Supplementary Material

S.1 The southern boxes

Offshore in the southern Arabian Sea (Boxes A-C, 10˚-12˚N) below the mixed layer, advection of the Subantarctic Mode Water (SAMW) from the south tends to split the low-oxygen water vertically into two parts, with the associated O_2 maximum occurring at roughly 250 m depth (Wyrtki*,* 1971: table 441; Sen Gupta et al., 1976; see also Fig. 2C in Beal et al., 2003). When discussing their section published in 1976, Sen Gupta and Naqvi (1984) adopted Warren's (1981) nomenclature (SAMW) for this water, which is also characterized by a salinity minimum. The density of the water mass (26.5-26.8 kg m^{-3}) is similar to that of the high-salinity Persian Gulf Water (PGW) found in our northern boxes, but the salinities and O_2 contents of the two water masses are clearly different. Along the longitudes studied here, the weak O_2 maximum of the SAMW extends poleward up to 10˚-12˚N depending on the depth (Naqvi et al., 1993) and, as we add here, probably also depending on the strength of the poleward advection. Note the greatly variable hydrography on four recent zonal sections near 8˚N through Box A1, including the aeration, especially down to about 250 m depth (Chereskin et al., 2002; Stramma et al., 2002; Beal et al., 2003). During the 1995 SWM, 1 mL L^{-1} (~ 45 μM) of O_2 was observed at 10˚N (Box B1) at 250 m depth with a salinity just below 35.3, similarly to March 1965 at 300 m (cf. Table S.1.b).

S.2 Bias in the apparent O_2 data

Many of our samples from the OMZ carry micromolar concentrations of NO_2^-, which oxidizes the iodide of the reagent to I_2 and raises the apparent O_2 content. Moreover, the resulting nitric oxide will during the titration in the Winkler procedure combine with newly dissolving O_2 and form new NO_2^-, which will react with iodide to form new I_2. This interference in the iodometric O_2 determination has been addressed in freshwater research for many decades by routinely adding sodium azide (Na_3N) to the Winkler reagent for eliminating NO_2^- (e.g., Maucha, 1932). For sea water, Wong (2012) urged consideration of the interference. Azide was added on the *Thompson* cruises (Morrison et al., 1999) but not, to our knowledge, on the cruises studied by us. Therefore we corrected the reported apparent O_2 values where the concurrent NO_2^- measurements were above 0.2-0.3 μM (italicized in Table S.1.b). The extent of O_2

overestimation (μM) due to the presence of NO_2^- in the samples was calculated and corrected for by multiplying the accompanying NO_2^- values by 0.4 (from Wong, 2012). (Independently from Wong, we had determined the same correction factor of 0.4 although with a wider confidence interval.)

To assess the more important overestimate of O_2 by titration with the Visual Endpoint Detection (VED) as in all of our data, we compare our values in three reoccupied boxes of 1994/1995 (D1, D2, and F1) with data by R/V *T. G. Thompson* during the same period, which are based on Winkler analyses with the Automated (photometric) Endpoint Detection (AED) following the JGOFS Manual (Anon., 1994). While the O_2 carried by the reagents is accounted for by the Manual, to our knowledge it was not considered on the cruises studied by us.

The resulting statistics are given in Table S.2.1. All 14 differences of the medians of VED are positive, seven of them significantly so. The median of all 14 medians is 0.035 mL L^{-1} (range, 0.010-0.085), that of the seven significant differences is 0.055 mL L^{-1} (range, 0.045-0.085; these values replace those in Banse and Postel, 2009: 92). Further, we estimate for the bulk of our O_2 data, measured by India's National Institute of Oceanography, that ~ 0.016 mL L^{-1} O_2 was added by the reagents (see solubilities in Murray et al. [1968] and the volumes of reagents and sample bottles, without considering temperature effects). Subtracting the O_2 carried by the VED reagents from the tabled value, we suggest that the median overestimate by the VED over the AED of JGOFS in the three sampled boxes is ~ 0.04 mL L^{-1} (~ 2 μM). We generalize the bias as valid for all O_2 measurements in Table S.1.b.

S.3 Temporal and spatial variability in the OMZ

A clear example of temporal variability at a fixed station is the gradual appearance in the late 1995 SWM of the Persian Gulf Water (PGW) once out of the six visits by R/V *T. G. Thompson* to JGOFS sta. S15 (10˚N, 65˚E) in 1994/1995. While the ship during a 48-h stay kept her position within 9 km, the intrusion expanded from initial absence to occupying the depth interval from 300 to 370 m. The peak salinity changed from 35.30 to 35.45.

