

Supplementary Table 1a: Reference Frame Finite Rotations

Africa-Indian/Atlantic Hotspots

Age	Lat	Long	Angle	Reference
10.0	46.19	-87.86	-1.92	(1)
20.0	45.23	-78.55	-3.99	(1)
30.0	43.54	-69.67	-6.05	(1)
40.0	44.56	-54.31	-8.08	(1)
50.0	36.97	-58.90	-10.26	(1)
60.0	23.73	-42.14	-12.53	(1)
70.0	20.74	-39.07	-13.77	(1)
80.0	17.69	-36.11	-15.00	(1)
90.0	14.60	-33.26	-16.24	(1)
100.0	14.40	-29.63	-20.08	(1)
110.0	12.94	-28.58	-21.61	(2)*
120.0	14.00	-28.85	-22.28	(2)*
130.0	11.89	-27.27	-23.56	(2)*
140.0	9.99	-25.88	-24.89	(2)*

* Derived from (2) by adding stage rotations to rotations from (1)

Supplementary Table 1b: Atlantic Finite Rotations

North America-Northwest Africa

Age	Lat	Long	Angle	Reference
9.7	80.98	22.82	2.48	(3)
19.0	80.89	23.28	5.24	(3)
25.8	79.34	28.56	7.04	(3)
33.1	75.99	5.98	9.77	(3)
38.4	74.54	0.19	11.92	(3)
42.5	74.38	-2.80	13.56	(3)
46.3	74.23	-5.01	15.11	(3)
49.0	75.29	-4.26	15.95	(3)
52.4	77.34	-1.61	16.96	(3)
55.9	80.64	6.57	17.90	(3)
65.6	82.74	2.93	20.84	(3)
71.6	81.35	-8.32	22.75	(3)
73.6	81.11	-10.64	22.74	(3)
79.1	78.64	-18.16	26.98	(3)
83.5	76.81	-20.59	29.51	(3)
89.9	74.33	-22.65	33.86	(4)
94.1	72.00	-24.39	36.49	(4)
100.0	69.42	-23.52	40.46	(4)
106.9	68.08	-22.66	45.36	(4)
118.1	66.21	-21.00	53.19	(4)
120.4	66.28	-19.82	54.44	(5)
126.7	66.11	-18.95	56.48	(5)
131.9	65.95	-18.50	57.45	(5)
139.6	66.12	-18.38	59.90	(5)
147.7	66.54	-17.98	62.08	(5)
154.3	67.15	-15.98	64.75	(5)
170.0	67.02	-13.17	72.10	(6)

Greenland-North America

Age	Lat	Long	Angle	Reference
33.1	0.00	0.00	0.00	(7)*
43.8	63.25	-79.58	-1.81	(7)*
47.9	60.77	-96.82	-2.83	(7)*

53.3	39.68	-116.16	-3.74	(7)*
55.9	19.28	-136.19	-3.16	(7)*
68.7	49.25	-137.47	-6.07	(7)*
79.1	62.58	-125.53	-9.26	(7)*
85.0	62.58	-125.53	-10.26	(7)*
135.0	62.58	-125.53	-14.26	(7)*

* Based on (7)

Lomonosov Ridge-North America

Age	Lat	Long	Angle	Reference
43.8	0.00	0.00	0.00	(7)*

Lomonosov Ridge-Eurasia

43.8	66.25	140.91	9.86	(7)*
47.9	65.38	138.44	10.96	(7)
49.7	64.52	138.18	11.50	(7)
53.4	63.07	144.26	12.82	(7)
55.9	62.10	143.40	13.53	(7)*
58.0	61.30	143.40	16.00	(7)*

* Based on (7)

Jan Mayen Plate-Eurasia

Age	Lat	Long	Angle	Reference
33.1	64.90	-12.20	-8.00	(8)*
40.1	64.90	-12.20	-22.60	(5)
47.9	64.30	-12.70	-37.30	(9)
53.3	63.00	-16.00	-47.50	(8)*
56.0	63.00	-16.00	-48.00	(8)*

Jan Mayen Plate-Greenland

56.0	74.00	-14.70	-48.00	(8)*
57.0	74.00	-14.70	-50.00	(8)*

* Based on (8)

Europe-North America

Age	Lat	Long	Angle	Reference
10.9	66.44	132.98	-2.57	(7)
20.1	68.91	132.51	-5.09	(7)
33.1	68.22	131.53	-7.65	(7)
47.9	65.38	138.44	-10.96	(7)
53.3	63.07	144.26	-12.82	(7)
55.9	56.17	145.06	-13.24	(7)
68.7	54.45	147.06	-15.86	(7)
79.1	63.40	147.75	-18.48	(7)
83.5	61.14	148.40	-18.89	This Study
92.0	66.67	150.26	-20.37	(10)
105.0	66.85	152.34	-21.49	(10)
118.0	68.99	154.75	-23.05	(10)
145.0	68.99	154.75	-23.05	(10)
170.0	69.10	156.70	-23.64	This Study

Porcupine-North America

Age	Lat	Long	Angle	Reference
10.9	65.66	133.80	-2.54	(5)
20.1	68.77	136.75	-5.05	(5)
33.1	65.71	136.95	-7.43	(5)
40.1	61.63	140.50	-8.78	(5)
47.9	58.85	142.63	-10.43	(5)
55.9	59.99	143.61	-13.56	(5)

