

Table 1: CARINA Cruise Summary

CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
Iceland- _Sea_Time_Series	iceland	1	2 ^d	8/15/1991- 10/2/2006	A.Fridricksoson B.Saemundsson	J. Olafsson	J. Olafsson	80	0	66 ^e	0	0	See Note ^f NORDIC SEAS
Irminger_Sea_Time _Series	irminger	1, 2	2 ^g	8/8/1991- 2/2/2006	A.Fridricksoson B.Saemundsson	J.Olafsson	J.Olafsson	56	0	34 ^e	0	0	See Note ^f
TUNDRA 94				7/5-8/8/1994	A. Fedorov		L. Anderson						Data not red. Arctic Ocean
91AA19971204 ^h SWEDARP	swe97	3	40	12/4/1997-2/6/ 1998	Agulhas	D. Turner	M. Chierici A. Fransson	37 ⁱ	36 ⁱ	35 ^j	37 ^k	36 ^l	CFC-113,CCl4, Cl3Et,SF6 ^l
Good Hope				11/4-12/8/2004	A.S. Vavilov	S. Gladyshev S.Speich	M. Ivarez						
34AR19970805 ^m 34AR97_12 WOCE AR18f	ar18f	1, 2	180	8/5-9/25/1997	Aranda	H. Gr nvall J. Launiainen		0	0	0	0	17 0	NORDIC SEAS
31AN19890420 31AN119	an119	1, 2	51	4/20-6/6/1989	Atlantis 2	P. Brewer??	Goyet Brewer	48	30	49	49	0	
09AR19960527 09AR9601_1 ⁿ WOCE SR03g	p12sv		71	5/27-9/21/1996	A. Australis	S. Rintoul	B. Tilbrook	63	59				¹³ C, ¹⁴ C
09AR20011029 WOCE SR03_2001b	sr03.aa2001		134	11/29-12/11/ 2001	A. Australis	B. Tilbrook	B. Tilbrook C. Sabine	97	96	0	0	83	CFC-113
BG9714_B,C,D		2		1997	Belgica	M. Elskens	A. Borges						
BG9815_C,D		2		1998	Belgica	M. Frankignoulle	A. Borges						
BG9919_A,B,C		2		1999	Belgica	M. Frankignoulle	A. Borges						
BG0211		2		2002	Belgica	L. Chou	A. Borges						
BG0413		2		2004	Belgica	L. Chou	A. Borges						

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BG0611		2		2006	Belgica	L. Chou	A. Borges						
74AB19900528 74AB047	ab047	2	71	5/28-6/15/1990	C. Darwin	???	Watson	1	0	0	0	0	
74AB19910501 74AB058	ab058	2	614 _o	5/1-5/15/1991	C. Darwin	R. Pollard	R os	59 7	59 7	59 7	597	0	ChlorA
74AB19910614 74AB060	ab060	1, 2	143 _o	6/14-7/2/1991	C. Darwin	???	Watson	17	87	0	0	0	
74AB19910712 74AB061	ab061	1, 2	45 _o	7/12-7/24/1991	C. Darwin	???	Watson	0	0	0	0	0	
CD110B ???				1998	C. Darwin	A. Miller	A. Borges						
CD114 ???				1998	C. Darwin	I. Joint	A. Borges						
74AB20020301 CD139; I5	i5.2002	3	146	3/1-4/15/2002	C. Darwin	H. Bryden	A. Rios M. Alvarez	4 ^p	77 q	0	145 q	11 9	³ H, ³ He, Neon ^r
29CS19930510 29CSMORENA ^s (WOCE AR16e)	ar16e	2	92	5/10-6/1/1993	Cornide de Saavedra	J.M. Cabanas	F. P rez ^t	0	79 u	0	83	0	
29CS19771007 29CS7710 ^v (Galicia4)	g4	2	88	10/7-10/27/1977	Cornide de Saavedra	F. Fraga	R os P rez	79 w	79 x	0	88 ^{dt}	0	
74DI19890511 74DI182	di182	1, 2	990 _o	5/11-6/7/1989	Discovery	???	Watson	78 6	0	68 1	162	0	
74DI19890612 74DI183	di183	1, 2	87	6/12-7/9/1989	Discovery	???	Watson	4	0	0	0	0	
74DI19890716 74DI184	di184	1, 2	34	7/16-8/10/1989	Discovery	???	Watson	0	0	0	0	0	

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74DI19900425 74DI190	di190	2	17 ^o	4/25-4/29/1990	Discovery	???	Watson	14	0	13	12	0	
74DI19900515 74DI191	di191	1, 2	43 ^o	5/15-6/4/1990	Discovery	???	Watson	7	0	11	0	0	
74DI19900612 74DI192	di192	2	20	6/12-6/24/1990	Discovery	???	Pegler Watson	11	12	8	10	0	
74DI19970807 74DI230 ^y (WOCE A25) FOUREX	a25sv	1, 2	143	8/7-9/17/1997	Discovery	S. Bacon	M. Alvarez I.S. Aristegui	0	90 ^z	0	90	11 9	Chloroa Phaeo.
74DI19980426 74DI233	di233	1, 2	44	4/26-5/23/1998	Discovery	Smythe-Wright	M. Alvarez I.S. Aristegui	44 aa	44	0	44	0	
74DI20040404 ^{ab} 74DI279	di279	2	123	4/4-5/10/2004	Discovery	S. Cunningham	U. Schuster	69	67	56			
74DI20041103 74DI(285) CROZEX	di285	3		11/03-12/10/ 2004	Discovery	R. Pollard	D. Bakker	X ac	0	0	0	0	
74DI20041213 74DI(286) CROZEX	di286	3		12/13/2004- 01/21/2005	Discovery	R. Saunders	D. Bakker	X ^a c	0	0	0	0	
33LK19960415 ^{ad} 33LKETAMBOT2_ 1 WOCE AR04h/ AR15	ar04h	1	94	4/15-5/16/1996	Edwin.Link	Y. Gouriou ^{ae}	J.-F. Ternon	85	85 af	85 ag	90 ^{ah}	85 ai	
32EV19910529 32EV223	ev223	2	51	5/29-6/3/1991	Endeavor	???	Takahashi	0	0	0	0	6	

