	91.76	29.6	8	1.42	0.22	5
ES42	28.90	91.94	Null				
ES43 ⁺	29.04	92.23	89	2	0.85	0.1	12
ES44 ⁺	29.07	93.38	96	2	0.8	0.1	8
ES45 [*]	29.12	93.78	Null				
ES46	29.24	94.25	41	6	0.85	0.24	2
ES47 [*]	29.48	94.41	Null				
ES48	29.49	94.58	55	2	0.6	0.09	3
MC01	31.0	102.35	0	4	1.06	0.4	11
MC02	30.38	102.43	Null				

MC03	30.00	102.49	151	8	0.65	0.16	7
MC04	30.05	101.48	70	11	1.05	0.17	18
MC05	29.99	100.22	Null				
MC06	28.94	99.79	168	7	1.04	0.22	7
MC07	29.04	100.42	47	22	1.29	0.18	5
MC08	28.99	101.51	147	9	0.81	0.2	14
MC09	28.96	102.76	153.6	12	0.6	0.15	10
MC10	28.98	103.87	116	6	1.12	0.03	2
MC11	28.33	103.12	167	9	0.8	0.1	15
MC12	27.66	102.20	144	11	0.8	0.2	6
MC13	27.74	100.76	97	0	1.3	0	1
MC14	27.86	99.73	178	6	1.43	0.33	9
MC15	26.76	99.98	2	8	0.8	0.19	8
MC16	27.18	103.63	122	6	1.75	0.28	2
MC17	26.47	101.74	Null				
MC18	26.06	103.20	Null				
MC19	25.73	101.89	136	18	0.9	0.05	4
MC20	25.78	100.61	Null				
MC21	25.49	99.64	93	5	0.88	0.15	4
MC22	24.53	100.24	125	8	1.03	0.4	4
MC23	24.93	101.51	Null				
MC24	24.17	102.83	95.6	10	1.08	0.06	5
MC25	24.89	103.67	98.3	15	0.95	0.3	4

Table DR2 caption: The direction of shear-wave polarization is measured from North. σ_ϕ and σ_t are the uncertainties for ϕ and δt calculated at one standard deviation. (*) Null measurements associated with a limited azimuthal coverage. (+) Splitting parameters derived using the stacking technique (Restivo and Helffrich, 1999). The stacking technique was applied at stations where transverse energy was observed and splitting was difficult to constrain using the other methods because a low signal to noise ratio.

Table DR3: Summary of the GPS velocities measured around the Eastern Syntaxis in the South China reference frame.

Sites	Lon (°)	Lat (°)	East (mm/yr)	± (mm/yr)	North (mm/yr)	± (mm/yr)
MLX1	94.184	29.189	11.66	1.0	13.23	0.8
BMZ1	96.886	30.055	11.72	0.3	1.35	0.3
RWZ1	96.763	29.505	9.21	0.9	1.26	0.8
CHY1	97.456	28.65	7.23	1.1	-1.74	0.8
GYX1	97.217	29.153	7.36	1.0	0.19	0.8
ZMZ1	95.738	29.87	13.52	1.2	5.89	0.9
SOZ1	96.094	29.745	8.08	1.9	2.91	1.6
TOM1	95.085	30.103	13.97	1.9	10.93	1.7
LLZ1	94.724	29.737	13.14	1.0	10.44	0.8
LZX1	94.418	29.601	13.01	0.9	11.27	0.8

PQX1	94.892	29.541	11.38	1.0	8.85	0.8	
LAC1	93.082	29.082	11.91	1.1	18.01	0.9	
GBD1	93.339	29.90	13.58	1.0	14.61	0.8	
LOZ1	92.439	28.432	9.65	2.1	21.99	1.9	
CAD1	97.122	31.164	12.79	1.0	3.89	0.8	
ZUG1	97.778	29.727	8.31	1.3	-0.71	1.1	
MKZ1	98.595	29.691	9.32	1.0	-2.2	0.9	

Seismic experiments and data quality

The two seismic surveys included the deployment of 73 broadband seismic stations, which recorded continuously at a sample rate of 40sps. The broadband seismic instruments used in the splitting analysis were composed of Reftek 72A-02 data loggers associated with four different types of sensors specifically Streckeisen STS2, Guralp CMG--3ESP, CMG--3T and CMG--40T. Only the events displaying good quality waveforms were retained for the analysis. Waveform plots are included below.

Figure DR1: Example of SKS waveforms.

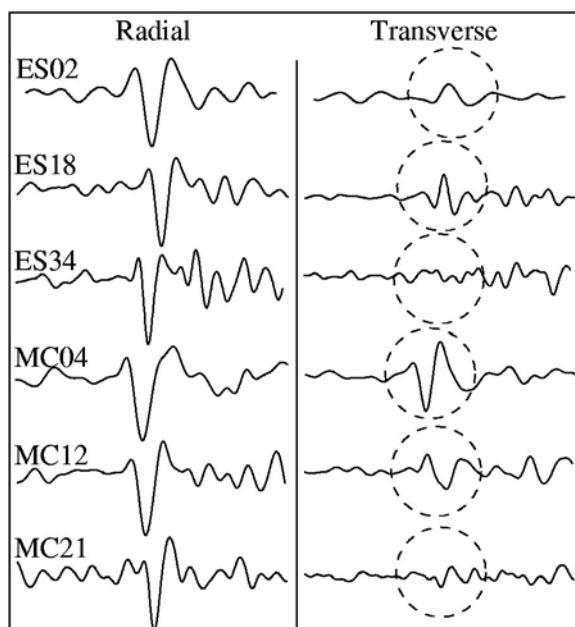


Figure DR1 shows good quality SKS waveforms recorded from the January 25, 2004 Samoa Isl. earthquake on both the radial and transverse components at six stations , three in Tibet, two in Sichuan and one in Yunnan. SKS transverse energy (dotted circle) indicative of anisotropy is clearly observed for most of the stations except ES34 located northeast of the Namche Barwa massif. The location of these stations is indicated in Table DR2.