67.7	62.22	145.44	-16.33	(5)
83.5	64.35	149.97	-19.21	(5)
120.4	67.13	155.32	-22.54	(5)

Rockall-North America

Age	Lat	Long	Angle	Reference
10.9	65.66	133.80	-2.54	(5)
20.1	68.77	136.75	-5.05	(5)
33.1	65.71	136.95	-7.43	(5)
40.1	64.45	140.04	-9.06	(5)
47.9	61.82	142.32	-10.77	(5)
55.9	56.07	143.73	-13.25	(5)
67.7	58.93	147.05	-15.45	(5)
83.5	72.29	154.49	-20.94	(5)
120.4	75.32	159.61	-23.47	(5)

South America-Africa

Age	Lat	Long	Angle	Reference
2.7	62.20	-39.40	0.83	(3)
9.7	62.05	-40.59	3.18	(3)
19.0	58.77	-37.32	7.05	(3)
25.8	57.59	-36.27	9.96	(3)
33.1	56.17	-33.64	13.41	(3)
38.4	57.10	-33.00	15.91	(3)
46.3	56.95	-31.15	19.11	(3)
52.4	58.89	-31.18	21.38	(3)
55.9	61.35	-32.21	22.27	(3)
65.6	63.88	-33.61	24.76	(3)
71.6	63.41	-33.38	26.57	(3)
79.1	62.92	-34.36	30.99	(3)
83.5	61.88	-34.26	33.51	(3)
120.4	51.60	-35.00	52.92	(11)
126.7	50.40	-33.50	54.42	(11)
131.7	50.00	-32.50	55.08	(11)

Northwest Africa-South Africa

Age	Lat	Long	Angle	Reference
120.4	16.50	6.70	-1.15	(11)

Northwest Africa-South America

120.4	50.80	-34.20	-53.69	(11)
-------	-------	--------	--------	------

Malvinas-Africa

Age	Lat	Long	Angle	Reference
65.6	63.00	-33.30	0.70	(11)
71.1	62.90	-34.60	2.67	(11)
73.0	62.85	-34.75	3.59	(11)
79.1	62.71	-36.26	7.00	(11)
83.5	58.55	-33.73	9.52	(11)

Supplementary Table 1c: Indian Finite Rotations

India-Central Indian Basin

Age	Lat	Long	Angle	Reference
10.9	-8.70	76.90	2.75	(12)

20.1	-5.20	74.30	5.93	(5)
83.5	-5.20	74.30	5.93	(5)
India-Madagascar				
83.5	22.30	19.50	-51.40	This study
88.0	19.80	27.20	-59.16	This study
120.4	24.02	32.04	-53.01	This study
124.0	23.14	33.10	-54.51	This study
India-Elan Bank Plate				
124.0	1.34	-165.88	79.66	This study
132.1	1.34	-165.88	79.66	This study
India-Madagascar				
132.1	18.45	31.00	-61.52	This study
Central Indian Basin-Antarctica				
Age	Lat	Long	Angle	Reference
10.9	13.10	36.10	-6.61	(12)
20.1	15.40	32.70	-11.97	(12)
33.1	13.80	33.40	-20.41	(12)
40.1	16.60	29.90	-23.62	(5)
47.9	14.93	26.05	-27.71	(5)
55.9	11.36	20.00	-37.64	(5)
67.7	9.40	13.70	-51.59	(5)
83.5	7.80	10.90	-65.10	(5)
Central Indian Basin-India				
83.5	5.20	-105.70	5.93	(5)
Elan Bank Plate (Enderby Basin)-Antarctica				
Age	Lat	Long	Angle	Reference
124.0	0.00	0.00	0.00	(13)
124.7	18.02	164.67	0.55	(13)
126.7	38.50	-172.21	2.33	(13)
128.9	40.58	-168.78	5.57	(13)
132.1	27.32	-178.18	9.82	(13)
Elan Bank Plate (Enderby Basin)-India				
132.1	1.34	-165.88	-79.65	(13)
Central MesoTethys North-Central MesoTethys South				
Age	Lat	Long	Angle	Reference
130.0	0.00	0.00	0.00	This Study
140.0	49.95	-1.36	-6.92	This Study
154.0	49.97	-1.03	-16.37	This Study
160.0	49.97	-0.98	-20.41	This Study
180.0	50.01	-0.93	-33.93	This Study
190.0	49.78	-0.37	-40.72	This Study
200.0	49.62	-0.08	-47.50	This Study
210.0	49.45	0.18	-54.29	This Study
220.0	49.36	0.38	-61.07	This Study
230.0	49.25	0.53	-67.86	This Study
240.0	49.19	0.65	-74.65	This Study
250.0	49.13	0.78	-81.44	This Study
260.0	49.07	0.88	-88.23	This Study
270.0	49.03	0.96	-95.02	This Study
280.0	48.98	1.04	-101.81	This Study
Western MesoTethys-Africa				
Age	Lat	Long	Angle	Reference
120.0	0.00	0.00	0.00	This Study

