Anomalous South Pacific lithosphere dynamics derived from new total sediment thickness estimates off the West Antarctic margin

— Supplementary data —

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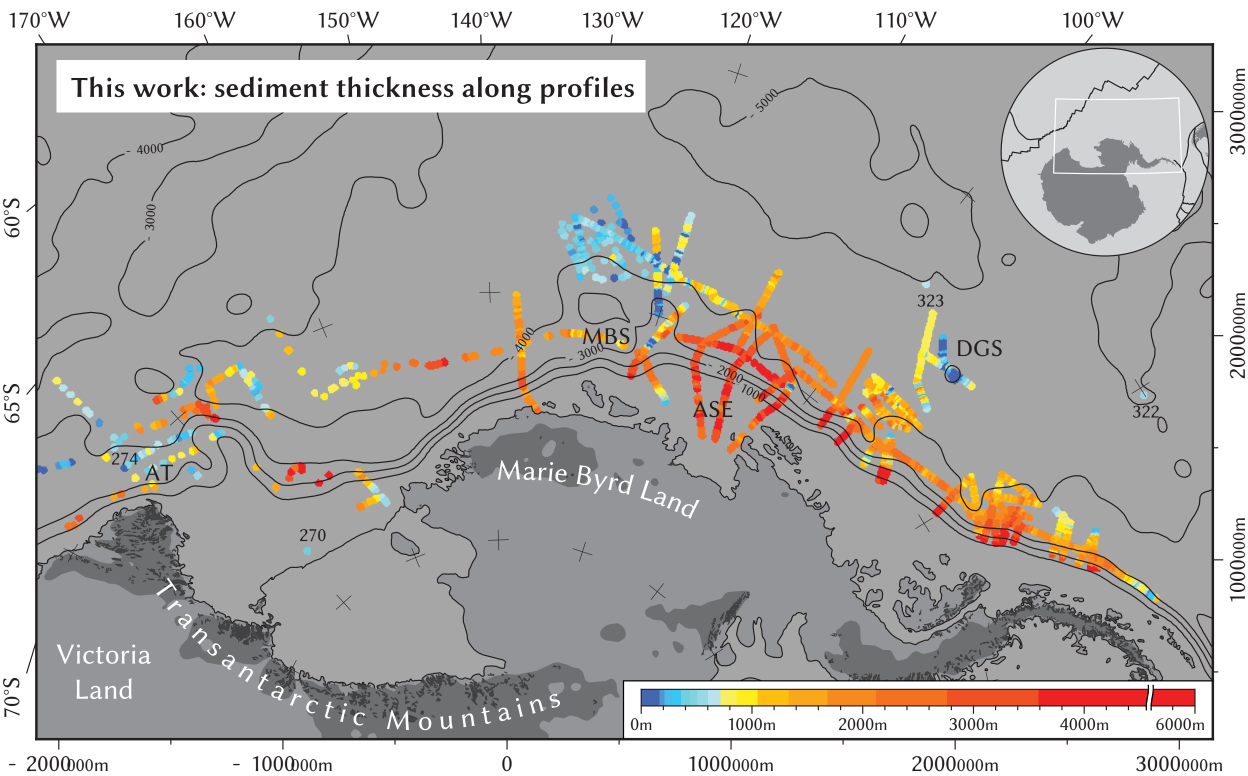

Figure A.1: Sediment thickness along profiles (seismic and gravity, cf. Figure 1). Primary data were buffered by a distance of 20 km to make them visible on the map. Contour lines indicate water depth in meter. Same color coding and scale as in Figure 2.

*Corresponding author.

