## 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] |
| 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 rcd. |
| 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. lvarez | | | | | | |
| 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 | |
| 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 | | | | | | |

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

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

## 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 |
| 09FA20010524<br>09FA200105_1<br>P15S_2001 | p15s2001a | | 129 | 5/24-7/7/2001 | Franklin | S. Wijffels | B. Tilbrook<br>C. Sabine | 125 | 125 | 0 | 0 | 106 | CFC-113, $CCl_4$ |
| 29GD19821110[aj]<br>29GD8211<br>(Galicia5) | g5 | 2 | 19 | 11/10- 11/19/ 1982 | G. del Cid | F. Fraga | R os<br>P rez | 19 w | 19 x | 0 | 19[dt] | 0 | |
| 29GD19831201[ak]<br>29GD8312<br>(Galicia6) | g6 | 2 | 24 | 12/1-12/12/1983 | G. del Cid | F. Fraga | R os<br>P rez | 24 w | 24 x | 0 | 24[dt] | 0 | |
| 29GD19840218[al]<br>29GD8402<br>(Galicia7) | g7 | 2 | 33 | 2/18-3/7/1984 | G. del Cid | F. Fraga | R os<br>P rez | 33 w | 33 x | 0 | 33[dt] | 0 | |
| 29GD19840711[am]<br>29GD8407<br>(Galicia8) | g8 | 2 | 118 an | 7/11-8/8/1984 | G. del Cid | F. Fraga | R os<br>P rez | 76 w | 76 x | 0 | 76[dt] | 0 | ChloroA |
| 29GD19860904[ao]<br>29GD8609<br>(Galicia9) | g9 | 2 | 50 | 9/4-10/3/1986 | G. del Cid | F. Fraga | R os<br>P rez | 48 w | 50 x | 0 | 48[dt] | 0 | ChloroA<br>$NH_4$ |
| 06GA19960613<br>06GA276 | ga276 | 2 | 125 o | 6/13-6/27/1996 | Gauss | A. Sy | Schneider<br>Thomas | 122 | 0 | 0 | 0 | 0 | |
| 06GA20000506<br>06GA3501<br>(WOCE AR19f) | ga3501 | 2 | 75 | 5/6-6/6/2000 | Gauss | P. Kolterman | Wallace | 59 | 60 | 0 | 0 | 0 | Chloroa |
| 58GS20030922[ap]<br>58GS200309 | gs0309 | 1, 2 | 80 | 9/22-10/13/2003 | G.O. Sars | T. Johannessen | A. Olsen<br>T. Johannessen | 47 aq | 50 | 0 | 0 | 50 | $^{13}C$aq<br>See Note[ar] |
| 58AA19940203<br>58AA9402<br>Leg 1 | aa9402.1 | 1 | 16 | 2/3-2/23/1994 | H. Mosby | O.M. Johannessen | L. Anderson<br>T. Johannessen<br>I. Skelvan | 16 | 14 | 0 | 0 | 0 | |

## 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 |
| 58AA19940224<br>58AA9402<br>Leg 2 | aa9402.2 | 1 | 24 | 2/24-3/17/1994 | H. Mosby | I. Skelvan<br>T. Johannessen | L. Anderson<br>T. Johannessen | 24 | 22 | 0 | 0 | 12<br>as | |
| 58AA19940826<br>58AA9409 | aa9409 | 1, 2 | 49 | 8/26-9/10/1994 | H.Mosby | L. Golman | T. Johannessen | 35 | 33<br>at | 0 | 0 | 0 | |
| 58AA19950217<br>58AA9502 | aa9502 | 1 | 41 | 2/17-3/18/1995 | H. Mosby | O.M. Johannessen<br>I. Skjelvan | L. Anderson<br>T. Johannessen<br>I. Skelvan | 38 | 32 | U | 34 | 40 | |
| 58AA19961121<br>58AA9611 | aa9611 | 1 | 58 | 11/21-11/30/ 1996 | H. Mosby | T. Johannessen | T. Johannessen | 39 | 51 | 0 | 0 | 46 | |
| 58AA19970225<br>58AA9702 | aa9702 | 1 | 81 | 2/25-3/24/1997 | H. Mosby | T. Johannessen | T. Johannessen | 52 | 51 | 0 | 0 | 0 | |
| 58AA19980308<br>58AA9803 | aa9803 | 1 | 78 | 3/8-3/24/1998 | H. Mosby | K. Simonsen | T. Johannessen | 71 | 67 | 0 | 0 | 0 | |
| 58AA19991003<br>58AA9918 | aa9918 | 1 | 71 | 10/3-10/11/1999 | H. Mosby | A. Omar<br>A. Olsen | A. Omar | 61 | 59 | 0 | 0 | 0 | |
| 58AA20000923<br>58AA0026 | aa0026 | 1 | 168 | 9/23-10/03/2000 | H. Mosby | S. Osterhus | A. Omar | 16<br>8[au] | 16<br>8 | 0 | 0 | 0 | $^{18}O$ |
| 58AA20010527<br>58AA0113<br>TRACTOR 13 | aa0113 | 1, 2 | 129 | 5/27-6/19/2001 | H. Mosby | T. Johannessen | A. Olsen<br>A. Omar | 92 | 55 | 0 | 0 | 11<br>6[av] | $SF_6$[aw] |
| 58AA20010822<br>58AA0119 | aa0119 | 1 | 69 | 8/22-8/29/2001 | H. Mosby | R. Skogseth | A. Omar | 68<br>au,<br>ax | 68 | 0 | 0 | 0 | No nuts. |