140.0	48.65	-5.47	-5.52	This Study
154.0	49.44	-2.49	-14.96	This Study
160.0	49.52	-2.10	-19.00	This Study
180.0	49.70	-1.54	-32.52	This Study
190.0	49.51	-0.83	-39.31	This Study
200.0	49.36	-0.44	-46.09	This Study
210.0	49.21	-0.11	-52.88	This Study
220.0	49.14	0.15	-59.66	This Study
230.0	49.04	0.34	-66.45	This Study
240.0	48.99	0.50	-73.24	This Study
250.0	48.94	0.66	-80.02	This Study
260.0	48.89	0.78	-86.81	This Study
270.0	48.86	0.89	-93.60	This Study
280.0	48.82	0.98	-100.39	This Study

Eastern MesoTethys North-Eastern MesoTethys South

Age	Lat	Long	Angle	Reference
150.0	0.00	0.00	0.00	This Study
160.0	50.04	-0.76	-6.48	This Study
180.0	50.08	-0.84	-20.01	This Study
200.0	49.60	0.39	-33.59	This Study
220.0	49.35	0.90	-47.16	This Study
240.0	49.19	1.17	-60.74	This Study
260.0	49.13	1.36	-74.31	This Study
280.0	49.07	1.49	-87.89	This Study

Central NeoTethys South-India

Age	Lat	Long	Angle	Reference
135.9	0.00	0.00	0.00	This Study
200.0	19.95	18.98	69.28	This Study

North India-Australia

Age	Lat	Long	Angle	Reference
83.5	11.50	-7.70	-37.08	(14)
99.0	6.89	0.33	-44.68	Müller et. al. 2000
120.4	5.26	-176.95	53.96	(15)
124.0	6.56	-176.61	55.28	(15)
124.7	6.97	-176.51	55.70	(15)
126.7	7.79	-176.29	56.60	(15)
127.7	8.18	-176.19	57.04	(15)
128.2	8.30	-176.18	57.24	(15)
128.4	8.44	-176.16	57.49	(15)
129.0	8.64	-176.14	57.82	(15)
129.5	8.89	-176.12	58.24	(15)
130.2	9.13	-176.09	58.66	(15)
130.9	9.43	-176.06	59.20	(15)
132.1	9.82	-176.01	59.91	(15)
133.4	10.30	-175.96	60.81	(15)
134.0	10.68	-175.92	61.54	(15)
135.0	10.99	-175.89	62.16	(15)
135.3	11.21	-175.86	62.60	(15)
135.9	11.54	-175.83	63.28	(15)
136.2	11.80	-175.80	63.81	(15)

Burma-North India

Age	Lat	Long	Angle	Reference
130.9	0.00	0.00	0.00	(14)*

Burma-West Burma				
130.9	43.77	68.70	97.41	(14)*
* Based on (14)				

West Burma-Sino/Malaya				
Age	Lat	Long	Angle	Reference
11.0	17.51	137.86	5.01	(16)
14.9	1.82	26.76	-6.01	(17)
73.0	1.82	26.76	-6.01	(17)
80.0	8.67	100.09	46.22	(17)

West Burma-North India				
80.0	43.77	68.70	97.41	(14)
130.9	43.77	68.70	97.41	(14)

West Burma-Australia				
130.9	20.40	106.86	99.67	(14)
133.3	19.65	107.67	102.45	(14)
135.3	19.09	109.40	104.39	(14)
135.8	19.01	109.61	105.11	(14)
137.9	18.04	110.32	107.06	(14)
146.7	14.11	113.15	115.81	(14)
150.4	12.58	114.21	119.54	(14)
152.1	11.93	114.66	121.16	(14)
154.1	11.10	115.23	123.31	(14)
155.9	10.36	115.73	125.28	(14)

Eastern NeoTethys South-West Burma				
Age	Lat	Long	Angle	Reference
135.9	0.00	0.00	0.00	(14)

Eastern NeoTethys South-Australia				
135.9	18.92	109.67	-105.28	(14)

Madagascar-Africa				
Age	Lat	Long	Angle	Reference
120.4	0.00	0.00	0.00	This Study
124.1	2.57	-63.33	1.50	This Study
126.7	2.57	-63.33	2.43	This Study
128.2	2.57	-63.33	3.17	This Study
130.2	2.57	-63.33	3.94	This Study
132.1	2.57	-63.33	4.68	This Study

Madagascar-Antarctica				
132.1	11.34	154.17	42.60	This Study
145.1	10.89	153.08	43.20	This Study

Seychelles-Madagascar				
Age	Lat	Long	Angle	Reference
64.0	0.00	0.00	0.00	This Study
68.7	4.32	28.67	-12.94	This Study
83.5	1.69	40.73	-27.79	This Study

Mascarene-Madagascar				
Age	Lat	Long	Angle	Reference
60.9	0.00	0.00	0.00	This Study
62.5	4.32	28.67	-2.94	This Study
64.7	9.04	26.79	-5.30	This Study
68.7	4.32	28.67	-12.94	This Study
73.3	4.25	30.73	-19.27	This Study
83.5	-4.50	46.00	-45.16	(5)