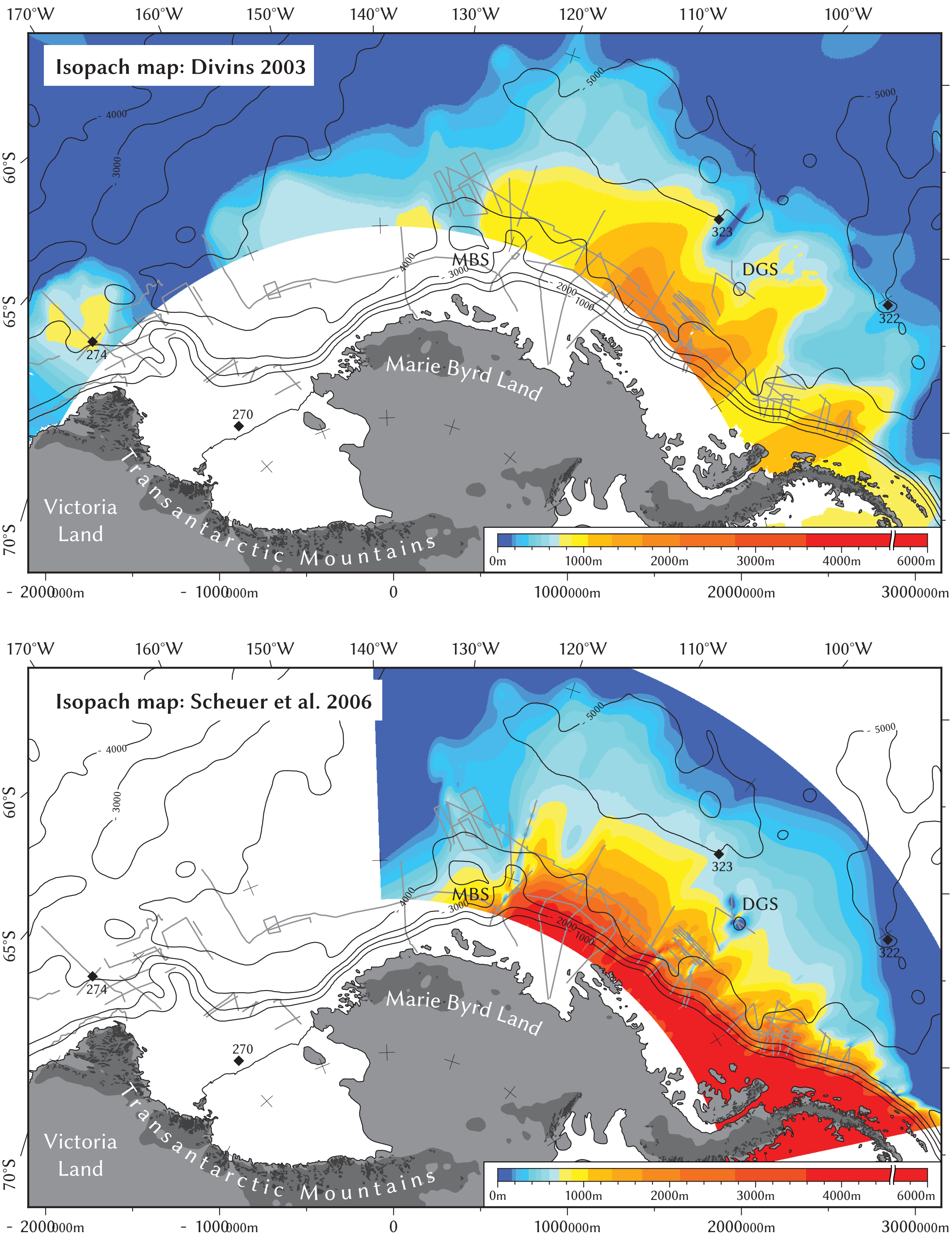

Figure A.2: Sediment isopach maps of Divins (2003)/Whittaker et al. (2013) and Scheuer et al. (2006a). Same color coding and scale as in previous figure.

