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Supplement of

A 60-year ice-core record of regional climate from Adélie Land, coastal Antarctica

Sentia Goursaud et al.

Correspondence to: Sentia Goursaud (sentia.goursaud@lsce.ipsl.fr)

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Supplementary material.

5 S1. SIC1 ice core records of accumulation (in cm w.e. y^{-1}) and $\delta^{18}O$ (in ‰) using the first and the second chronologies, annual mean surface temperature (in $^{\circ}C$) extracted from the READER data base for Dumont d'Urville Station (<https://legacy.bas.ac.uk/met/READER/>), annual wind speed measured at Dumont d'Urville station (P. Pettré, pers. comm.), and average sea ice concentration extracted between $90^{\circ}E$ and $150^{\circ}E$ from the Nimbus-7 SMMR and DMSP SSM/I-SSMIS Passive Microwave Data <http://nsidc.org/data/nsidc-0051>.

Year	1st dating		2nd dating		Average sea-ice concentration (%)	Temperature ($^{\circ}C$)	Wind speed ($m\ s^{-1}$)
	Accumulation (cm w.e. y^{-1})	$\delta^{18}O$ (‰)	Accumulation (cm w.e. y^{-1})	$\delta^{18}O$ (‰)			
1946	9,35	-17,08	9,35	-17,08			
1947	16,02	-17,79	16,02	-17,79			
1948	9,87	-19,11	9,87	-19,11			
1949	28,73	-18,17	28,73	-18,17			
1950	14,05	-18,69	14,05	-18,69			18,10
1951	18,39	-20,51	18,39	-20,51			19,74
1952	13,36	-20,39	13,36	-20,39			15,03
1953	30,91	-20,56	30,91	-20,56			
1954	24,14	-21,91	24,14	-21,91			
1955	25,79	-19,74	25,79	-19,74			
1956	13,88	-21,54	13,88	-21,54		-12,17	10,77
1957	17,42	-20,31	17,42	-20,31		-10,27	12,39
1958	25,19	-17,94	25,19	-17,94		-11,36	10,59
1959	13,92	-18,02	13,92	-18,02		-11,73	10,88
1960	29,92	-18,36	29,92	-18,36		-11,28	10,66
1961	14,00	-18,82	14,00	-18,82		-10,88	11,03
1962	22,78	-20,36	22,78	-20,36		-10,46	11,52
1963	24,00	-18,93	24,00	-18,93		-11,33	12,04
1964	14,68	-17,22	14,68	-17,22		-10,86	11,77
1965	13,36	-18,53	13,36	-18,53		-10,71	11,32
1966	20,52	-21,97	20,52	-21,97		-10,73	11,11