96.3	-2.90	44.80	-50.00	(5)
------	-------	-------	--------	-----

Antarctica-Africa

Age	Lat	Long	Angle	Reference
10.9	8.20	-49.40	1.53	(12)
20.1	10.70	-47.90	2.78	(12)
33.1	12.00	-48.40	5.46	(12)
40.1	13.60	-41.40	7.47	(18)
51.7	8.50	-40.80	10.01	(18)
63.1	11.30	-49.60	11.10	(18)
75.5	-4.00	-40.90	14.03	(18)
76.3	-4.60	-40.60	14.39	(18)
83.5	-0.45	-40.01	17.77	(19)
99.0	-2.50	-34.03	26.12	(20)
120.4	10.36	153.67	-41.56	This Study
124.7	9.45	152.50	-42.91	This Study
126.7	9.30	152.00	-43.71	This Study
132.1	8.90	151.20	-46.29	This Study
134.0	8.72	151.10	-47.27	This Study
136.7	8.39	150.64	-48.16	This Study
137.9	8.25	150.44	-48.55	This Study
140.4	7.96	150.04	-49.38	This Study
148.1	6.79	146.80	-51.55	This Study
160.0	10.45	148.76	-58.19	This Study

Arabia-Africa

Age	Lat	Long	Angle	Reference
10.9	25.90	24.40	4.12	(5)
20.1	24.87	18.45	5.64	(5)
33.1	22.54	27.07	9.46	(5)

Supplementary Table 1d: Antarctic Finite Rotations

Australia-Antarctica

Age	Lat	Long	Angle	Reference
10.9	13.10	36.10	-6.55	(12)
20.1	15.40	32.70	-11.97	(12)
33.1	13.80	33.40	-20.41	(12)
40.1	16.60	29.90	-23.62	(5)
47.9	14.00	31.47	-24.80	(5)
55.9	11.72	32.01	-25.35	(5)
67.7	8.70	33.20	-25.83	(5)
83.5	4.90	35.80	-26.81	(5)
99.0	-5.92	41.22	-28.61	This Study
120.4	11.10	-137.17	29.65	This Study

Marie Byrd Land-East Antarctica

Age	Lat	Long	Angle	Reference
26.6	-18.15	-17.85	0.00	(21)
33.6	-18.15	-17.85	0.70	(22)
43.8	-18.15	-17.85	1.70	(21)
53.4	-18.15	-17.85	1.70	(22)
61.1	-18.15	-17.85	2.20	based on (22)
120.0	-18.15	-17.85	2.20	based on (22)
156.6	72.60	-10.70	12.97	this study

Iselin Bank-Marie Byrd Land

Age	Lat	Long	Angle	Reference
53.3	-73.00	175.00	0.00	(21)
61.1	-73.00	175.00	-7.00	(21)

Supplementary Table 1d: Pacific Finite Rotations

Pacific-Marie Byrd Land (West Antarctica)

Age	Lat	Long	Angle	Reference
0.8	64.25	-79.06	0.68	(23)
2.6	67.03	-73.72	2.42	(23)
5.9	67.91	-77.93	5.42	(23)
8.9	69.68	-77.06	7.95	(23)
10.9	70.86	-75.96	9.71	(23)
12.3	71.75	-73.77	10.92	(23)
17.5	73.68	-69.85	15.17	(23)
20.1	74.15	-68.70	16.90	(23)
24.1	74.72	-67.28	19.55	(23)
28.3	74.55	-67.38	22.95	(23)
33.5	74.38	-64.74	27.34	(23)
42.5	74.90	-51.31	34.54	(23)
47.9	74.52	-50.19	37.64	(23)
53.4	73.62	-52.50	40.03	(23)
61.1	71.38	-55.57	44.90	(23)
67.7	68.94	-55.52	49.60	(24)
73.6	66.72	-55.04	53.74	(24)
83.5	65.58	-52.38	63.07	(24)

Pacific-Pacific Hotspots

83.5	59.80	-59.50	61.07	(25)*
96.0	60.99	-68.50	67.28	(25)*
110.0	64.55	-65.80	71.47	(25)*
125.0	66.33	-68.54	83.14	(25)*
140.0	66.33	-48.57	90.91	(25)*

* Derived from (25) by adding stage rotations to rotations from (24)

Bellinghausen-Pacific

Age	Lat	Long	Angle	Reference
61.2	70.43	-56.55	-44.00	This Study
63.8	70.43	-56.55	-46.35	(24)
67.7	70.88	-51.01	-52.48	(24)
71.5	71.40	-42.69	-59.57	(24)
73.6	70.98	-41.28	-62.70	(24)

Aluk Plate-Marie Byrd Land

Age	Lat	Long	Angle	Reference
20.1	6.60	150.17	11.10	This Study
33.1	6.60	150.17	14.80	This Study
40.1	6.60	150.17	18.50	This Study
47.9	6.60	150.17	22.20	This Study

Pacific-Farallon

Age	Lat	Long	Angle	Reference
10.9	60.11	-89.75	-14.88	This Study
23.0	73.53	-92.61	-31.08	This Study
33.1	76.10	-110.70	-45.27	(26)
40.1	82.19	-122.97	-52.24	This Study
47.9	85.24	-160.16	-62.78	This Study
55.9	84.28	135.44	-71.47	This Study