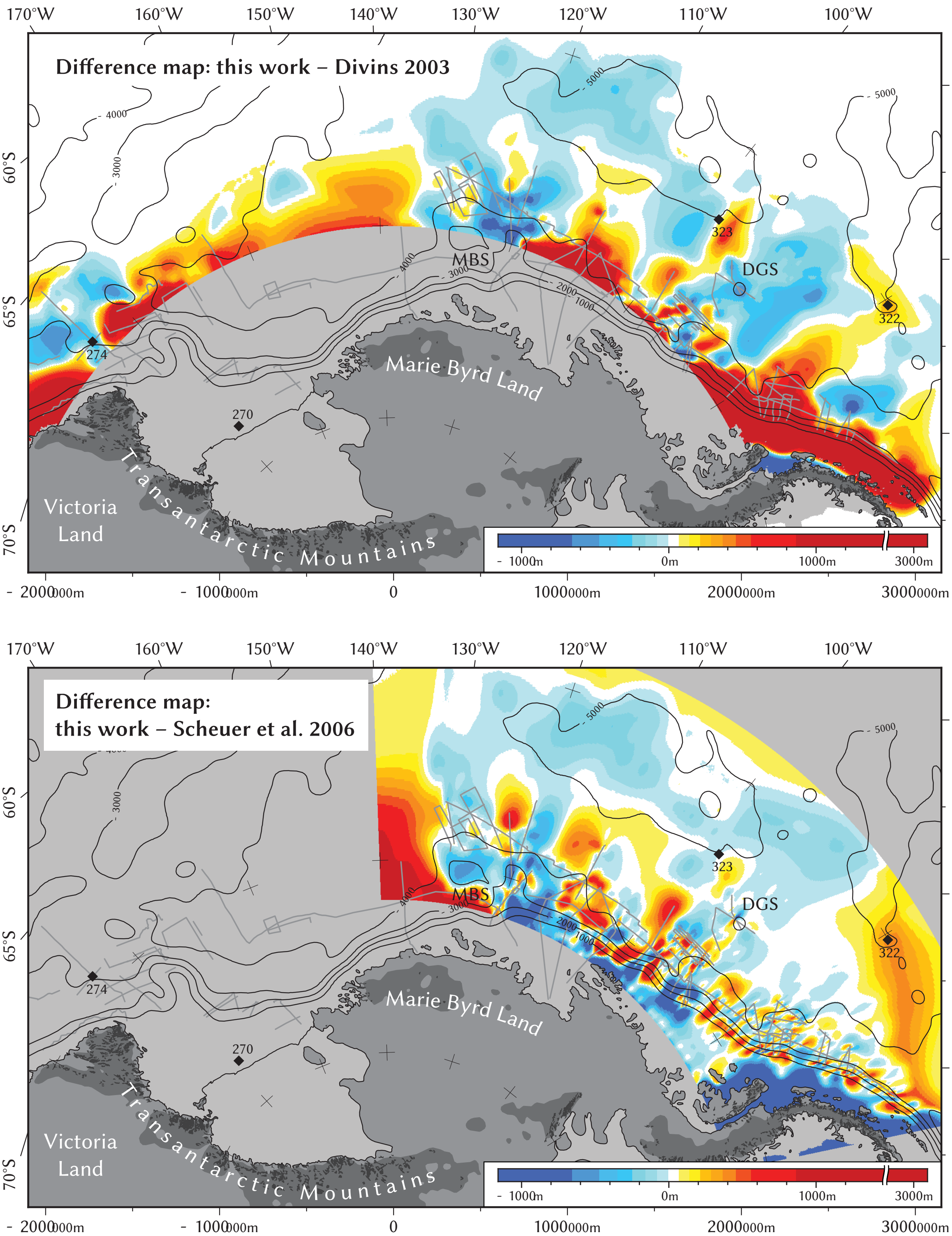

Figure A.3: Sediment thickness difference maps: Divins (2003)/Whittaker et al. (2013) subtracted from this work (top) and Scheuer et al. (2006a) subtracted from this work (bottom). The sediment volume in the overlap areas are 1.14×10^6 km^3 smaller in Divins (2003) and 0.35×10^6 km^3 larger in Scheuer et al. (2006a) as compared to this work.