As another example, Fig. S.3.1 depicts sections to 500 m depth of isopleths for salinity and nitrite on the scale of about half a degree of latitude and 11 days in the northern OMZ, when temporal and spatial effects cannot be easily separated.

S.4 Meso-zooplankton records from the OMZ

To document further that metazoan zooplankton reside in the OMZ of the Arabian Sea, the following records are cited.

Based on divided hauls with a net of 0.33 mm mesh size in the northern Arabian Sea, Vinogradov and Voronina (1962) and Vinogradov (1970: 272 and Table 71) recorded a median plankton wet weight (presumably preserved, Vinogradov, 1970: Ch. 2, Processing) of ~ 5 mg m^{-3} in the 200- to 500-m depth interval with its OMZ biomass minimum. Between 150 and 500 m depth at < 0.1 mL L^{-1} O_2, the two authors reported copepod "swarms" of *Pleuromamma indica* with up to 9700 specimens per 1000 m^3, numerous euphausiids, and single copepods of five other species.

Böttger-Schnack (1996) sampled with divided nocturnal hauls of about 12 m^3 in 50-m steps with 55 μm mesh size at a station in our Box E2 in SI 1987. As estimated from her Figs. 2 and 3, she reported 1 mg m^{-3} of plankton wet weight and 10-20 m^{-3} of adults and identifiable juveniles of copepods from the plankton minimum in the top of the O_2 minimum. The biomass rose by about tenfold in the next 200 to 300 (400) m depths with slightly enhanced O_2 content, but the increase was not accompanied by higher specimen numbers. She noted that the SI season is the most oligotrophic part of the year, implying that the abundance may be higher in the other seasons. As reported by others also from other open-sea OMZs, many species were present both in the epi- and bathypelagials but dropped out at low O_2 values. Those present often seemed to be layered, which is observable only in narrow depth intervals as studied by Böttger-Schnack (1996; see also Saltzman et al., 1997, and Wishner et al., 2008). Also remarkable for the paper but usually not reported is the large fraction of carcasses and discarded exoskeletons, often one half of the total, in much of the OMZ.

From Madhupratap et al. (2001), who used a closing net with 200 μm mesh size during the FIs of 1992 and 1993 along 64˚E, we convert (cf. their p. 1347) the nighttime carbon values in Table 2 and obtain 1.5, 0.4, 0.7, and 0.3 mg m^{-3} dry weight from about 25 m^3 of water strained in the 300-200 m depth interval at 15˚, 17˚, 19˚, and 21˚N, respectively.

Fabian et al. (2005) employed divided nocturnal net hauls of 3000 to 4000 m^3 in ≥ 50-m steps with 333 μm mesh size near the CAST sediment trap site at a station in our Box D1 during FI 1995, SI 1997, and NEM 1998. As estimated from their Figs. 2, 3, 5, and 7, they collected about

300, 5000, and 700 copepods per 1000 m^{-3} in the plankton minimum of the top of the O_2 minimum. Specimens increased by ten- to almost one-hundred-fold in the secondary maximum of the next few hundred meters of depth. In the same hauls from the plankton minimum, pelagic ostracods numbered about 60, 100, and 20, respectively, while chaetognaths vanished. The differences of abundance between seasons *cum* years are marked and the high specimen numbers of the SI 1997 contrast with those of Böttger-Schnack (1996) for the same season of 1987.

Of larger forms resident in the OMZ of the Arabian Sea, about 100 specimens of a shrimp, one of a euphausid species, and two mesopelagic fish per 1000 m^{-3} (Wishner et al., 2008) and about one fish-eating mesopelagic fish per 10,000 m^{-3} (Butler et al., 2001) were collected nocturnally during one and two cruises, respectively. Four shrimp species appear to reside almost entirely in the OMZ, their nighttime abundances per 1000 m^3 in the upper OMZ near 15˚20'N, 61˚30'E being 7-9, 2, 0.2-0.3, and 0.1 or 0.4 specimens, respectively (Mincks et al., 2000). All these species likely prey on copepods and smaller fish.

For the western and northwestern Arabian Sea on principally three cruises, Ignatyev (2006) collected macroplankton to 100 m depth by midwater trawls with 0.5 mm mesh size in the cod end. The biomass and taxonomic composition varied between day and night, seasons, and due to presence or absence of eddies. For example, at night in zones of anticyclonic eddies, crustaceans and coelenterates contributed 40-81% (mean, 47%) and 27-60 (mean, 37%) of macroplankton wet weight, respectively. In contrast, in upwelling water of cyclonic eddies, 67 [sic]-92% (mean, 59%) of biomass were contributed by tunicates alone. Important to note is that 20-42% of the gross weight of all catches were remains of unidentifiable gelatinous animals, usually not reported in publications.