67.7	82.93	125.82	-80.17	This Study
83.5	81.35	119.76	-93.37	This Study
120.4	71.12	92.43	-128.09	This Study
126.7	68.55	91.88	-131.50	This Study
131.9	66.01	91.24	-134.89	This Study
139.6	64.83	92.55	-141.27	This Study
147.7	63.46	94.64	-147.89	This Study
154.3	61.30	94.85	-156.46	This Study
160.0	61.43	96.02	-169.11	This Study
170.0	59.86	99.52	-181.77	This Study

Vancouver-Pacific

Age	Lat	Long	Angle	Reference
10.9	82.60	4.60	-7.94	This Study
20.1	82.60	4.60	-15.65	(5)
33.1	88.47	-135.73	-35.27	(5)
40.1	87.29	-163.17	-44.92	(5)
47.9	86.65	-179.21	-52.73	(5)
55.9	85.75	133.44	-57.99	(5)
67.7	82.67	109.04	-65.82	(5)
83.5	77.10	93.60	-75.91	(5)
120.4	72.20	85.90	-104.18	(5)
126.7	67.75	81.35	-106.34	(5)
131.9	64.81	79.22	-107.98	(5)
139.6	61.40	79.62	-112.88	(5)
147.7	59.22	80.42	-117.06	(5)

Cocos-Pacific

Age	Lat	Long	Angle	Reference
5.0	39.13	-108.60	-10.25	This Study
10.0	35.30	-105.60	-25.08	This Study
20.0	40.42	-117.81	-47.44	This Study
23.0	39.80	-119.70	-54.29	This Study
33.1	68.83	-103.84	-50.86	This Study

Nazca-Pacific

Age	Lat	Long	Angle	Reference
10.9	60.11	-89.75	-14.88	(5)
20.1	64.50	-91.50	-30.70	(5)

Phoenix-Pacific

Age	Lat	Long	Angle	Reference
67.7	82.80	170.40	-82.06	(27)
83.5	76.19	-90.70	-87.96	This Study
86.0	75.82	-87.26	-87.78	This Study

Phoenix-Hikurangi(Moa)

86.0	75.82	-87.49	-87.77	This Study
120.4	75.82	-87.49	-87.77	This Study

Phoenix-Pacific

120.4	63.32	-36.31	-94.68	This Study
126.7	56.74	-43.64	-100.39	This Study
139.6	48.19	-49.52	-108.96	This Study
147.7	45.36	-51.24	-113.25	This Study
154.3	42.23	-53.01	-117.54	This Study
160.0	36.04	-55.39	-127.15	This Study
170.0	33.67	-56.25	-131.16	This Study

Hikurangi (Moa)-Pacific

Age	Lat	Long	Angle	Reference
86.0	0.00	0.00	0.00	This Study
120.0	5.60	129.85	30.33	This Study
150.0	5.60	129.85	30.33	This Study

Izanagi-Pacific

Age	Lat	Long	Angle	Reference
60.0	0.00	0.00	0.00	This Study
120.4	60.71	-131.38	78.02	This Study
126.7	60.94	-133.76	84.97	This Study
131.9	60.77	-135.76	90.92	This Study
139.6	59.85	-135.99	98.08	This Study
147.7	59.09	-136.37	108.98	This Study
154.3	59.39	-137.65	115.73	This Study
160.0	57.20	-136.36	130.27	This Study
170.0	56.42	-135.35	143.78	This Study

Kula-Pacific

Age	Lat	Long	Angle	Reference
41.0	0.00	0.00	0.00	This Study
47.9	53.00	-82.50	4.40	This Study
55.9	3.44	105.95	-9.78	This Study
67.7	10.42	108.36	-15.70	This Study
79.0	10.42	108.36	-21.37	This Study

Supplementary Table 1f: Marginal and Back-arc Basin Finite Rotations

South Philippine Sea-Eurasia

Age	Lat	Long	Angle	Reference
5.0	48.20	157.00	5.45	(28)
25.0	19.22	158.31	38.67	(28)
40.0	19.22	158.31	38.67	(28)
50.0	9.14	141.86	83.54	(28)

South Philippine Sea-Pacific

50.0	-5.82	122.99	95.11	(28)
------	-------	--------	-------	------

North Philippine Sea-South Philippine Sea, West Philippine Basin

Age	Lat	Long	Angle	Reference
34.0	0.00	0.00	0.00	This Study
34.9	16.81	86.12	-1.14	This Study
35.3	13.74	86.24	-2.04	This Study
38.1	13.74	86.24	-3.32	This Study
39.6	13.74	86.24	-4.81	This Study
43.8	15.19	90.74	-7.27	This Study
47.9	17.04	90.74	-9.35	This Study
49.7	19.73	90.13	-12.04	This Study
53.4	22.32	94.29	-16.10	This Study
55.9	23.91	94.07	-17.61	This Study
57.9	26.18	94.36	-20.75	This Study