1967	29,12	-19,56	29,12	-19,56		-10,57	11,45
1968	28,14	-19,33	28,14	-19,33		-9,70	11,78
1969	29,83	-16,54	29,83	-16,54		-11,87	11,15
1970	23,42	-16,04	23,42	-16,04		-11,06	10,83
1971	22,22	-19,16	22,22	-19,16		-9,87	10,59
1972	18,44	-18,10	18,44	-18,10		-16,10	10,43
1973	13,00	-19,46	13,00	-19,46		-10,27	9,73
1974	27,98	-17,36	27,98	-17,36		-10,56	8,57
1975	17,49	-20,18	17,49	-20,18		-10,91	10,76
1976	19,85	-20,15	19,85	-20,15		-11,12	9,03
1977	27,30	-20,25	27,30	-20,25		-10,18	9,68
1978	25,03	-17,41	25,03	-17,41		-10,30	9,54
1979	23,68	-17,62	23,68	-17,62	13,11	-10,63	9,71
1980	9,67	-16,93	9,67	-16,93	9,55	-9,21	9,00
1981	35,94	-18,84	21,85	-17,98	8,22	-8,60	10,87
1982	16,83	-18,18	14,10	-19,33	9,93	-10,37	10,06
1983	37,25	-17,92	16,83	-18,18	12,03	-10,81	8,84
1984	23,16	-15,94	28,07	-18,09	10,57	-10,69	8,69
1985	16,77	-18,22	9,18	-17,41	9,67	-10,75	8,03
1986	22,17	-21,06	23,16	-15,94	10,15	-9,88	10,23
1987	27,74	-20,19	16,77	-18,22	9,10	-10,38	10,72
1988	16,69	-17,98	22,17	-21,06	9,28	-11,07	10,76
1989	22,96	-17,43	27,74	-20,19	8,86	-10,95	9,62
1990	15,36	-16,88	16,69	-17,98	8,52	-10,50	9,53
1991	24,40	-17,95	22,96	-17,43	9,83	-9,37	9,43
1992	32,21	-17,32	15,36	-16,88	8,67	-10,43	9,68
1993	26,00	-18,20	24,40	-17,95	9,64	-10,87	10,02
1994	19,28	-16,99	32,21	-17,32	11,24	-11,83	9,24
1995	19,30	-16,54	26,00	-18,20	10,06	-10,64	9,41
1996	21,65	-23,56	19,28	-16,99	9,86	-10,02	9,91
1997	15,56	-21,74	19,30	-16,54	10,16	-11,13	10,15
1998	13,90	-21,28	21,65	-23,56	10,64	-10,88	10,23
1999	11,22	-18,41	15,56	-21,74	10,91	-11,93	9,26

2000	23,29	-16,85	48,41	-18,53	11,58	-10,94	10,15
2001	38,02	-19,03	38,02	-19,03	9,96	-10,83	9,02
2002	24,10	-20,97	24,10	-20,97	9,82	-10,03	
2003	24,16	-18,24	24,16	-18,24	8,42	-11,23	
2004	32,49	-20,76	32,49	-20,76	10,28	-10,27	
2005	24,97	-18,59	24,97	-18,59	8,97	-10,68	
2006	28,96	-20,17	28,96	-20,17	10,35	-10,85	

S2. SIC1 density profile (in g cm⁻³) measured along 50 cm segments (with depth reported here in cm snow equivalent)

Top Hole (cm snow equivalent)	Bottom Hole (cm snow equivalent)	Density (g cm ⁻³)
0	50	0.40
50	100	0.39
100	150	0.45
150	200	0.53
200	250	0.53
250	300	0.55
300	350	0.63
350	400	0.54
400	450	0.56
450	500	0.53
500	550	0.54
550	600	0.44
600	650	0.59
650	700	0.55
700	750	0.60
750	800	0.58
800	850	0.56
850	900	0.58
900	950	0.56
950	1000	0.57
1000	1050	0.59
1050	1100	0.61
1100	1150	0.63
1150	1200	0.61
1200	1250	0.63
1250	1300	0.63
1300	1350	0.62
1350	1400	0.65
1400	1450	0.65

1450	1500	0.59
1500	1550	0.60
1550	1600	0.63
1600	1650	0.65
1650	1700	0.59
1700	1750	0.59
1750	1800	0.65
1800	1850	0.67
1850	1900	0.71
1900	1950	0.66
1950	2000	0.68
2000	2050	0.70
2050	2100	0.69
2100	2150	0.69
2150	2200	0.67
2200	2240	0.62

S3. Inter-annual variability in the timing of the monthly precipitation $\delta^{18}\text{O}$ maximum simulated by the ECHAM5-wiso model over 1979-2007 (36 years).

	January	February	March	August	November	December
Number of years	8	1	3	2	8	7
Frequency	0.28	0.03	0.10	0.07	0.28	0.24

S4. Depth-age relationship corresponding to the two chronologies of the S1C1 core. The linear regression associated with both chronologies give a slope of $-0.2 \text{ m w.e. y}^{-1}$ and a coefficient correlation of -1.0 (with $p=2.5\text{E-}83$ for the first dating and $p=9.0\text{E-}92$ for the second dating).