S.5 Salinity on year

Table S.4 lists slopes of regressions on year for four decades in all boxes, while Table S.5 comprises seasonal regressions for the OMZ when ≥ 15 contiguous years were at hand.

S.6 Four-decadal changes of O_2

Looking in Table S.6 at the negative regression slopes in Boxes D1-F1 between 200 and 500 m (D-boxes also with 150 m; Box E, lat. 18˚N, is hardly represented), depths largely cannot be distinguished from each other. Exceptions are a few with 2-3 values each that differ on the $p = 0.2$ level. These low levels of significance, if any, among depths will be neglected in the following.

For the NEM, the median slope of all indicated depths combined is -0.0041 mL L^{-1} a^{-1} (n = 11; six significant slopes, median, -0.0045 mL L^{-1}; 0.18 and 0.20 µM). The median differs at $p < 0.01$ from that for the SWM of -0.0019 mL L^{-1} a^{-1} ($n = 12$; seven significant slopes, median, -0.0022 mL L^{-1} (-0.09 and -0.10 µM, respectively). An even larger difference between NEM and SWM is found in Box F1 (medians, -0.0064 *vs*. -0.0014 mL L^{-1} a^{-1}; $p = 0.05$, $n = 4$ and 3, respectively), but there is no statistical difference for Box D2. In contrast to these central boxes, the median for the nine NEM slopes in the northern boxes F2, G1, and G2 is +0.0038 mL L^{-1} a^{-1} (without 150 m; only one negative slope, four significant slopes, median, 0.0045, Table 7). Within each latitudinal band the only west-east difference of slopes are D1 > D2 ($p = 0.2$, $n = 5$ and 5) during the SWM and F2 > F1 ($p = 0.01$; $n = 4$ and 4) during the NEM.

A detailed statistical study of Tables 7 and S7 is inadvisable because 52 values > 0.10 mL L^{-1} (38 for the 200- to 500-m horizons) were not accompanied by NO_2^- measurements and had to be accepted at face value (see Sect. 2.3). The majority occurred in the southern boxes, but overall, inspection showed that these unsupported data were not found more often above than below the regression lines. For the 18 cases with > 2 of such values, regressions of O_2 on year were run again. The sign of the slopes changed for three lines, but in all cases the values were altered only in the third or fourth decimal places, so the inclusion of the unsupported determinations is justifiable.

S.7 Decadal change of nitrite

To study decadal change of NO_2^- in another way, the number of "zero values" (i.e., $\leq$ 0.2 µM), of $\geq$ 0.5 µM, and of $\geq$ 1.5 µM, each relative to the total number of NO_2^- values for a depth and box for 1985 and earlier, are compared with the data acquired since then. Unweighted percentages of the totals are used and only cases with total $n > 2$ are considered. Also, in view of the medians in Table 2, to avoid possible decadal bias the 150-m horizon is omitted except in Box D2, while the 400- and 500-m depths are excluded for the D-boxes, as well as 500 m for the E-boxes. For the "zero values" there is no difference between the medians of the percentages in the western (D1-G1) boxes for ≤ 1985 and ≥ 1986 (medians, 31.5 and 33%; $n = 12$ and 16, respectively). In contrast, the medians in the D2-G2 boxes differ at $p = 0.01$ (medians 14 and 2.5%; $n = 2$ and 12, respectively). Thus there is an increase of denitrification in the eastern boxes in the second period. The only significant difference among seasonal medians ($p = 0.2$) occurs with the same sign during the NEM in the eastern boxes (≤ 1985 vs. ≥ 1986, medians, 32 and 11.5% respectively; both $n = 4$).