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09FA20010524 09FA200105_1 P15S_2001	p15s2001a		129	5/24-7/7/2001	Franklin	S. Wijffels	B. Tilbrook C. Sabine	12 5	12 5	0	0	10 6	CFC-113, CCl ₄
29GD19821110 ^{aj} 29GD8211 (Galicia5)	g5	2	19	11/10- 11/19/ 1982	G. del Cid	F. Fraga	R os P rez	19 w	19 x	0	19 ^{dt}	0	
29GD19831201 ^{ak} 29GD8312 (Galicia6)	g6	2	24	12/1-12/12/1983	G. del Cid	F. Fraga	R os P rez	24 w	24 x	0	24 ^{dt}	0	
29GD19840218 ^{al} 29GD8402 (Galicia7)	g7	2	33	2/18-3/7/1984	G. del Cid	F. Fraga	R os P rez	33 w	33 x	0	33 ^{dt}	0	
29GD19840711 ^{am} 29GD8407 (Galicia8)	g8	2	118 an	7/11-8/8/1984	G. del Cid	F. Fraga	R os P rez	76 w	76 x	0	76 ^{dt}	0	ChloroA
29GD19860904 ^{ao} 29GD8609 (Galicia9)	g9	2	50	9/4-10/3/1986	G. del Cid	F. Fraga	R os P rez	48 w	50 x	0	48 ^{dt}	0	ChloroA NH ₄
06GA19960613 06GA276	ga276	2	125 o	6/13-6/27/1996	Gauss	A. Sy	Schneider Thomas	12 2	0	0	0	0	
06GA20000506 06GA3501 (WOCE AR19f)	ga3501	2	75	5/6-6/6/2000	Gauss	P. Kolterman	Wallace	59	60	0	0	0	ChloroA
58GS20030922 ^{ap} 58GS200309	gs0309	1, 2	80	9/22-10/13/2003	G.O. Sars	T. Johannessen	A. Olsen T. Johannessen	47 aq	50	0	0	50	13 _C aq See Note ^d
58AA19940203 58AA9402 Leg 1	aa9402.1	1	16	2/3-2/23/1994	H. Mosby	O.M. Johannessen	L. Anderson T. Johannessen I. Skelvan	16	14	0	0	0	

NORDIC SEAS

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58AA19940224 58AA9402 Leg 2	aa9402.2	1	24	2/24-3/17/1994	H. Mosby	I. Skelvan T. Johannessen	L. Anderson T. Johannessen	24	22	0	0	12 _{as}	NORDIC SEAS
58AA19940826 58AA9409	aa9409	1, 2	49	8/26-9/10/1994	H. Mosby	L. Golman	T. Johannessen	35	33 _{at}	0	0	0	NORDIC SEAS
58AA19950217 58AA9502	aa9502	1	41	2/17-3/18/1995	H. Mosby	O.M. Johannessen I. Skjelvan	L. Anderson T. Johannessen I. Skelvan	38	32	U	34	40	NORDIC SEAS
58AA19961121 58AA9611	aa9611	1	58	11/21-11/30/ 1996	H. Mosby	T. Johannessen	T. Johannessen	39	51	0	0	46	NORDIC SEAS
58AA19970225 58AA9702	aa9702	1	81	2/25-3/24/1997	H. Mosby	T. Johannessen	T. Johannessen	52	51	0	0	0	NORDIC SEAS
58AA19980308 58AA9803	aa9803	1	78	3/8-3/24/1998	H. Mosby	K. Simonsen	T. Johannessen	71	67	0	0	0	NORDIC SEAS
58AA19991003 58AA9918	aa9918	1	71	10/3-10/11/1999	H. Mosby	A. Omar A. Olsen	A. Omar	61	59	0	0	0	BARENTS SEA
58AA20000923 58AA0026	aa0026	1	168	9/23-10/03/2000	H. Mosby	S. Osterhus	A. Omar	16 _{gau}	16 ₈	0	0	0	18 _O BARENTS SEA
58AA20010527 58AA0113 TRACTOR 13	aa0113	1, 2	129	5/27-6/19/2001	H. Mosby	T. Johannessen	A. Olsen A. Omar	92	55	0	0	11 _{6av}	SF ₆ ^{aw} NORDIC SEAS
58AA20010822 58AA0119	aa0119	1	69	8/22-8/29/2001	H. Mosby	R. Skogseth	A. Omar	68 _{au, ax}	68	0	0	0	No nuts. BARENTS SEA