East Parece Vela Basin-West Parece Vela Basin

Age	Lat	Long	Angle	Reference
15.0	0.00	0.00	0.00	(29)
17.3	35.00	84.44	-1.34	(29)
20.1	37.46	84.27	-2.64	(29)
21.3	39.52	92.84	-3.99	(29)
22.6	42.08	102.55	-5.11	(29)
23.4	43.64	111.93	-7.02	(29)
25.2	44.26	118.69	-9.58	(29)
26.5	44.39	121.28	-11.15	(29)
28.0	44.45	123.26	-12.74	(29)

East Shikoku Basin-West Shikoku Basin

Age	Lat	Long	Angle	Reference
15.0	0.00	0.00	0.00	(29)
17.3	35.00	84.44	-1.27	(29)
18.3	36.78	84.32	-1.45	(29)
20.1	8.00	154.14	3.85	(29)
21.3	4.88	154.14	4.81	(29)
22.6	4.88	151.58	6.80	(29)
23.4	4.88	152.65	8.47	(29)
25.2	4.88	152.65	10.78	(29)
26.5	4.88	152.65	13.09	(29)
28.0	4.88	152.65	14.52	(29)

East Mariana Trough-East Parece Vela Basin, Mariana Trough

Age	Lat	Long	Angle	Reference
6.7	23.36	138.24	-12.53	(17)

Ayu Trough-South Philippine Basin

Age	Lat	Long	Angle	Reference
15.0	9.87	132.00	-25.00	(28)
25.0	9.87	132.00	-25.00	(28)
35.0	9.45	135.84	-13.98	(28)

Southwest Caroline Basin-Western Caroline Basin

Age	Lat	Long	Angle	Reference
25.8	0.00	0.00	0.00	(28)
26.6	0.00	0.00	0.06	(28)
28.7	0.00	0.00	3.40	(28)
30.1	0.00	0.00	0.24	(28)
33.1	2.76	94.60	3.40	(28)
35.3	1.45	-85.74	-8.63	(28)
36.6	1.45	-85.74	-9.80	(28)
37.0	1.45	-85.74	-10.40	(28)
40.0	1.45	-85.74	-11.20	(28)

Northeast Caroline Basin-Southeast Caroline Basin

Age	Lat	Long	Angle	Reference
25.8	0.00	0.00	0.00	(28)
26.6	4.44	169.58	-1.60	(28)
27.0	6.82	170.18	-1.88	(28)
28.0	12.07	171.21	-2.84	(28)
28.3	13.40	175.08	-2.84	(28)
28.7	15.43	-173.90	-2.77	(28)
29.4	19.85	-153.83	-2.89	(28)
30.1	19.85	-129.30	-3.04	(28)
30.5	19.85	-129.29	-3.16	(28)
30.9	19.85	-129.28	-3.74	(28)
33.1	19.02	-118.23	-4.35	(28)
35.3	19.02	-118.23	-5.30	(28)
37.0	19.02	-118.23	-6.30	(28)

South China Sea (south)-South China Sea (north)

Age	Lat	Long	Angle	Reference
15.0	0.00	0.00	0.00	(30)
16.8	-3.00	93.60	0.70	(30)
17.6	5.00	105.50	3.70	(30)
18.9	-1.40	88.70	2.40	(30)
20.1	0.10	83.30	2.80	(30)
21.3	0.10	81.30	3.50	(30)
23.1	-1.10	75.90	3.90	(30)
25.2	7.00	87.80	7.50	(30)
26.6	9.30	91.20	10.30	(30)
28.0	8.20	87.40	10.30	(30)
28.6	7.90	85.70	10.80	(30)
30.1	7.90	85.70	11.10	(30)

North South China Sea-North South China Sea (south)

Age	Lat	Long	Angle	Reference
28.6	0.00	0.00	0.00	(30)
30.1	10.90	84.90	1.40	(30)

Proto South China Sea-North South China Sea (south)

Age	Lat	Long	Angle	Reference
50.0	0.00	0.00	0.00	This Study

55.9	41.57	25.50	-1.68	This Study
67.7	41.19	25.54	-5.16	This Study
83.5	41.98	25.48	-9.72	This Study
90.0	42.24	25.44	-11.64	This Study

Celebes Sea-Kalimantan

Age	Lat	Long	Angle	Reference
34.0	0.00	0.00	0.00	(28)
35.6	-9.00	100.00	1.00	(28)
38.1	-9.00	100.00	4.50	(28)
40.1	-9.00	100.00	8.60	(28)
41.5	-9.00	100.00	11.00	(28)
43.8	-9.00	100.00	15.00	(28)
47.9	-9.00	100.00	18.30	(28)
50.0	-9.00	100.00	20.00	(28)

Banda Sea-Banda Arc

Age	Lat	Long	Angle	Reference
3.5	0.00	0.00	0.00	This Study
5.9	18.31	-80.00	2.30	This Study
6.5	20.00	-80.00	3.10	This Study
8.0	20.00	-80.00	4.40	This Study

East Japan Sea-West Japan Sea

Age	Lat	Long	Angle	Reference
15.0	0.00	0.00	0.00	This Study
30.0	50.00	155.00	-7.50	This Study