Considering the percentages of values ≥ 0.5 μM for the two periods with the same criteria as above, the first and second periods when ranked within seasons (lumped for all boxes) did not differ. Comparing the percentages of the early and later periods within the western and eastern boxes, the medians did not differ in the west (both were 56%; $n = 12$ and 16, respectively), while in the east they differed at $p = 0.01$ (medians, 75 and 83%; $n = 11$ and 13, respectively). For values ≥ 1.5 μM within the western and eastern boxes, the percentages for the second period ranked significantly larger in both the western and eastern boxes at $p = 0.05$ and $p < 0.01$, respectively (medians, 21 and 37%; $n = 12$ and 16 in the west; and medians of 43 and 70%; $n = 11$ and 13 in the east). In contrast to the ≥ 0.5 μM comparison, the percentages within seasons (lumped for all boxes) for the ≥ 1.5 μM values were higher in the ≥ 1986- than the ≤ 1985-periods for the NEM ($p = 0.01$, medians, 66 and 33%; $n = 8$ and 8), the SWM ($p = 0.1$, medians 43 and 0%; $n = 5$ and 8), and the FI ($p = 0.2$, medians 59 and 22%; $n = 6$ and 4); the trend for the SI (medians 47 and 42%; $n = 6$ and 6) was in the same direction. Thus denitrification increased after 1985 also by these measures. In view of the difference in O_2 between the NEM and the SWM (Sect. 4.2.1), the numbers of ≥ 1.5 μM values among the two seasons lumped for all boxes were compared for the period ≥ 1986 but did not differ (NEM and SWM, medians, 66 and 43%, $n = 8$ and 8).

Table S.1.a. Abbreviations of ship names in Table S.1.b.

Country	Code	Ship Name
Germany	ME	*Meteor*
	SONNE	*Sonne*
India	GV	*Gaveshani*
	KI	*Kistna*
	SK	*Sagar Kanya*
	AAS	*A.A. Siderenko*
	SS	*Sagar Sampada*
Japan	UM	*Umitaka Maru*
UK	DI	*Discovery*
Ukraine	PV	*Prof. Vodyanitsky*
US	AB	*Anton Bruun*
	AT	*Atlantis*
	RQ	*Requisite*
	TN	*T.G. Thompson*
USSR	ML	*Mikhail Lomonosov*
	OK	*Okean*
	PI	*Priliv*
	SC	*Akademik Shirshov*
	SH	*Shokalsky*
	VE	*Akademik Vernadsky*
	VI	*Vityaz*
WOCE		*World Ocean Circulation Experiment*

Table S.1.b. The data are arranged vertically within boxes (with center latitudes and longitudes) by ship (see Table S.1.a for ship names), station designation, date, decimal year, and season (a, northeast monsoon; b, spring intermonsoon; c, southwest monsoon; d, fall intermonsoon), depth (m), oxygen (mL L^{-1}; italicized values corrected for NO_2^- interference, see Supplement, Sect. S.2.3), nitrite (µM), temperature (˚C), and salinity (psu). Medians and number of samples are listed below boxes. The body of this table (the data list) may be found on the following pages.