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SBI Spring	hly0201	1			Healy								¹⁸ O, ²²⁴ Ra ^{ay} , ²²⁶ Ra, ²²⁸ Ra, ²²⁸ Th, POC, DOC, PON, Urea, ChloroA, Phaeo., Ammonium
32H120020718 ^{az} 32H1HLY0203 SBI Summer	hly0203	1	44	7/18-8/21/2002	Healy	J.M. Grebmeier L.W. Cooper	N. Bates	42 _{ba}	0	0	0	0	¹⁸ O ^{bb} , ²²⁴ Ra, ²²⁶ Ra, ²²⁸ Ra, ²²⁸ Th, POC, PON ^{bc} , DOC ^{bd} , Urea, ChloroA ^{be} , Phaeo., Ammonium, Lignin
29HE19951203 ^{bg} Fruela-95	fruela95	3	48 ^{bh}	12/3/1995-1/5/1996	Hesperides	R. Anad n M. Estrada	G. Ros n	0	36 _{bi}	0	46 ^{bi}	0	Ammonium, POC, DOC ^{bj} , PON ^{bk} , ChloroA
29HE19960117 ^{bg} Fruela-96	fruela96	3	23	1/17-2/5/1996	Hesperides	R. Anad n M. Estrada	A. R os	0	22 _{bi}	0	22 ^{bi}	0	Ammonium, POC ^{bj} , PON ^{bk} , ChloroA
29HE19980730 ^{bl} 29HE050	he050	2	44	7/30-8/21/1998	Hesperides	F. Perez	A. R os M. Alvarez J. Aristigui	24	24	0	44	0	Ammonium
29HE20010305 FICARAM II HE073	he073	2, 3	29	3/5-4/17/2001	Hesperides	A. Rios	A. R os	29 _{bm}	29	0	29	0	
29HE20020304 FICARAM IV HE081	he081	2, 3	19	3/4-4/9/2002	Hesperides	F. Perez	A. R os F. Perez	19 _{bm}	19	0	19	0	
29HE20030408 29HE091 FICARAM VI	he091	2	7	4/8-4/24/2003	Hesperides	R os	A. R os R. Wanninkhof	7 ^{bn}	7 ^{bo}	7 ^{bp}	7	0	

Arctic Ocean

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18HU19820228 18HU82001	hu82001	1, 2	129	2/28-4/4/1982	Hudson	Clarke Reid Swift	P. Jones	54 bq	54	0	0	28 bt	NORDIC SEAS
18HU19920527 18HU92014 WOCE AR07W/AR13	hu9205	1, 2	46	5/27-6/15/1992	Hudson	J. Lazier	P. Jones	27	0	0	0	31	
18HU19930405 18HU92053	hu9304	2	59 ⁰	4/5-5/14/1993	Hudson	N. Oakey	P. Jones	15	0	0	59	0	
18HU19930617 18HU93019 WOCE AR07W	hu9306	1, 2	26	6/17-6/29/1993	Hudson	J. Lazier	P. Jones	20	0	0	26	22	
18HU19931115 18HU93039 WOCE AR13a	hu9311	2	104	11/15-12/17/ 1993	Hudson	R.A. Clarke	P. Jones	89	0	0	103	98	
18HU19940524 18HU94008 WOCE AR07We/AR13	hu9405	1, 2	40	5/24-6/12/1994	Hudson	J. Lazier	P. Jones	20	0	0	33	29	
18HU19941012 18HU94030 WOCE AR13c	hu9410	2	97	10/12-11/10/ 1994	Hudson	R.A. Clarke	P. Jones	80	0	0	97	94	
18HU19950419 18HU95003 WOCE AR13d	hu95003	2	107	4/19-5/16/1995	Hudson	R.A. Clarke	P.Jones R. Gershey	74	0 ^{br}	0	0	81	CCl4, Cl3Et CFC-113
18HU19970509 18HU97009 WOCE AR07W	hu97009	1, 2	130	5/9-6/11/1997	Hudson	R.A. Clarke	P. Jones R. Gershey	95	82	0	0	90	(³ H, ³ He) ^{aw} CCL4, CFC-113
				3/17-3/23/1998	Jan Mayen		L.Anderson						BARENTS SEA

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74JC19960720 74JC9608	jc9608	1	41	7/20-8/22/1996	J.C. Ross	A. Watson	T. Johannessen I. Skelvan	25	25 bz	U	0	0	NORDIC SEAS
58JH19911106 ^{bs} 58JH9111	jh9111	1, 2	76	11/6-11/25/1991	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	36 bt	CCl ₄ , Cl ₃ Et, ³ H, ³ He, He NORDIC SEAS
58JH19920712 58JH9207 WOCE AR18b	jh9207 ^{bu}	1, 2	31	7/12-7/28/1992	J. Hjort	J. Blindheim E. Buch	J. Olafsson	9 ^{bv}	0	0	6	0	¹³ C, ¹⁴ C ^{bv} NORDIC SEAS
58JH19921107 ^{bs} 58JH9211	jh9211	1, 2	68	11/7-11/29/1992	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	30 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He NORDIC SEAS
58JH19930730 58JH9308	jh9308	1	69	7/30-8/15/1993	J. Hjort	F. Rey	T. Johannessen I. Skelvan	35	36	0	0	0	NORDIC SEAS
58JH19931107 ^{bs} 58JH9311	jh9311	1, 2	51	11/7-11/30/1993	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	51 bt	CFC-113, Cl ₃ Et, ³ H, ³ He, He NORDIC SEAS
58JH19940525 58JH9405	jh9405	1	44	5/25-6/6/1994	J. Hjort	F. Rey	I. Skelvan T. Johannessen	20	20	0	0	0	NORDIC SEAS
58JH19940723 58JH9408 WOCE AR18d	jh9408	1, 2	74	7/23-8/16/1994	J.Hjort	J. Bllindheim	J. Olafsson	78	0	78	0	67 bw	CCl ₄ , CFC-113 ³ H, ³ He; ¹³ C, ¹⁴ C NORDIC SEAS
58JH19941029 ^{bs} 58JH9410	jh9410	1, 2	108	10/29-11/23/ 1994	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	69 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He NORDIC SEAS
58JH19950427 58JH9505	jh9505	1, 2	109	4/27-5/23/1995	J. Hjort	F. Rey	T. Johannessen I. Skelvan	47	46	U	0	0	NORDIC SEAS