## 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 |
| 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]<br>32H1HLY0203<br>SBI Summer | hly0203 | 1 | 44 | 7/18-8/21/2002 | Healy | J.M. Grebmeier<br>L.W. Cooper | N. Bates | 42<br>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[bf] |
| 29HE19951203[bg]<br>Fruela-95 | fruela95 | 3 | 48[bh] | 12/3/1995-1/5/1996 | Hesperides | R. Anad n<br>M. Estrada | G. Ros n | 0 | 36<br>bi | 0 | 46[bi] | 0 | Ammonium, POC, DOC[bj], PON[bk], ChloroA |
| 29HE19960117[bg]<br>Fruela-96 | fruela96 | 3 | 23 | 1/17-2/5/1996 | Hesperides | R. Anad n<br>M. Estrada | A. R os | 0 | 22<br>bi | 0 | 22[bi] | 0 | Ammonium, POC[bj], PON[bk], ChloroA |
| 29HE19980730[bl]<br>29HE050 | he050 | 2 | 44 | 7/30-8/21/1998 | Hesperides | F. P rez | A. R os<br>M. Alvarez<br>J. Aristigui | 24 | 24 | 0 | 44 | 0 | Ammonium |
| 29HE20010305<br>FICARAM II<br>HE073 | he073 | 2, 3 | 29 | 3/5-4/17/2001 | Hesperides | A. Rios | A. R os | 29<br>bm | 29 | 0 | 29 | 0 | |
| 29HE20020304<br>FICARAM IV<br>HE081 | he081 | 2, 3 | 19 | 3/4-4/9/2002 | Hesperides | F. Perez | A. R os<br>F. Perez | 19<br>bm | 19 | 0 | 19 | 0 | |
| 29HE20030408<br>29HE091<br>FICARAM VI | he091 | 2 | 7 | 4/8-4/24/2003 | Hesperides | R os | A. R os<br>R. Wanninkhof | 7[bn] | 7[bo] | 7[bp] | 7 | 0 | |