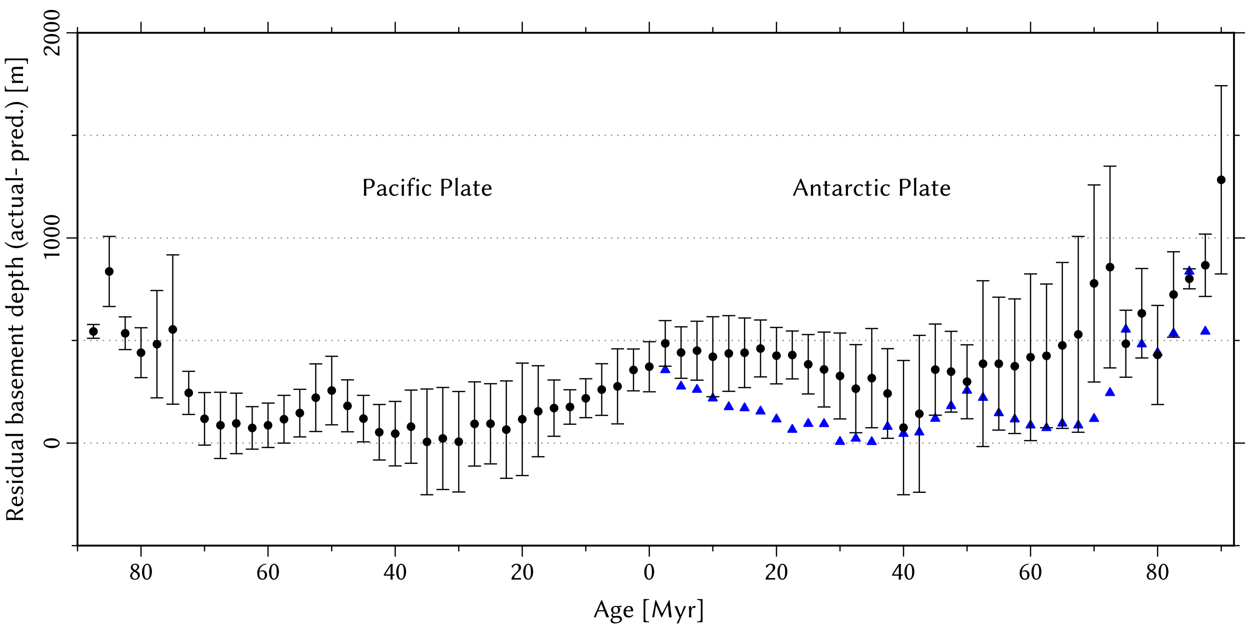

Figure A.4: Residual basement depth vs. crustal age from Pacific–Antarctic Ridge. Bullets are mean values of 2.5 Myr bins along all profiles from Figure 5. Whiskers indicate standard deviation about the mean. Blue triangles represent values from the Pacific Plate mirrored to the right. The mean offset between residual basement values from the Pacific Plate vs. Antarctic Plate of the same age is about 240 m.