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58JH19951108 ^{bs} 58JH9511	jh9511	1, 2	51	11/8-11/26/1995	J. Hjort	J. Blindheim F. Rey	I. Skjelvan T. Johannessen	26	26 bx	U	0	31 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He
58JH19960722	jh9607	1	5	7/22-8/1/1996	J. Hjort								DOC ^{by}
58JH19961030 ^{bs} 58JH9611	jh9611	1, 2	42	10/30-11/9/1996	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	27 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He
58JH19970425 ^{bs} 58JH9704	jh9704	1, 2	135	4/25-5/22/1997	J. Hjort	J. Blindheim F. Rey	L. Anderson	48	56 bz	0	56	54 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He
58JH19980804 ^{bs} 58JH9808	jh9808	1	49 ^{ca}	8/4-8/23/1998	J. Hjort	F. Rey T. Johannessen	L. Anderson	35 cb	35	0	34	27 bt	CCl ₄ , CFC-113, Cl ₃ Et, ³ H, ³ He, He
58JH19990616 ^{bs} 58JH9906	jh9906	1, 2	35 ^{cc}	6/16-7/7/1999	J. Hjort	J. Blindheim F. Rey	NA	0	0	0	0	35 bt	CCl ₄ , CFC-113, ³ H, ³ He, He
58JH20000527 ^{bs} 58JH0006	jh0006	1	119	5/27-6/19/2000	J.Hjort	???	NA	0	0	0	0	0	
58JH20050528 ^{bs} 58JH2005	jh2005	1	37 ^c c	5/28-6/17/2000	J.Hjort	J. Blindheim F. Rey	NA	0	0	0	0	37 bt	CCl ₄ , CFC-113, ³ H, ³ He, He
49HH19941213 KH94_4	kh94.4	3	11	12/13/1994-1/ 28/1995	Hakuho-Maru	K.Kawaguchi	M. Ishii	11	11	11 cd	0	0	Chloroa
49HH20011208 KH01_3	kh01.3	3	18	12/8/2001-1/19/ 2002	Hakuho-Maru		M. Ishii	17	0	0	0	0	Chloroa, NH ₄
316N19971005 316N154_2 WOCE AR24b	ar24b	1, 2	162	10/5-11/19/1997	Knorr	R. Curry	C. Goyet	0	44	U	0	0	TOC ^{ce} , LADCP

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316N20010627 MANTRA/ PIRANA 3	mp3	2	29	6/27 - 8/15/2001	Knorr	D. Capone E. Carpenter	P. Yager	29 ee	29 ee	0	0	0	
316N20020601 316N200206	nordic02	1	159	6/1-6/30/2002	Knorr	W. Smethie	R. Bellerby	15 7 ^a q	15 6	0	0	15 9 ^{cf}	CFC-113 NORDIC SEAS
58LA19860719 58LA0786	lance86	1	11	7/19-7/26/1986	Lance	??	L.Anderson	7	7	0	11	0	BARENTS SEA
18SN19940726 AOS94	sn094	1	39	7/26-9/1/1994	L.S. St. Laurent		P.Jones Azetsu-Scott	39 cg	38	0	0	39 ch	CFC-113, CCl4 Arctic Ocean
18SNA097 JOIS 97	sn097	1			L.S. St. Laurent	F. MacLaughlin K. Faulkner	P.Jones Azetsu-Scott	X	Y ^{ci}				Arctic Ocean
35LU19890509 ^s 35LU0589 Bord Est 3	bd3	2	47	5/9-5/26/1989	LeNoroit		F. P rez ^t A. R os	47 w	47	0	47	0	³ H, ³ He, He
35LU19950909 ^{ad} 35LLETAMBOT1_ 1 WOCE AR04g	ar04g	2	85	9/9-10/11/1995	LeNoroit	Y. Gouriou	J.-F. TERNON	47	47 af	64 ag	47 ^a h	78	ChloroA, Phaeo.
32MB19900224 3175CG90_1 ^{ci} P15Sa	cgc90sv	3	64	2/24-4/12/1990	M. Baldrige	D.Wisegarver	R. Feely ^{ck}	49	0	U	0	56 cl	³ H, ³ He, He Neon, ¹³ C
35MF19980121 OISO-01	oiso1	3	16	1/21-2/19/1998	Marion-Duf- resne	N. Metzl	C. Lo Monaco	16	16	U	0	0	¹³ C, ¹⁸ O ^{aw}
35MF19980818 OISO-02	oiso2	3	14	8/18-9/9/1998	Marion-Duf- resne	N. Metzl	C. Lo Monaco	14	14	U	0	0	ChloroA ¹³ C, ¹⁸ O ^{aw}