Lord Howe Rise-Australia, Tasman Sea

Age	Lat	Long	Angle	Reference
52.2	0.00	0.00	0.00	(31)
53.3	-14.19	130.41	-0.72	(31)
55.8	-15.93	133.47	-2.11	(31)
57.9	-16.93	136.23	-3.79	(31)
61.2	-4.65	131.51	-4.43	(31)
62.5	-4.71	132.68	-5.17	(31)
64.0	-0.19	130.37	-5.46	(31)
65.6	-3.99	131.80	-6.73	(31)
67.7	-9.04	134.46	-8.83	(31)
71.1	-14.72	139.04	-13.08	(31)
73.6	-9.53	137.20	-12.94	(31)
79.0	0.37	133.82	-13.00	(31)
86.0	4.06	-42.35	15.51	(31)
90.0	3.27	-42.59	18.34	This Study

Louisiade Plateau-Australia, Coral Sea

Age	Lat	Long	Angle	Reference
52.0	0.00	0.00	0.00	(32)
53.3	-7.75	144.57	-2.08	(32)
55.8	7.15	124.35	-1.89	(32)
57.9	1.14	132.09	-4.63	(32)
61.2	-3.01	137.84	-10.65	(32)
63.0	2.89	-43.55	11.42	This Study

North Loyalty Basin (south)-North Loyalty Basin (north)

Age	Lat	Long	Angle	Reference
35.0	0.00	0.00	0.00	

35.3	6.00	-155.00	-1.65	Sdrolias et. al. 2003
38.1	-0.61	-149.64	-3.41	Sdrolias et. al. 2003
39.6	6.00	-155.00	-5.05	Sdrolias et. al. 2003
43.8	5.70	-153.10	-7.99	Sdrolias et. al. 2003

Northwest South Fiji Basin-East South Fiji Basin

Age	Lat	Long	Angle	Reference
25.0	0.00	0.00	0.00	
25.6	0.09	-179.72	0.39	(33)
25.8	0.99	-178.47	0.93	(33)
26.6	8.19	-178.49	1.94	(33)
28.0	3.87	179.78	3.41	(33)
28.3	3.57	177.18	4.48	(33)
28.7	3.41	176.86	5.10	(33)
29.4	6.41	-179.89	4.98	(33)
30.1	11.96	-179.48	4.94	(33)
33.1	34.81	-177.48	5.29	(33)

East South Fiji Basin-Three Kings Ridge

Age	Lat	Long	Angle	Reference
25.0	0.00	0.00	0.00	
25.6	88.13	-1.98	-0.51	(33)
25.8	89.43	-0.93	-1.11	(33)
26.6	87.48	5.81	-1.81	(33)
27.0	82.87	5.76	-2.34	(33)
28.0	76.07	17.61	-3.00	(33)
28.3	74.59	18.75	-4.07	(33)
29.4	75.04	32.87	-5.11	(33)
33.1	74.85	42.29	-6.16	(33)

Tonga Ridge-Lau Ridge, Lau Basin

Age	Lat	Long	Angle	Reference
0.9	-34.00	-178.50	1.12	(34)
1.8	-34.00	-178.50	4.77	(34)
7.0	-26.87	-178.28	18.98	(34)

Solomon Sea-Australia

Age	Lat	Long	Angle	Reference
25.0	59.20	1.20	-15.86	(28)
28.7	64.30	8.00	-13.21	(28)
30.1	69.60	19.80	-11.18	(28)
33.0	72.10	101.70	-7.91	(28)
35.3	46.20	139.60	-7.19	(28)
38.1	14.70	151.50	-9.18	(28)
39.6	4.10	154.30	-11.07	(28)
40.1	1.30	155.00	-11.77	(28)
45.0	9.60	-22.10	16.21	(28)

Jamaica-Yucatan, Cayman Trough

Age	Lat	Long	Angle	Reference
3.4	28.68	-84.38	-1.82	(35)
9.9	79.35	-161.30	-1.24	(35)
19.7	68.78	134.98	-2.47	(35)
25.2	69.94	137.98	-3.22	(35)
27.3	69.94	137.98	-3.64	(35)
28.5	76.94	173.26	-4.20	(35)
33.2	76.94	179.67	-5.65	(35)

41.5 56.27 123.41 -7.75 (35)

Sandwich Basin East-Sandwich Basin West

Age	Lat	Long	Angle	Reference
9.8	80.00	-16.57	-3.06	This Study

Central Scotia Basin-Burdwood

Age	Lat	Long	Angle	Reference
9.8	-48.13	10.20	-2.44	This Study
20.1	-48.13	10.20	-8.05	This Study

Drake Passage South-Drake Passage North

Age	Lat	Long	Angle	Reference
9.8	70.00	23.36	-3.31	This Study
26.0	68.71	26.48	-9.67	This Study