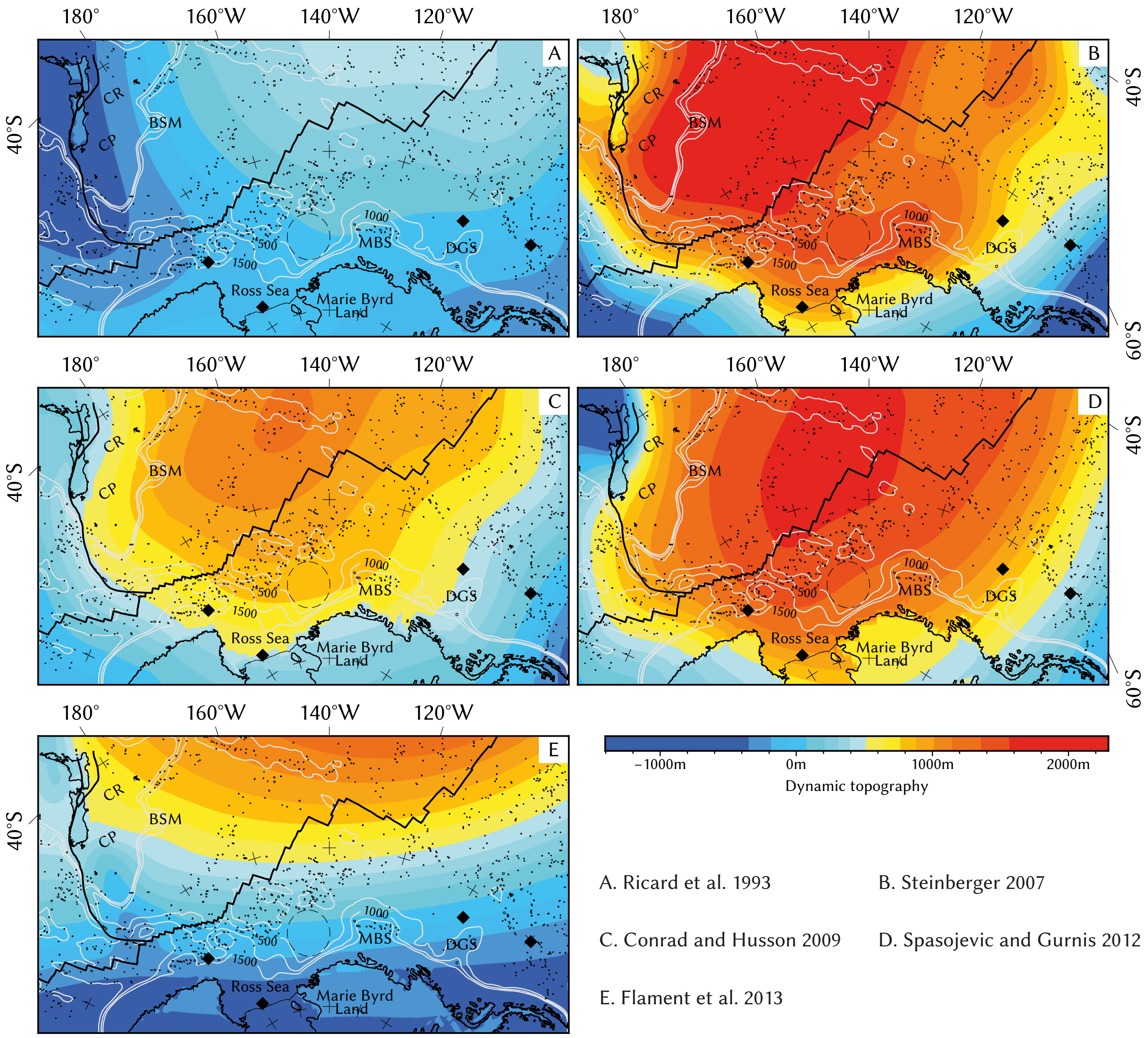

Figure A.5: Present-day dynamic topography models of the South Pacific (Ricard et al. 1993; Steinberger 2007; Conrad and Husson 2009; Spasojevic and Gurnis 2012; Flament et al. 2013) vs. residual basement depth (500, 1000 and 1500 m contours).