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35MF19981205 OISO-03	oiso3	3	17	12/5-12/27/1998	Marion-Dufresne	N. Metzl	C. Lo Monaco	17	17	U	0	0	ChloroA 13C, 18O _{aw}
35MF19990104 ^{cm} ANTARES 4	ant4	3	35	1/4-2/23/1999	Marion-Dufresne	M. Denis	B. Delille	25	33	0	32 ^{cn}	0	Ba ^{co}
35MF20000117 OISO-04	oiso4	3	19	1/17-1/27/2000	Marion-Dufresne	N. Metzl	C. Lo Monaco	19	9 ^{cp}	U	0	0	ChloroA 13C, 18O _{aw}
35MF20000719 OISO-05	oiso5	3	12	7/19-8/16/2000	Marion-Dufresne	N. Metzl	C. Lo Monaco	12	12	U	0	0	ChloroA 13C, 18O _{aw}
35MF20010103 OISO-06	oiso6	3	11	1/3-1/26/2001	Marion-Dufresne	N. Metzl	C. Lo Monaco	11	11	U	0	0	ChloroA 13C, 18O _{aw}
06MT19920322 06MT021	met21	1, 2	287	3/22-8/18/1992	Meteor	J. Duinker	Pegler Schneider Mintrop	27 4	27 2	U	0	0	NORDIC SEAS
06MT19940219 ^{cq} 06MT27_3 WOCE AR04e	met27.3	2	102	2/26-3/25/1994	Meteor	F. Schott	NA	0	0	0	0	96	
06MT19941012 ^{cr} 06MT302 WOCE A02	a2	1, 2	52	10/12-11/12/ 1994	Meteor	Koltermann	A. K rtzinger K. Friis	29 cs	30	0	0	44	14C _{ct} , 13C _{aw}
06MT19941115 ^{cr} 06MT303 WOCE A01	alwgersv	1, 2	62	11/15-12/19/ 1994	Meteor	Meincke	H. Thomas	44 cu	0	U	0	55	CFC, 14C 3H, 3He
06MT19960613 06MT362	met36.2	1, 2	16	6/13-7/14/1996	Meteor	Kremling	Mintrop Koertzinger	15 cv	15	0	16	0	
06MT19960910 06MT365	met36.5	2	62	9/10-10/3/1996	Meteor	C. Hemleben	P rez Wallace	61	26	26	26	0	

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CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
06MT19970107 06MT372	met37.2	2	45	1/7-1/20/1997	Meteor	T. Muller	P rez	20	28	0	28	0	Chloroa DOC, Al ^{aw}
06MT19970517 06MT392 WOCE AR12/AR24	met39.2	1, 2	67	5/17-6/7/1997	Meteor	W. Zenk	Koertzing Mintrop	30 cw	30	0	65	64	
06MT19970707 06MT394 WOCE AR05/AR07W	met39.4	1, 2	98	7/7-8/9/1997	Meteor	F. Schott	Mintrop Koertzing	46 cw	46	0	96	98	³ H, ³ He ^{aw}
06MT19970815 06MT395 WOCE AR07Ei + VEINS	met39.5	1, 2	110	8/15-9/9/1997	Meteor	A. Sy	Thomas Schneider	78 cu	0	U	0	92 cx	¹⁸ O, SF ₆ , ¹⁴ C ^{aw}
06MT432				1999		G. Graf	A. Borges						
06MT19990610 06MT199906 06MT452	met45.2	1, 2	53	6/10-7/9/1999	Meteor	W. Zenk	K. Friis	29	29 cy	29 cy	30 ^{cz}	49 db	³ H, ³ He, ¹⁴ C, ¹³ C ^{aw}
06MT19990711 06MT199907 06MT453	met45.3	2	100	7/11-8/10/1999	Meteor	F. Schott	K. Friis	37 da	37 cy	37 cy	42 ^c z	99 db	³ H, ³ He, ¹⁴ C, ¹³ C ^{aw}
06MT454	met45.4	1, 2		8/13-8/31/1999	Meteor	J. Meincke						X ^d b	
06MT20010507 06MT501 ^{dc}	met50.1	2	53	5/7-5/31/2001	Meteor	J. Fischer	Friis	26	39	0	41	X ^d b	CFC Merge needed
06MT502		2		6/2-6/18/2001	Meteor	F. Schott						X ^d b	CFC Merge needed

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CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
06MT503		1, 2		6/21-7/15/2001	Meteor	J. Holfort						X ^d _b	CFC Merge needed
06MT504	met50.4	1, 2	139	7/16-8/7/2001	Meteor	W. Zenk	Friis	114	108	0	48	X ^d _b	CFC Merge needed
06MT20011018 06MT512 ^{dd}	met51.2	2	41	10/18-11/11/2001	Meteor	W. Roether	A. Schneider	14	14 _{de}	0	0	40 _{df}	³ H, ³ He, He, neon
06MT20020607 06MT533	met53.3	2	103	6/7-7/4/2002	Meteor	M. Rhein		0	0	0	0	74 _{cx}	
06MT20021013 06MT55	met55	2	51	10/13-11/16/2002	Meteor	D. Wallace	D. Wallace	6	6	U _{dg}	0	0	N ₂ O, ¹³ C, ¹⁵ N, POC, PON, DMS ^{dh}
06MT20040311 06MT605	met60.5	2	46	3/11-4/13/2004	Meteor	Wallace	Wallace	46 _{di}	46 _{dj}	0	0	45 _{dk}	CCl ₄ , SF ₆ ^{dk} SilicateCorr Needed
32OC19950529 ^{dl} 32OC269	oc26.9	2	51	5/29-6/3/1995	Oceanus		Takahashi	6	0	0	0	0	
77DN19910726 77DN9107	dn91.07	1	54	7/26-9/3/1991	Oden	L. Anderson J.-E. Hellsvik	Anderson	45	44	0	0	46	DOC 18 _O ^{dm} Arctic Ocean
74DN01??				7/17-7/26/2001	Oden		L.Anderson						Arctic Ocean
77DN0204 ^{dn}		1			Oden								NORDIC SEAS
18RD19980404 ^{do} NOW98 Northwater Polynya	now98car	1	72 348	4/4-7/21/1998	P. Radisson	L. Fortier H. Melling	L. Miller D. Wallace T. Yager	68	59	0	0		DOC ^{dp} , PON, POC Polynya