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

## 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 |
| 74JC19960720<br>74JC9608 | jc9608 | 1 | 41 | 7/20-8/22/1996 | J.C. Ross | A. Watson | T. Johannessen<br>I. Skelvan | 25 | 25 bz | U | 0 | 0 | |
| 58JH19911106[bs]<br>58JH9111 | jh9111 | 1, 2 | 76 | 11/6-11/25/1991 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 36 bt | CCl4, Cl3Et, $^{3}H$,$^{3}He$, He |
| 58JH19920712<br>58JH9207<br>WOCE AR18b | jh9207[bu] | 1, 2 | 31 | 7/12-7/28/1992 | J. Hjort | J. Blindheim<br>E. Buch | J. Olafsson | 9[bv] | 0 | 0 | 6 | 0 | $^{13}C$,$^{14}C$bv |
| 58JH19921107[bs]<br>58JH9211 | jh9211 | 1, 2 | 68 | 11/7-11/29/1992 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 30 bt | CCl4, CFC-113, Cl3Et, $^{3}H$,$^{3}He$, He |
| 58JH19930730<br>58JH9308 | jh9308 | 1 | 69 | 7/30-8/15/1993 | J. Hjort | F. Rey | T. Johannessen<br>I. Skelvan | 35 | 36 | 0 | 0 | 0 | |
| 58JH19931107[bs]<br>58JH9311 | jh9311 | 1, 2 | 51 | 11/7-11/30/1993 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 51 bt | CFC-113, Cl3Et, $^{3}H$,$^{3}He$, He |
| 58JH19940525<br>58JH9405 | jh9405 | 1 | 44 | 5/25-6/6/1994 | J. Hjort | F. Rey | I. Skelvan<br>T. Johannessen | 20 | 20 | 0 | 0 | 0 | |
| 58JH19940723<br>58JH9408<br>WOCE AR18d | jh9408 | 1, 2 | 74 | 7/23-8/16/1994 | J.Hjort | J. Bllindheim | J. Olafsson | 78 | 0 | 78 | 0 | 67 bw | CCl4, CFC-113 $^{3}H$,$^{3}He$; $^{13}C$,$^{14}C$ |
| 58JH19941029[bs]<br>58JH9410 | jh9410 | 1, 2 | 108 | 10/29-11/23/ 1994 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 69 bt | CCl4, CFC-113, Cl3Et, $^{3}H$,$^{3}He$, He |
| 58JH19950427<br>58JH9505 | jh9505 | 1, 2 | 109 | 4/27-5/23/1995 | J. Hjort | F. Rey | T. Johannessen<br>I. Skelvan | 47 | 46 | U | 0 | 0 | |

## 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 |
| 58JH19951108[bs]<br>58JH9511 | jh9511 | 1, 2 | 51 | 11/8-11/26/1995 | J. Hjort | J. Blindheim<br>F. Rey | I. Skjelvan<br>T. Johannessen | 26 | 26 bx | U | 0 | 31 bt | CCl4, CFC-113, Cl3Et, $^3H$,$^3He$, He |
| 58JH19960722 | jh9607 | 1 | 5 | 7/22-8/1/1996 | J. Hjort | | | | | | | | DOC[by] |
| 58JH19961030[bs]<br>58JH9611 | jh9611 | 1, 2 | 42 | 10/30-11/9/1996 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 27 bt | CCl4, CFC-113, Cl3Et, $^3H$,$^3He$, He |
| 58JH19970425[bs]<br>58JH9704 | jh9704 | 1, 2 | 135 | 4/25-5/22/1997 | J. Hjort | J. Blindheim<br>F. Rey | L. Anderson | 48 | 56 bz | 0 | 56 | 54 bt | CCl4, CFC-113, Cl3Et, $^3H$,$^3He$, He |
| 58JH19980804[bs]<br>58JH9808 | jh9808 | 1 | 49[ca] | 8/4-8/23/1998 | J. Hjort | F. Rey<br>T. Johannessen | L. Anderson | 35 cb | 35 | 0 | 34 | 27 bt | CCl4, CFC-113, Cl3Et, $^3H$,$^3He$, He |
| 58JH19990616[bs]<br>58JH9906 | jh9906 | 1, 2 | 35[cc] | 6/16-7/7/1999 | J. Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 35 bt | CCl4, CFC-113, $^3H$,$^3He$, He |
| 58JH20000527[bs]<br>58JH0006 | jh0006 | 1 | 119 | 5/27-6/19/2000 | J.Hjort | ??? | NA | 0 | 0 | 0 | 0 | 0 | |
| 58JH20050528[bs]<br>58JH2005 | jh2005 | 1 | 37[c] c | 5/28-6/17/2000 | J.Hjort | J. Blindheim<br>F. Rey | NA | 0 | 0 | 0 | 0 | 37 bt | CCl4, CFC-113, $^3H$,$^3He$, He |
| 49HH19941213<br>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<br>KH01_3 | kh01.3 | 3 | 18 | 12/8/2001-1/19/2002 | Hakuho-Maru | | M. Ishii | 17 | 0 | 0 | 0 | 0 | Chloroa, NH4 |
| 316N19971005<br>316N154_2<br>WOCE AR24b | ar24b | 1, 2 | 162 | 10/5-11/19/1997 | Knorr | R. Curry | C. Goyet | 0 | 44 | U | 0 | 0 | TOC[ce], LADCP |