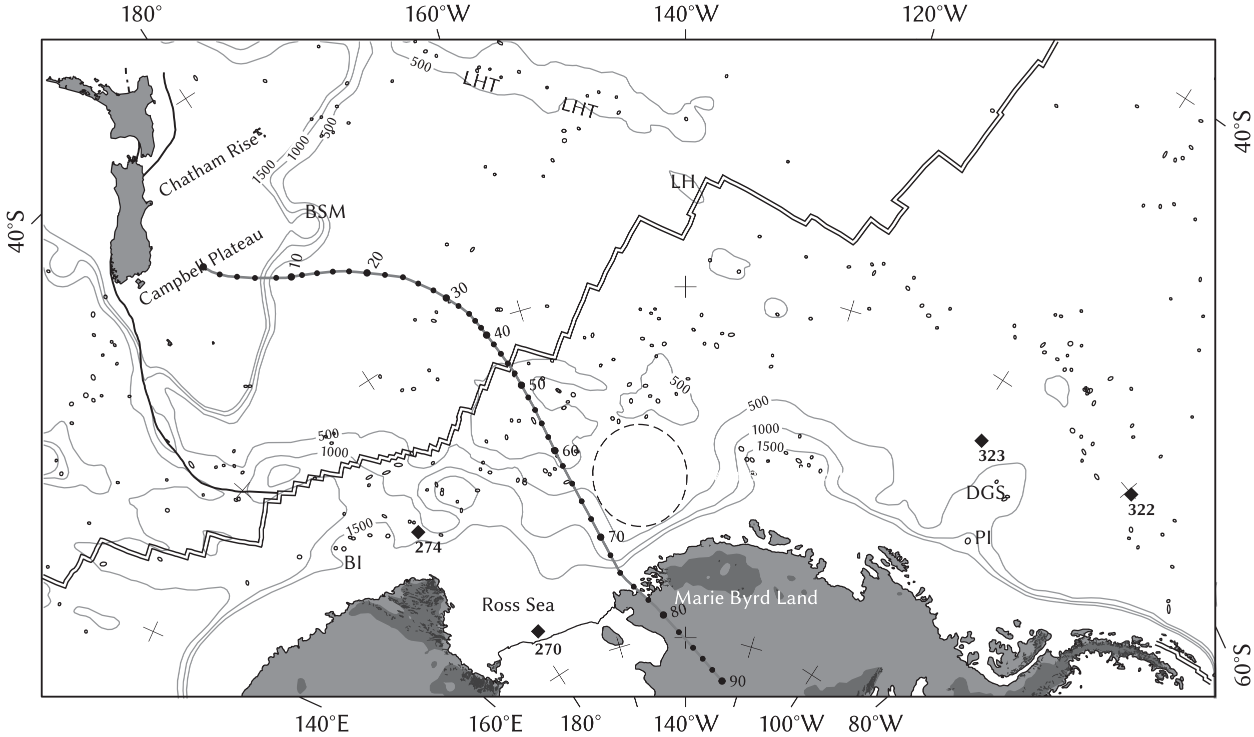

Figure A.6: Motion path of Campbell Plateau from 90 Myr to present relative to Pacific hotspots (Wessel and Kroenke 2008) vs. residual basement depth (500, 1000 and 1500 m contours).

Table A.1: Source-ID (values of source identification grid) vs. data origin of data used for compiling sediment thickness, including DSDP boreholes (1–4), data from the Antarctic Seismic Data Library System (SDLS, Wardell et al. 2007, 5–93, 161–207), recently acquired and processed seismic data (99–140), and data from previous work (e.g., Scheuer et al. 2006a, b; Wilson and Luyendyk 2009; Uenzelmann-Neben and Gohl 2012; Wobbe et al. 2012; Gohl et al. 2013; Kalberg and Gohl 2014; Whittaker et al. 2013).