Table 1: CARINA Cruise Summary

CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
18RD19990827 ^{do} NOW99 Northwater Polynya	now99	1	40	8/27-10/5/1999	P. Radisson	L. Fortier H. Melling	L. Miller D. Wallace T. Yager	40	40	0	0		DOC ^{dq} , PON, POC Polynya
67SL19881117 ^{dr} 67SL8811	sl88.11	2	20	11/17-11/26/ 1988	P.Siedlecki	A. R os	R os	0	20 ds	0	20 ^{dt}	0	
32L919920718 NEWP92 ^{du}	newp92	1	81	7/18-8/14/1992	Polar Sea	J. Deming	T. Yager	10	10 dv	0	0	0	³ H, ³ He ^{dw} , He, POC, PON, Chlora. ^{dx} , Phaeo. Polynya
32L919930722 NEWP93	newp93	1	102	7/22-8/17/1993	Polar Sea	J. Deming	Johnson Wallace Schneide Neill	70	69	69 dy	0	0	³ H, ³ He ^{dw} , He, POC, Chlora. PON, Phaeo. Polynya
32PZ20020715 ^{dz} 32PZAWS02I	aws02i	1	63	7/15-8/13/2002	Polar Star	R. Pickart		0	0	0	0	0	Arctic Ocean
06AQ1993???? 06ANTIX_4		1		1993?	Polarstern		L. Anderson	X ea ^c g					Arctic Ocean
06ANTX_6				1992									
06ANTXVIII_2 EisenEx				11/1-11/29/2000	Polarstern		D. Bakker Y. Bozec H. de Baar						
06AQ19960712 ^{eb} 06ARKXII (AQN12)	aqn12	1	102	7/12-9/6/1996	Polarstern	E. Augstein	Anderson	78	63	0	57	97	³ H, ³ He, 18O, DOM,DOC Arctic Ocean

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Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
06ARKXXII_3				1/22-4/6/2005	Polarstern		M. Hoppema						
49ZS19921203 ^{ec} JARE34	jare34	3	22	12/3/1992- 3/19/1993	Shirase	N. Sato R. Maruse	M. Ishii	21 ed	0	0	22	0	NH ₄ , Chloroa, Phaeo.
33SW20010102 MANTRA/ PIRANA 1	mp1	2	34	1/2-2/18/2001	S.JohnsonI	A. Michaels D. Capone	P. Yager	34 ee	34 ee	0	0	0	
33SW20030418 33SW200305 MANTRA/ PIRANA 8	mp8	2	27	4/18-5/22/2003	S.JohnsonI	D. Capone A. Subramaniam	P. Yager	27	27				
06BE20001128 06BE152	be152	2	122	11/28-12/27/ 2000	Sonne	M. Rhein		0	0	0	0	10 4 ^{ef}	Missing O2 and Nuts
SOIREE				1999	Tangaroa		D. Bakker						
61TG20020206 JARE43	jare43	3	8	2/6-3/7/2002	Tangaroa	T. Odate	M. Ishii	8	0	0	0	0	NH ₄ , Chloroa
61TG20030217 JARE44	jare44	3	11	2/17-3/12/2003	Tangaroa	T. Odate	M. Ishii	7	0	0	0	0	NH ₄ , Chloroa, Phaeo
35TH19990702 ^{eg} 35TH9907 (Equalant99)	eq99	2		7/2-8/22/1999	Thalassa	Y. Gouriou	Goyet	X X eh	Y Y ^{ei}				Not yet imported
35TH20020611 ^{ej} 35TH0602 Ovide 2002	ovide2	1, 2	90	6/11-7/11/2002	Thalassa	H. Mercier	F. P rez M. lvarez	0	90	U	90	0	
35TH20040605 35TH0604 Ovide 2004	ovide4	1, 2	114	6/5-7/6/2004	Thalassa	T. Huck	F. P rez M. lvarez M. Casta o A. R os	11 4 ^w	11 4 ^{ek}	U	114 ek	0	