Table S.1.b

Ship	Sta	Date	dYear	Season	150mO	200mO	300mO	400mO	500mO	150mN	200mN	300mN	400mN	500mN	150mT	200mT	300mT	400mT	500mT	150mS	200mS	300mS	400mS	500mS
Box A1+A2, 8°N																								
SH		Feb-69	1969.2	a		1.24			0.96						15.85		11.66			35.25		35.21		
AB	333	May-64	1964.4	b	0.59	0.60	1.21	0.92		0.06	0.06	0.03	0.05		17.03	14.46	12.20	11.06		35.27	35.20	35.19	35.19	
SC		May-70	1970.4	b	1.10		1.20		0.96						17.47	15.02	12.08	11.19	10.91	35.36	35.25	35.16	35.15	35.23
SK14	11	Apr-85	1985.3	b											17.84	15.46	12.91	11.44	11.38	35.19	35.22	35.21	35.15	35.17
ME32/3	267	May-95	1995.4	b						0.00	0.00		0.00											
SC		Jun-72	1972.5	c		1.16			0.91						15.75	13.81	11.92	10.89	10.46	35.13	35.20	35.13	35.10	35.31
OK		Jul-73	1973.5	c							0.00			0.06		16.16			10.70		35.37			35.17
OK		Jul-73	1973.5	c						0.17														
SK24	11	Jul-86	1986.5	c		0.99	0.52			0.08	0.00	0.00			22.81	16.54	12.86			35.20	35.25	35.23		
SK24	12	Jul-86	1986.5	c												16.37	12.96		10.72		35.40	35.32		35.27
SK24	13	Jul-86	1986.5	c	0.77	0.91	1.54		1.30	0.00	0.00	0.00		0.00	20.52	15.93	12.87		10.86	35.61	35.45	35.29		35.24
WOCE IR1W	26	Aug-93	1993.6	c											20.06	15.80	12.34	11.39	10.59	35.38	35.43	35.25	35.26	35.24
WOCE IR1W	27	Aug-93	1993.6	c											19.64	14.99	12.25	11.24	10.62	35.61	35.38	35.20	35.21	35.24
WOCE IR1W	28	Aug-93	1993.6	c											19.86	15.82	12.53	11.56	10.95	35.67	35.38	35.28	35.29	35.29
TN39	6	Sep-94	1994.7	c						0.01	0.01	0.01	0.00	0.01	19.34	14.79	12.10			35.55	35.27	35.21		
ME32/5	400	Jul-95	1995.5	c						0.01	0.01	0.00	0.00	0.00	16.41		12.13	11.27	10.69	35.26		35.17	35.17	35.22
WOCE I01W	932	Sep-95	1995.7	c						0.01	0.01		0.01	0.01	17.48	14.27	12.12	11.24	10.58	35.47	35.27	35.23	35.26	35.25
WOCE I01W	933	Sep-95	1995.7	c						0.01	0.01	0.01	0.01	0.01	16.81	13.07	12.30	11.49	10.82	35.41	35.27	35.22	35.28	35.29
WOCE I01W	934	Sep-95	1995.7	c						0.01	0.01	0.01	0.01	0.01	17.84	13.15	12.41	11.53	10.78	35.56	35.31	35.24	35.30	35.31
	Medians				**0.77**	**0.99**	**1.21**	**0.92**	**0.96**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**17.84**	**15.02**	**12.28**	**11.27**	**10.72**	**35.38**	**35.27**	**35.22**	**35.21**	**35.24**
	n				**3**	**5**	**4**	**1**	**4**	**10**	**10**	**7**	**7**	**7**	**15**	**15**	**16**	**11**	**13**	**15**	**15**	**16**	**11**	**13**
Box B1, 10°N																								
AT	575	Mar-65	1965.2	a	0.03	0.47	0.87	0.85	0.74	0.11	0.08	0.12			16.81	14.35	12.56	11.31	10.90	35.53	35.40	35.30	35.18	35.27
AT	576	Mar-65	1965.2	a	0.92		1.19	0.34	0.48	0.07	0.21	0.02			15.57	14.12	12.31	11.51	10.92	35.29	35.31	35.28	35.28	35.29
SH		Feb-69	1969.2	a		0.55	0.72								15.90	13.58				35.46	35.32			
TN43	S15	Jan-95	1995.1	a						0.01	0.00	0.00	0.00	0.00		14.72	12.67	11.69	11.20		35.37	35.36	35.35	35.37
TN45	S15	Mar-95	1995.2	a						0.02	0.01	0.01	0.01	0.00		15.89	13.12	11.88	11.33		35.42	35.37	35.33	35.38