References

1. C. J. O'Neill, R. D. Müller, B. Steinberger, *Geochemistry, Geophysics, Geosystems* **6**, doi:10.1029/2004GC000784 (2005).
2. R. D. Müller, J.-Y. Royer, L. A. Lawver, *Geology* **21**, 275 (1993).
3. R. D. Müller, S. C. Cande, J.-Y. Royer, W. R. Roest, S. Maschenkov, in *Caribbean Basins* P. Mann, Ed. (Elsevier, Amsterdam, 1999), vol. 4, pp. 39-55.
4. R. D. Müller, W. R. Roest, *Journal of Geophysical Research* **97**, 3337 (1992).
5. R. D. Müller, W. R. Roest, J.-Y. Royer, L. M. Gahagan, J. G. Sclater, *Journal of Geophysical Research* **102**, 3211 (1997).
6. K. Klitgord, H. Schouten, in *The Western North Atlantic Region, DNAG* P. R. Vogt, B. E. Tucholke, Eds. (Geol. Soc. Am., Boulder, CO, United States, 1986), vol. M, pp. 351-378.
7. C. Gaina, W. R. Roest, R. D. Müller, *Earth and Planetary Science Letters* **197**, 273 (Apr 15, 2002).
8. C. Gaina, T. H. Torsvik, L. Gernigon, P. J. Ball, paper presented at the European Geoscience Union Meeting, Vienna 2007.
9. L. A. Lawver, R. D. Müller, S. P. Srivastava, W. Roest, in *Geological History of the Polar Oceans: Arctic Versus Antarctic* U. Bleil, J. Thiede, Eds. (1990) pp. 29-62.
10. S. P. Srivastava, W. R. Roest. (Atlantic Geoscience Centre, Geologic Survey of Canada, Map sheets L17-2 - L17-6, 1989).
11. D. Nürnberg, R. D. Müller, *Tectonophysics* **191**, 27 (1991).
12. J.-Y. Royer, T. Chang, *Journal of Geophysical Research* **96**, 11779 (1991).
13. C. Gaina, R. D. Müller, B. Brown, T. Ishihara, in *Evolution and Dynamics of the Australian Plate* H. R.R., M. R.D., Eds. (Geological Society of Australia Special Publication 22 and Geological Society of America Special Paper 372, 2003) pp. 405-416.
14. C. Heine, R. D. Müller, C. Gaina, in *Continent-Ocean Interactions within East Asian Marginal Seas, AGU Geophysical Monograph* P. D. Clift, D. E. Hayes, W. Kuhnt, P. Wang, Eds. (American Geophysical Union, Washington, 2004), vol. 149, pp. 37-54.
15. R. D. Müller *et al.*, in *The history and dynamics of global plate motions* M. A. Richards, R. G. Gordon, R. D. van der Hilst, Eds. (American Geophysical Union, Washington, DC, 2000), vol. Geophysical Monograph 121, pp. 161-188.
16. J. R. Curray *et al.*, in *Geological and Geophysical Investigations of Continental Margins* J. S. Watkins, J. Montadert, P. W. Dickerson, Eds. (American Association Petroleum Geologists, Tulsa, Oklahoma, 1979), vol. 29, pp. 189-198.
17. T.-Y. Lee, L. A. Lawver, *Tectonophysics* **251**, 85 (1995).
18. A. Bernard, M. Munsch, Y. Rotstein, D. Sauter, *Geophysical Journal International* **162**, 765 (2005).
19. A. P. Nankivell, University of Oxford (1998).
20. K. M. Marks, A. A. Tikku, *Earth & Planetary Science Letters* **186**, 479 (2001).
21. S. C. Cande, J. M. Stock, *Geophysical Journal International* **157**, 399 (Apr, 2004).
22. S. C. Cande, J. M. Stock, R. D. Mueller, T. Ishihara, *Nature* **404**, 145 (2000).
23. S. C. Cande, C. A. Raymond, J. Stock, W. F. Haxby, *Science* **270**, 947 (1995).
24. R. D. Larter, A. P. Cunningham, P. F. Barker, K. Gohl, F. O. Nitsche, *Journal of Geophysical Research-Solid Earth* **107**, 2345 (Dec 13, 2002).

25. P. Wessel, Y. Harada, L. W. Kroenke, *Geochemistry Geophysics Geosystems* **7**, L312 (Mar, 2006).
26. S. F. Tebbens, S. C. Cande, *Journal of Geophysical Research-Solid Earth* **102**, 12061 (1997).
27. J. J. McCarron, R. D. Larter, *Journal of the Geological Society* **155**, 255 (Mar, 1998).
28. C. Gaina, R. D. Müller, *Earth Science Reviews* **83**, 177 (2007).
29. M. Sdrolias, W. R. Roest, R. D. Müller, *Tectonophysics* **394**, 69 (2004).
30. A. Briais, P. Patriat, P. Tapponnier, *Journal of Geophysical Research* **98**, 6299 (1993).
31. C. Gaina *et al.*, *Journal of Geophysical Research* **in press** (1998).
32. C. Gaina, R. D. Muller, J. Y. Royer, P. Symonds, *Journal of Geophysical Research-Solid Earth* **104**, 12927 (Jun 10, 1999).
33. M. Sdrolias, M. R.D., C. Gaina, in *Evolution and Dynamics of the Australian Plate* H. R.R., M. R.D., Eds. (Geological Society of Australia Special Publication 22 and Geological Society of America Special Paper, 2003).
34. C. Y. Yan, L. W. Kroenke, in *Proceedings of the Ocean Drilling Program, Scientific Results* W. H. Berger, L. W. Kroenke, L. A. Mayer, Eds. (College Station, TX, 1993), vol. 130, pp. 697.
35. M. I. Ross, C. R. Scotese, *Tectonophysics* **155**, 139 (1988).