SID	Source	SID	Source	SID	Source
0	interpolated	32	AWI-94052	64	IT92A113
1	DSDP-28-270	33	AWI-94053	65	IT92A114
2	DSDP-28-274	34	AWI-94054-A	66	IT92A114A
3	DSDP-35-322	35	AWI-94054-B	67	IT92A115
4	DSDP-35-323	36	AWI-94054-C	68	IT92A124
5	AWI-010001	37	AWI-95200	69	IT97235
6	AWI-20060022	38	AWI-95201	70	IT97236
7	AWI-20060023	39	AWI-95210	71	PET-98401c
8	AWI-94002-A	40	BAS-92322	72	PET-98402a
9	AWI-94002-B	41	BAS-92323	73	PET-98403a
10	AWI-94002-C	42	BAS-92324	74	PET-98404
11	AWI-94002-D	43	BAS-92325	75	PET-98405b
12	AWI-94003-A	44	BAS-92327	76	PET-98405c
13	AWI-94003-B	45	BAS-92328	77	PET-98407
14	AWI-94003-C	46	BAS-92329	78	PET-98408
15	AWI-94030-A	47	BAS-92330	79	PET-98409
16	AWI-94030-B	48	I95130	80	TH86002A
17	AWI-94030-C	49	I95130A	81	TH86002B
18	AWI-94030-D	50	I95130B	82	TH86003A
19	AWI-94030-E	51	I95135	83	TH86003B
20	AWI-94040-A	52	I95135A	84	TH86003C
21	AWI-94040-B	53	I95136	85	TH86003D
22	AWI-94041-A	54	I95137	86	TH86003E
23	AWI-94041-B	55	I95138A	87	TH86003F
24	AWI-94041-C	56	IT89A45B	88	TH86004A
25	AWI-94042-A	57	IT89A48	89	TH86004B
26	AWI-94042-B	58	IT89A49	90	TH86004C
27	AWI-94042-C	59	IT92A106	91	TH86006
28	AWI-94043-A	60	IT92A107	92	TH86008
29	AWI-94043-B	61	IT92A108	93	TH86009
30	AWI-94050	62	IT92A109	95, 96	Scheuer et al. (2006a)
31	AWI-94051	63	IT92A110	97	assigned (this work)

Table A.1: Source-ID vs. data origin (continued).

SID	Source	SID	Source	SID	Source
99	AWI-20060200	164	IT89AR36B	186	NBP9602-07H
107	AWI-20100107	165	NBP9601L010A	187	NBP9602-07I
108	AWI-20100108	166	NBP9601L010B	188	NBP9602-08A
109	AWI-20100109	167	NBP9601L010C	189	NBP9602-08B
110	AWI-20100110	168	NBP9601L082A	190	NBP9702-01A
111	AWI-20100111	169	NBP9601L082B	191	NBP9702-01C
112	AWI-20100112	170	NBP9601L08B	192	NBP9702-01D
113	AWI-20100113	171	NBP9602-01A	193	NBP9702-01E
117	AWI-20100117	172	NBP9602-01B	194	NBP9702-02C
118	AWI-20100118	173	NBP9602-04	195	NBP9702-05A
119	AWI-20100119	174	NBP9602-05A	196	NBP9702-05B
126	AWI-20100126	175	NBP9602-05B	197	NBP9702-05C
129	AWI-20100129	176	NBP9602-06A	198	NBP9702-06A
130	AWI-20100130	177	NBP9602-06C	199	NBP9702-06B
131	AWI-20100131	178	NBP9602-06D	200	SEV87-02B
132	AWI-20100132	179	NBP9602-07A	201	SEV87-07
139	AWI-20100139	180	NBP9602-07B	202	SEV87-11
140	AWI-20100140	181	NBP9602-07C	203	TH82-12
151	Wobbe et al. (2012)	182	NBP9602-07D	204	TH82-13
161	ATC82B-208	183	NBP9602-07E	205	TH82-14
162	BGR80-100	184	NBP9602-07F	206	TH82-16
163	IT89A37	185	NBP9602-07G	207	TH82-17
251	Ross Sea, Wilson and Luyendyk (2009)				
252	Ross Sea, Cooper et al. (1991)				
253	Divins (2003)/Whittaker et al. (2013)				

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