AB	332	May-64	1964.4	b		0.07	0.24	0.88		0.11	0.06	0.08	0.08		19.90	16.08	12.77	11.57		35.57	35.42	35.34	35.28	
OK		May-73	1973.4	b							0.17			0.20		16.30					35.35			
VE22	6772	Apr-80	1980.3	b						0.00	0.00	0.00	0.00	0.00	20.31	15.91	12.49	11.47	10.96		35.62	35.37	35.33	35.39
SK14	32	Apr-85	1985.3	b	0.35	0.30	0.77	0.86	0.52	0.00	0.00	0.00	0.00	0.00	19.19	15.49	12.68	11.95	11.16	35.70	35.47	35.32	35.37	35.33
ME32/3 **means**	258-265	May-95	1995.4	b						0.02	0.01	0.00	0.00	0.00	20.11	15.89	13.12	12.11	11.19	35.57	35.25	35.26	35.34	35.32
SONNE 119	10	May-97	1997.4	b						0.04	0.02	0.00			21.08	16.41	13.20			35.57	35.29	35.22		
VI	A	Sep-59	1959.7	c	0.13	0.21	0.46	0.46	0.43						19.40		12.74	11.22	10.59	35.61		35.20	35.12	35.17
VI	B	Sep-59	1959.7	c	0.20	0.27		0.50	0.47							16.09	12.93	11.21			35.41	35.26	35.26	35.26
AT	99	Sep-63	1963.7	c	0.28	0.22		1.05	0.32						19.44	15.62	12.92	11.70	11.21	35.44	35.32	35.29	35.26	35.33
SC		Jun-70	1970.5	c		0.62									20.35		13.22			35.48		35.27		
SC		Jun-72	1972.5	c		0.54			0.40						18.64	14.99	12.52	11.48	10.84	35.45	35.22			
SH		Jun-72	1972.5	c		0.50																		
SC		Aug-72	1972.6	c		0.44										17.96	13.40	11.88	11.25		35.40	35.24	35.22	35.33
SH		Jun-73	1973.5	c	0.46	0.23			0.57						18.91	15.87	12.98	11.60	11.09	35.53	35.39	35.36		
SK01	88	Aug-83	1983.6	c	0.19	0.21	0.45	0.48	0.54	0.00	0.00	0.00	0.00	0.00	18.97	16.16	13.03	11.72	11.18	35.57	35.35	35.37	35.33	35.36
TN39	8	Sep-94	1994.7	c						0.01	0.01	0.01	0.01	0.00	18.22	14.92	12.98			35.50	35.33	35.36		
TN49	S15	Aug-95	1995.6	c						0.01	0.00	0.00	0.00	0.00	17.75	14.91	12.82	11.80	11.12	35.43	35.29	35.31	35.34	35.35
TN50	S15	Aug-95	1995.6	c						0.02	0.01	0.01	0.01	0.00		15.39	12.60	11.73	11.15		35.31	35.35	35.34	35.27
WOCE I7N	785	Aug-95	1995.6	c						0.01	0.00		0.00	0.00	20.44	16.19		11.69	11.06	35.70	35.46		35.34	35.32
WOCE I7N	786	Aug-95	1995.6	c							0.00	0.00	0.00											
SK04	189	Nov-83	1983.8	d										0.57										
TN53	S15	Nov-95	1995.8	d							0.00		0.02	0.02		13.63	11.99	11.73	10.70		35.33	35.33	35.36	35.33
TN54	S15	Dec-95	1995.9	d							0.03	0.00	0.00	0.01		14.12	12.17	11.46	10.97		35.30	35.32	35.35	35.36
	Medians				**0.24**	**0.30**	**0.72**	**0.68**	**0.48**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**19.19**	**15.62**	**12.80**	**11.69**	**11.11**	**35.53**	**35.35**	**35.32**	**35.33**	**35.33**
	n				**8**	**13**	**7**	**8**	**9**	**14**	**18**	**15**	**14**	**14**	**17**	**23**	**22**	**20**	**18**	**16**	**23**	**21**	**18**	**17**
Box B2, 10°N																								
AT	577	Mar-65	1965.2	a	0.03	0.41	1.19	1.17	0.69	0.07	0.04	0.03			16.80	14.36	12.49	11.53	11.02	35.25	35.14	35.18	35.17	35.22
AT	578	Mar-65	1965.2	a	0.11	0.24	1.02	1.19	1.21	0.02	0.00	0.00			19.04	15.57	13.25	11.88	11.18	35.44	35.14	35.25	35.24	35.27
