Supplementary Information for
Strong export of Antarctic Bottom Water east of the Kerguelen Plateau

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Supplementary Table 1: Maximum observed mean speeds in deep western boundary currents at depths greater than 3000 m, for which time-series measurements of at least one year in length exist. Also shown are those of deep channel flows (indicated by asterisk) for comparison. Water mass abbreviations: Antarctic Bottom Water (AABW), Weddell Sea Bottom Water (WSBW), Circumpolar Deep Water (CDW), North Atlantic Deep Water (NADW).

Location	Water mass	Max. mean speed (cm s^{-1})	Depth (m)	Duration (days)	Reference
Kerguelen DWBC	AABW	23.6	3461	699	This paper
North of Falklands	AABW	10-15	~5500	409	Ref. 8: Whitworth et al. (1991)
Northwest Weddell Sea	WSBW	6.3	3474	688	Ref. 11: Fahrbach et al. (2001)
South Pacific DWBC	CDW	9.6	5134	663	Ref. 31: Whitworth et al. (1999)
Hunter Channel (South Atlantic 34°S)*	AABW	7.1	4175	518	Ref. 32: Zenk et al. (1999)
Vema Channel (South Atlantic 31.1°S)*	AABW	33.7	4425	692	Ref. 33: Hogg et al. (1999)
North Atlantic (42°N)	NADW	9.3	4200	2 yrs	Ref. 19: Schott et al. (2006)
North Atlantic (26.5°N)	NADW	13.9	3080	1552	Ref. 18: Bryden et al. (2005)
North Atlantic (26.5°N)	NADW	~ 14	4000	~385	Ref. 24 Johns et al. (2008)

Supplementary Table 2:   Northwestward transport of AABW ($\theta < 0$°C; in Sv) in the Kerguelen DWBC.   The WOCE I8S section (green dots, Fig. 1b) crossed the DWBC downstream of the moored array.   The other sections were aligned with the moored array.   For the WOCE I8S section, shipboard ADCP (SADCP) and lowered ADCP (LADCP) estimates were obtained by referencing geostrophic calculations to SADCP and LADCP measurements, respectively.   Other LADCP estimates are obtained without geostrophic calculations.   Mooring estimates during the concurrent cruises are based on the data around the CTD/LADCP measurements except that most of the CTD/LADCP observations on the deployment cruise were completed several days prior to the mooring deployment.

Voyage	Date	SADCP	LADCP	Moorings
WOCE I8S[3]	Dec 1994 − Jan 1995	15.0±3.2	26.0±4.4	
Mooring deployment	Feb 2003		9.0	15.2
BEAGLE2003[6]	Feb 2004	18.5	20.4	20.5
Mooring recovery	Jan 2005		17.4	16.8
Two-year mean	Feb 2003 – Jan 2005			12.3±1.2 (std. dev.: 5.6)

Supplementary Information References

31. Whitworth III, T. et al. On the deep western-boundary current in the Southwest Pacific Basin. *Prog. Oceanogr.* **43,** 1-54 (1999).

32. Zenk, W., Siedler, G. & Lenz, B. Antarctic Bottom Water flow through the Hunter Channel. *J. Phys. Oceanogr.* **29,** 2785-2801 (1999).

33. Hogg, N., Siedler, G. & Zenk, W. Circulation and variability at the southern boundary of the Brazil Basin. *J. Phys. Oceanogr.* **29,** 145-157 (1999).