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CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
35TH20020716 SEMANE ^{el}				7/16-7/22/2002	Thalassa		Ait-Armeur C. Goyet	X _{em}	Y	0	0	Z	
64TR8901					Tyro		van Heuven						not rcd
64TR19890804 64TY8908	ty89.08	1, 2	73	8/4-9/7/1989	Tyro		M. Stoll De Baar	34 _{en}	32	0	0	0	NH ₄
64TR19900417 64TY9001 ^{eo}	ty90.01	2		4/17-5/31/1990	Tyro	G. Fransz	M. Stoll J. Rommets	X	Y				
64TR19900701 ^{ep} WOCE AR07Ea	ar07ea	1, 2	33	7/1-7/12/1990	Tyro	H.M. van Aken	M. Stoll van Heuven	14	0	0	0	0	³ H
64TR19900721 ^{ep} 64TY9003	ty9003	1, 2	74	7/21-7/29/1990	Tyro	H.M. van Aken	M. Stoll van Heuven	34	0	0	0	0	³ H
64TR19910408 ^{eq} 64TY9104 WOCE AR07Eb	ty91.04	1, 2	141 _{er}	4/8-5/15/1991	Tyro	H.M. van Aken	Stoll DeBaar	13 _{g^e n}	0	0	0	0	
				1980	Ymer		L. Anderson						Arctic Ocean
CarboOcean													
Cruise	Base Name		No. Sta.	Date ^{es}	Ship	Ch. Sci.	Carbon P.I.	TC O ₂	Alk.	pC O ₂	pH	CF C	Other
ANT????					Polarstern								
74AB20050501 Cruise CD171	ab171		144	5/1-6/15/2005	C. Darwin	E. McDonagh	U. Schuster	70	72	?	0	?	Organic Nuts
58JM0703 ^{et} CABANERA I	jm0703		4	7/10-7/18/2003	Jan Mayan	P. Wassmann	R. Bellerby C. Kivim e	4	4	0	0	0	NH ₄ BARENTS SEA

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CARINA													
Cruise	Base Name	Area ^a	No. Sta.	Date ^b	Ship	Ch. Sci.	Carbon P.I.	TCO ₂	Alk.	pCO ₂ ^c	pH	CFC	Other
58JM0704 ^{et} CABANERA II	jm0704		7	7/24-7/31/2004	Jan Mayan	P. Wassmann	R. Bellerby C. Kivim e	7	5	0	0	0	NH ₄ BARENTS SEA
58JM0505 ^{et} CABANERA III	jm0505		9	5/20-6/2/2005	Jan Mayan	P. Wassmann	R. Bellerby C. Kivim e	9	9	0	0	0	NH ₄ BARENTS SEA
06MT592	met592				Meteor	M. Rhein						nn eu	
62PE240				9/18-10/5/2005	Pelagia		van Heuven						
06ANT22_3				1/22-4/6/2005	Polarstern		M.Hoppema H.de Baar						
35TH0506	ovide6		94	5/25-6/16/2006	???	???	P rez		94		94		

- a. Synthesis regions: 1=Arctic, 2=North Atlantic, 3=Southern Ocean
- b. First station to last station only for many cruises
- c. U indicates underway sampling only
- d. 79 occupations of 2 locations on 59 individual cruises during time period forming a irregular time series
- e. Method of Chipman et al., 1993. Values in moist air at listed temperature (~4C)
- f. 3/14/07 Jon and Thorarinn Arnarson expect ot have final T/S workup completed soon.
- g. 56 occupations of 2 locations on 52 individual cruises during time period forming a irregular time series
- h. See Turner et al 2004, Fransson et al. 2004a,b
- i. Abrahamsson et al., 2004a
- j. Calculated from pH15 and Alk, actually, fCO₂
- k. Total H scale at 15C; See Chierici et al., 2004; Abrahamsson et al., 2004a
- l. See Tanhua et al., 2004
- m. See Rudels et al., 1999; Garton and Sanford, 2003; Tanhua et al., 2005.
- n. Included in GLODAPv1.1, but no 2nd QC of carbon data.
- o. Many stations have only shallow or surface samples for carbon
- p. Returned to shore for analysis by R. Wanninkhof for QC purposes.
- q. File contains measured and corrected values for pH and alkalinity. Corrections made as described in Alvarez, 2007.
- r. Measurements by C. Postlewaite at SOC.
- s. See P rez et al., 2001.
- t. See R os et al., 2001.

u. File includes interpolated alkalinity values

v. See Manríquez et al., 1978.

w. Calculated from alkalinity and pH with constants from Lueker et al., 2000. Summary of Galicia cruises in Ros et al., 2001.

x. See Pérez and Fraga, 1987b; Ros and Pérez, 1999.

y. Cruise in GLODAPv1.1, but now have carbon data, so include here also

z. See Alvarez et al., 2002, 2003, 2004.

aa. TCO_2 calculated from pH and TA

ab. See Cunningham, 2005.

ac. See Bakker et al. 2007.

ad. See Oudot et al., 1999.

ae. See Gouriou et al., 1999.

af. Values calculated from pH and TCO_2

ag. Near surface values only, values are fCO_2 reported at in situ temperature.

ah. Reported on total $[\text{H}^+]$ scale at in situ conditions

ai. See Andrieu et al., 1999.

aj. See C. Mourio et al., 1984.

ak. See Pérez et al., 1987.

al. See Fraga et al. 1985

am. See Mourio et al., 1985.

an. Multiple casts at the same location recorded as individual stations. Approximately 45 different locations.

ao. See Figueiras et al., 1987.

ap. Actual code for this ship is LMEL

aq. See Olsen et al., 2006.

ar. As of 3/16/07 CFC still proprietary. Release requested.

as. See Anderson et al., 2000a.

at. Data quality too low, null out for merged CARINA data product

au. See Omar et al., 2003

av. A. Olssen data.

aw. Samples collected but no data in file

ax. See Omar et al., 2005

ay. See Kadko and Muench, 2005.

az. See Codispoti et al., 2005, Grebmeier et al., 2005.

ba. See Bates et al. 1996, 1998 and Bates 2001 for methods, see Bates et al., 2005a and Bates, 2006 for research with these data.

bb. See Cooper et al., 2005

bc. See Bates et al., 2005b; Moran et al., 2005.

bd. See Hansell et al., 2004; Mathis et al., 2005.

be. See Dunton et al. 2005, 2006.