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

## 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 |
| 35MF19981205<br>OISO-03 | oiso3 | 3 | 17 | 12/5-12/27/1998 | Marion-Duf-resne | N. Metzl | C. Lo Monaco | 17 | 17 | U | 0 | 0 | ChloroA<br>$^{13}C$, $^{18}O$aw |
| 35MF19990104[cm]<br>ANTARES 4 | ant4 | 3 | 35 | 1/4-2/23/1999 | Marion-Duf-resne | M. Denis | B. Delille | 25 | 33 | 0 | 32[cn] | 0 | Ba[co] |
| 35MF20000117<br>OISO-04 | oiso4 | 3 | 19 | 1/17-1/27/2000 | Marion-Duf-resne | N. Metzl | C. Lo Monaco | 19 | 9[cp] | U | 0 | 0 | ChloroA<br>$^{13}C$, $^{18}O$aw |
| 35MF20000719<br>OISO-05 | oiso5 | 3 | 12 | 7/19-8/16/2000 | Marion-Duf-resne | N. Metzl | C. Lo Monaco | 12 | 12 | U | 0 | 0 | ChloroA<br>$^{13}C$, $^{18}O$aw |
| 35MF20010103<br>OISO-06 | oiso6 | 3 | 11 | 1/3-1/26/2001 | Marion-Duf-resne | N. Metzl | C. Lo Monaco | 11 | 11 | U | 0 | 0 | ChloroA<br>$^{13}C$, $^{18}O$aw |
| 06MT19920322<br>06MT021 | met21 | 1, 2 | 287 | 3/22-8/18/1992 | Meteor | J. Duinker | Pegler<br>Schneider<br>Mintrop | 27 4 | 27 2 | U | 0 | 0 | |
| 06MT19940219[cq]<br>06MT27_3<br>WOCE AR04e | met27.3 | 2 | 102 | 2/26-3/25/1994 | Meteor | F. Schott | NA | 0 | 0 | 0 | 0 | 96 | |
| 06MT19941012[cr]<br>06MT302<br>WOCE A02 | a2 | 1, 2 | 52 | 10/12-11/12/ 1994 | Meteor | Koltermann | A. K rtzinger<br>K. Friis | 29 cs | 30 | 0 | 0 | 44 | $^{14}C$[ct], $^{13}C$aw |
| 06MT19941115[cr]<br>06MT303<br>WOCE A01 | a1wgersv | 1, 2 | 62 | 11/15-12/19/ 1994 | Meteor | Meincke | H. Thomas | 44 cu | 0 | U | 0 | 55 | CFC, $^{14}C$<br>$^{3}H$, $^{3}He$ |
| 06MT19960613<br>06MT362 | met36.2 | 1, 2 | 16 | 6/13-7/14/1996 | Meteor | Kremling | Mintrop<br>Koertzinger | 15 cv | 15 | 0 | 16 | 0 | |
| 06MT19960910<br>06MT365 | met36.5 | 2 | 62 | 9/10-10/3/1996 | Meteor | C. Hemleben | P rez<br>Wallace | 61 | 26 | 26 | 26 | 0 | |

## 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 |
| 06MT19970107<br>06MT372 | met37.2 | 2 | 45 | 1/7-1/20/1997 | Meteor | T. Muller | P rez | 20 | 28 | 0 | 28 | 0 | Chloroa<br>DOC, Al[aw] |
| 06MT19970517<br>06MT392<br>WOCE<br>AR12/AR24 | met39.2 | 1, 2 | 67 | 5/17-6/7/1997 | Meteor | W. Zenk | Koertzinger<br>Mintrop | 30 cw | 30 | 0 | 65 | 64 | |
| 06MT19970707<br>06MT394<br>WOCE<br>AR05/AR07W | met39.4 | 1, 2 | 98 | 7/7-8/9/1997 | Meteor | F. Schott | Mintrop<br>Koertzinger | 46 cw | 46 | 0 | 96 | 98 | $^{3}H$, $^{3}He$[aw] |
| 06MT19970815<br>06MT395<br>WOCE AR07Ei<br>+ VEINS | met39.5 | 1, 2 | 110 | 8/15-9/9/1997 | Meteor | A. Sy | Thomas<br>Schneider | 78 cu | 0 | U | 0 | 92 cx | $^{18}O$, $SF_6$, $^{14}C$[aw] |
| 06MT432 | | | | 1999 | | G. Graf | A. Borges | | | | | | |
| 06MT19990610<br>06MT199906<br>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<br>06MT199907<br>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<br>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 |