GV102	2329	Jan-82	1982.1	a		0.73			0.95															
SS98	2510	Feb-92	1992.2	a	0.47	0.63	0.74	0.60	0.43	0.02	0.04	0.08	0.04	0.06	18.23	15.01	13.08	11.84	11.08	35.45	35.30	35.30	35.28	35.29
DI	5382	May-64	1964.4	b	0.07	0.21									19.57	16.05	12.87	11.47		35.73	35.28	35.26	35.19	
DI	5383	May-64	1964.4	b	0.13	0.24	0.87	0.96	0.34						17.48	15.11	12.69	11.46	11.13	35.78	35.27	35.24	35.21	35.28
DI	5384	May-64	1964.4	b	0.51	0.12	0.67	0.30	0.35						19.73	16.48	13.19	11.88	11.32	35.59	35.35	35.30	35.32	35.38
VE22	6771	Apr-80	1980.3	b						0.00	0.00	0.00	0.00		16.75	14.45	12.40			35.68	35.41	35.27		
SK14	33	Apr-85	1985.3	b											20.14	16.79	13.54	12.19	11.91	35.56	35.34	35.25	35.30	35.28
SK14	35	Apr-85	1985.3	b											19.47	16.11	11.97	11.93	11.45	35.61	35.31	35.28	35.28	35.30
SK51	9	Apr-89	1989.3	b	0.86	0.53	0.86	0.59	0.50	0.01	0.00	0.00	0.00	0.00										
VI		Jul-59	1959.5	c		0.24	0.24																	
AT	100	Sep-63	1963.7	c	0.14	0.20	0.43	0.55	0.53	0.03	0.03				18.76	15.45	12.51	11.43	10.88	35.54	35.35	35.29	35.28	35.33
AT	101	Sep-63	1963.7	c	0.17	0.16	0.30	0.51	0.46						19.77	15.73	12.60	11.45	10.78	35.55	35.32	35.28	35.26	35.26
SK01	1	Jul-83	1983.5	c						0.09	0.14	0.18		0.00	17.97	14.68		11.54	10.96	35.56	35.37		35.33	35.35
SK01	90	Jul-83	1983.5	c	0.26	0.31	0.55	0.58	0.55	0.00	0.00	0.00	0.00	0.00	20.08	15.53	12.79	11.65	11.00	35.66	35.41	35.37	35.35	35.38
SK24	34	Jul-86	1986.5	c		1.14	0.54		0.57	0.08	0.00	0.00		0.00	17.78		13.03		10.88	35.39		35.29		35.30
SK04	192	Nov-83	1983.8	d					0.74															
	Medians				**0.16**	**0.24**	**0.67**	**0.59**	**0.54**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**18.90**	**15.53**	**12.79**	**11.60**	**11.05**	**35.56**	**35.32**	**35.28**	**35.28**	**35.30**
	n				**10**	**13**	**11**	**9**	**12**	**9**	**9**	**8**	**4**	**5**	**14**	**13**	**13**	**12**	**12**	**14**	**13**	**13**	**12**	**12**
Box C1, 12°N																								
VI	4710	Mar-60	1960.2	a	0.13	0.15	0.13	0.28	0.43						19.83	15.80	13.57	12.15	11.47	35.63	35.47	35.49	35.38	35.37
AM		Mar-73	1973.2	a							0.93			0.05		15.98			11.31		35.57			35.43
VE22	6760	Mar-80	1980.2	a						5.56	2.86	0.05	0.00	0.00	17.43	15.00	12.29	11.48		35.62	35.54	35.38	35.39	
TN43	S13	Jan-95	1995.1	a						0.70	0.02	0.00	0.00	0.00		15.35	13.03	11.84	11.20		35.88	35.52	35.41	35.39
SK99	20	Feb-95	1995.2	a						2.90	0.01	0.00			18.49	16.05	13.77			35.76	35.68	35.60		
TN45	S13	Mar-95	1995.2	a						0.02	0.01	0.00	0.00	0.00		16.78	13.63	12.42	11.38		35.68	35.88	35.40	35.42
TN54	S13	Dec-95	1995.9	a							0.02	0.00	0.00	0.00		15.27	12.83	11.84	11.47		35.61	35.47	35.42	35.46
AB	331	May-64	1964.4	b	0.65	0.10	0.36	0.44		0.02	0.01	0.02	0.01		19.07	16.11	12.77	11.85		35.63	35.61	35.37	35.35	
SC		May-71	1971.4	b		0.36			0.36						17.10	15.30	12.87	11.75	11.03	35.57	35.40	35.34	35.33	35.33