bf. See Benner et al. 2004.

bg. See Anadón and Estrada, 2002; Garcia et al. 2002.

bh. Includes 2 stations with decimal notation (39.2, 138.2)

bi. See Alvarez et al., 2002b.

bj. See Doval et al. 2002.
 bk. See Anad n et al., 2002.
 bl. See Perez et al., 2003.
 bm. Calculated from pH25 and alkalinity
 bn. File includes few coulometric TCO2 measured by Wanninkhof after the cruise. File also contains tco2calc from measured pH25 and Alk
 bo. See Perez et al. 2000 for method.
 bp. Surface samples only (fCO2)
 bq. See Chen et al., 1990.
 br. Samples collected, but no data in file
 bs. See Blindheim and Rey, 2004.
 bt. See Karstensen et al., 2005.
 bu. Blindheim working to clean up T/S data
 bv. Data from Gislefoss et al 1995.
 bw. See Fogelqvist et al., 2003.
 bx. All values flagged questionable
 by. See Borsheim, 2000.
 bz. See for method, Heraldsson et al., 1997.
 ca. Seven stations numbered 84981-84987 are probably casts at station 498. Either way these numbers need to be modified before building the merged data file.
 cb. See Chierici et al 1999; Anderson et al., 2000a,b.
 cc. Data restricted to stations with tracers
 cd. See Ishii et al. 2002
 ce. No data in file
 cf. Unpublished data of W. Smethie.
 cg. See Anderson et al. 1998.
 ch. Data of P. Jones
 ci. See Jutterstr m and Anderson, 2005.
 cj. See McTaggart et al., 1993.
 ck. See Lamb et al. 1993, 1995.
 cl. See Wisegarver et al., 1995.
 cm. See Park et al., 2002; Leblanc et al. 2002; Dubreuil et al., 2003;
 cn. Data from A. Borges
 co. See Jacquet et al., 2005.
 cp. All values flagged 4 by originator.
 cq. All data from CCHDO 3/14/07
 cr. Cruise was included in GLODAPv1.1, but had no carbon data at the time, so also included here
 cs. See K rtzinger et al., 1998.
 ct. Results in large volume data file
 cu. See Thomas and Ittekkot, 2001; Thomas, 2002.
 cv. See K rtzinger et al., 2001.
 cw. See K rtzinger et al., 1999.
 cx. Data from M. Rhein; See Rhein et al. 2002, 2004; Steinfeldt et al., 2004.
 cy. Calculated from TCO2 and pH

cz. See Friis et al., 2004.
 da. See Friis et al., 2003; 2005
 db. Data from M. Rhein/R. Steinfeldt. See Kieke et al., 2006
 dc. Superset of this cruise included in GLODAP as met50sv...
 dd. No nutrients yet. Requested 4/27/07.
 de. See Schneider et al., 2007.
 df. Measurements by B. Klien using method of Bultsiewicz et al., 1998.
 dg. See Kortzinger et al., 2003.
 dh. None of the extra measurements in file
 di. See Tanhua and Wallace, 2005; Tanhua et al. 2006, 2007.
 dj. See Mintrop et al., 2000.
 dk. See Tanhua et al., 2006.
 dl. In original file nutrients and oxygen listed as micromole/kilogram. Oxygen is clearly milliliter/liter. Assumed that nutrients are also per liter and converted all.
 dm. See Bauch et al., 1995.
 dn. Run jointly with Knorr 02 Nordic Seas cruise
 do. CTD data preliminary
 dp. Measurements of K. Cochran
 dq. Measurements of K. Cochran
 dr. ANA cruise of the Biomass-IV expedition; see Rios et al., 1992.
 ds. Perez et al., 1998.
 dt. See Perez and Fraga 1987a.
 du. See Budeus and Schneider, 1995 and Wallace et al, 1995a,b.
 dv. See Yager et al, 1995.
 dw. See Top et al., 1997
 dx. See Smith, 1995.
 dy. See Neill et al., 1997.
 dz. See Swift and Codispotti, 2002.
 ea. See Olsson and Anderson, 1997. See Olsson et al 1999.
 eb. Cruise report: The expedition of ARCTIC 96 of the RV Polarstern (ARK XII) with the Arctic Climate System Study (ARCSYS), Ber. Polarforsch. 234, ISSN 0176-5027, 1997.
 ec. JARE Data Report, No. 228, National Institute of Polar Research, Tokyo, September 1997 (not available via web). Nutrient and oxygen data are preliminary.
 ed. See Ishii et al., 1998.
 ee. See Cooley and Yager, 2006.
 ef. Data from Rhein; See Rhein et al. 2004.
 eg. See Gouriou et al., 1999, 2001.
 eh. See Touratier et al., 2005
 ei. Comparison to WOCE A15 by Tourtier^{eh} implies that values are offset high by 12.7umol/kg
 ej. See Lherminier et al., 2007.
 ek. See Perez et al., 2004.
 el. No data yet.
 em. See A t-Ameur and Goyet, 2007.
 en. See Stoll et al., 1996a, 1996b, 1999, 2002.

eo. See Rommets et al. 1991.
 ep. See van Aken and De Boer, 1995
 eq. A subset of this data is available from WHPO (files as AR07E). WOCE listing does not contain carbon data
 er. See van Aken and De Boer, 1995.
 es. First station to last station only
 et. Data received but marked proprietary until 01/01/08 at request of A. Olsen
 eu. CFC data proprietary except for CARINA usage until 1/1/2008 at request of M. Rhein.

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