## 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 |
| 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 | 11 4 | 10 8 | 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 | $^3H$, $^3He$, 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 | N2O, $^{13}C$, $^{15}N$, 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 | $CCl_4$, SF6[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] |
| 74DN01?? | | | | 7/17-7/26/2001 | Oden | | L.Anderson | | | | | | |
| 77DN0204[dn] | | 1 | | | Oden | | | | | | | | |
| 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 |

## 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]<br>NOW99<br>Northwater Polynya | now99 | 1 | 40 | 8/27-10/5/1999 | P. Radisson | L. Fortier<br>H. Melling | L. Miller<br>D. Wallace<br>T. Yager | 40 | 40 | 0 | 0 | | DOC[dq], PON, POC |
| 67SL19881117[dr]<br>67SL8811 | sl88.11 | 2 | 20 | 11/17-11/26/<br>1988 | P.Siedlecki | A. R os | R os | 0 | 20<br>ds | 0 | 20[dt] | 0 | |
| 32L919920718<br>NEWP92[du] | newp92 | 1 | 81 | 7/18-8/14/1992 | Polar Sea | J. Deming | T. Yager | 10 | 10<br>dv | 0 | 0 | 0 | $^3H$,$^3He$[dw],<br>He, POC,<br>PON,<br>Chlora.[dx],<br>Phaeo. |
| 32L919930722<br>NEWP93 | newp93 | 1 | 102 | 7/22-8/17/1993 | Polar Sea | J. Deming | Johnson<br>Wallace<br>Schneide<br>Neill | 70 | 69 | 69<br>dy | 0 | 0 | $^3H$,$^3He$dw,<br>He, POC,<br>Chlora.<br>PON,<br>Phaeo. |
| 32PZ20020715[dz]<br>32PZAWS02I | aws02i | 1 | 63 | 7/15-8/13/2002 | Polar Star | R. Pickart | | 0 | 0 | 0 | 0 | 0 | |
| 06AQ1993????<br>06ANTIX_4 | | 1 | | 1993? | Polarstern | | L. Anderson | X<br>ea<br>g | c | | | | |
| 06ANTX_6 | | | | 1992 | | | | | | | | | |
| 06ANTXVIII_2<br>EisenEx | | | | 11/1-11/29/2000 | Polarstern | | D. Bakker<br>Y. Bozec<br>H. de Baar | | | | | | |
| 06AQ19960712[eb]<br>06ARKXII<br>(AQN12) | aqn12 | 1 | 102 | 7/12-9/6/1996 | Polarstern | E. Augstein | Anderson | 78 | 63 | 0 | 57 | 97 | $^3H$,$^3He$,<br>$^{18}O$,<br>DOM,DOC |

## 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 |
| 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 | |

## 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 |
| 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 | $^3H$ |
| 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 | $^3H$ |
| 64TR19910408[eq] 64TY9104 WOCE AR07Eb | ty91.04 | 1, 2 | 141 er | 4/8-5/15/1991 | Tyro | H.M. van Aken | Stoll DeBaar | 138[e] n | 0 | 0 | 0 | 0 | |
| | | | | 1980 | Ymer | | L. Anderson | | | | | | |
| CarboOcean | | | | | | | | | | | | | |
| Cruise | Base Name | | No. Sta. | Date[es] | Ship | Ch. Sci. | Carbon P.I. | $TCO_2$ | Alk. | $pCO_2$ | pH | CFC | 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 | $NH_4$ |

## 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 |
| 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 | $NH_4$ |
| 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 | $NH_4$ |
| 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; Girton 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 Manr quez et al., 1978.
w. Calculated from alkalinity and pH with constants from Lueker et al., 2000. Summary of Galicia cruises in R os et al., 2001.
x. See P rez and Fraga, 1987b; R os and P rez, 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 [H+] scale at in situ conditions
ai. See Andrie et al., 1999.
aj. See C. Mouri o et al., 1984.
ak. See P rez et al., 1987.
al. See Frage et al. 1985
am. See Mouri o 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., 20003
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 Anad n and Estrada, 2002; Garcia et al. 2002.
bh. Includes 2 stations with decimal notation (39.2, 138.2)
bi. See lvarez 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 McTaggert 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 Bulsiewicz 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 micormole/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. P rez et al., 1998.
dt. See P rez 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, IISSN 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 P rez et al., 2004.
el. No data yet.
em. See A t-Ameur and Goyet, 2007.
en. See Stoll et al., 19996a,, 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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