Table S1b

Ship	Sta	Date	dYear	Season	150mO	200mO	300mO	400mO	500mO	150mN	200mN	300mN	400mN	500mN	150mT	200mT	300mT	400mT	500mT	150mS	200mS	300mS	400mS	500mS
PI		May-73	1973.4	b							0.00			0.00		15.30			11.52		35.52			35.35
PI		May-73	1973.4	b						0.00			0.00			17.01			12.16	35.53				35.41
SK91	11	Apr-94	1994.3	b		0.38	0.50	0.67	0.35							15.68	13.35	12.14	11.34		35.36	35.40	35.37	35.34
SK91	CTD7	Apr-94	1994.3	b							0.00	0.00	0.00	0.00	17.98	15.06	13.07	12.07	11.37	35.69	35.52	35.47	35.45	35.42
ME32/3	256	May-95	1995.4	b						0.06	0.42		0.00		20.40	16.87	13.50	11.88	11.63	35.75	35.66	35.48	35.35	35.45
PI		Jun-70	1970.5	c									0.00	0.00										
SC		Jun-70	1970.5	c							0.06		0.01											
SC		Jul-71	1971.5	c		0.28			0.27						19.84	15.85	12.80	11.96	11.51					
SC		Jun-72	1972.5	c		0.25			0.39						21.08	16.88	13.95	12.31	11.56	35.68	35.43	35.50	35.42	35.38
SC		Aug-72	1972.6	c					0.33		0.54			0.02	21.28	17.41	13.17	12.14	11.42	35.77	35.73	35.36	35.36	35.38
TN39	10	Sep-94	1994.7	c						0.01	2.97	0.00	0.00	0.00	21.16	17.34	13.78			35.89	35.75	35.58		
ME32/5	409	Jul-95	1995.5	c						0.02	0.01				21.68	17.77				35.86	35.67			
SK104	32	Jul-95	1995.5	c						0.01	3.54	0.00			21.03	16.99	14.18			35.77	35.54	35.58		
TN49	S13	Aug-95	1995.6	c						0.03	0.01	0.00	0.00	0.00	21.30	14.48	13.41	12.00	11.55	35.88	35.64	35.52	35.41	35.47
TN50	S13	Sep-95	1995.7	c							1.00					17.23					35.64			
TN53	S13	Nov-95	1995.8	d						1.00	0.10	0.00	0.00	0.00		15.18	12.90	11.90	11.28		35.61	35.47	35.42	35.42
	Medians				**0.39**	**0.27**	**0.36**	**0.44**	**0.36**	**0.03**	**0.04**	**0.00**	**0.00**	**0.00**	**20.12**	**15.98**	**13.26**	**11.96**	**11.45**	**35.72**	**35.61**	**35.48**	**35.40**	**35.41**
	n				**2**	**6**	**3**	**3**	**6**	**12**	**18**	**11**	**13**	**12**	**14**	**23**	**18**	**15**	**16**	**14**	**21**	**17**	**14**	**15**
Box C2, 12°N																								
VE22	6759	Mar-80	1980.4	a						0.00	0.00	0.00		0.00	18.23	15.45	12.77	12.76		35.50	35.34	35.32		
GV54	MX33	May-79	1979.4	b	0.47	0.13	0.18		0.20	0.00	0.00	0.00		0.00										
GV75	1527	May-80	1980.4	b		0.33		1.80	0.40		0.02		0.02	0.02	17.75	15.65				35.46	35.34			
SK91	9	Apr-94	1994.3	b		0.40	0.32	0.28	0.27		0.00	0.00	0.00	0.00		16.90	13.59	12.12	11.37		34.62	34.76	35.28	35.29
GV55	MX106	Jun-79	1979.5	c	0.54	0.56			0.77	0.00	0.00	0.00	0.00	0.00	18.85	15.65	13.09	12.06	11.41	35.58	35.40	35.38	35.40	35.38
GV82	1804	Nov-80	1980.8	d	0.36	0.37				0.04	0.08	0.47	0.13	0.06	17.32	15.43	12.76	11.96	11.22	35.56	35.61	35.46	35.51	35.55
	Medians				**0.47**	**0.37**	**0.25**	**1.04**	**0.34**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**17.99**	**15.65**	**12.93**	**12.09**	**11.37**	**35.53**	**35.34**	**35.35**	**35.40**	**35.38**
	n				**3**	**5**	**2**	**2**	**4**	**4**	**6**	**5**	**4**	**6**	**4**	**5**	**4**	**4**	**3**	**4**	**5**	**4**	**3**	**3**
Box D1, 15°N																								
VE22	6748	Mar-80	1980.2	a						4.44	0.00	0.00		0.00	17.57	15.47	13.74	12.31	11.55	35.82	35.75	35.80	35.66	35.61
GV103	2350	Feb-82	1982.2	a							3.37	0.21	0.00	0.00		14.80	12.84	12.12	11.50		35.48	35.44	35.44	35.46
GV114	2528	Dec-82	1982.9	a							0.71	0.00	0.00	0.00		16.82	12.95	11.95	11.71		35.95	35.52	35.52	35.51
GV114	2530	Dec-82	1982.9	a							0.00	0.00	0.00	0.00		16.11	14.30	12.66			35.83	35.89	35.66	35.54
GV114	2532	Dec-82	1982.9	a						0.00	0.00	1.67	0.00	0.00	18.56	16.61	14.53	13.14	12.00	35.77	35.83	35.95	35.79	35.67
SK13B	40	Mar-85	1985.2	a						0.00	4.00	0.00	0.00	0.00	17.25		12.96	11.89	11.39	35.70		35.47	35.38	35.39
UM	5	Jan-93	1993.1	a						0.34	3.12				18.70	16.88				35.93	35.99			
TN43	S10	Jan-95	1995.1	a						0.00	0.00	1.12	0.00	0.00	16.24	16.49	14.18	12.99	12.23	35.64	35.64	35.69	35.63	35.62
TN43	S11	Jan-95	1995.1	a						0.00	0.00	0.00	0.01	0.00		16.26	13.61	12.97	12.01		35.66	35.67	35.64	35.57
SK99 **means**	DRIFT17	Feb-95	1995.2	a						0.06	0.90	2.36	0.05	0.00	18.95	16.63	13.96	12.86	12.18	35.69	35.73	35.64	35.61	35.60
TN45	S10	Mar-95	1995.2	a						0.50	4.48	1.73	0.01	0.00		16.87	13.95	12.66	11.93		35.69	35.69	35.59	35.56
TN45	S11	Mar-95	1995.2	a						3.00	5.28	2.60	0.01	0.00	20.41	16.59	13.64	12.39	11.74	35.88	35.65	35.55	35.52	35.54
TN54	S10	Dec-95	1995.9	a						5.21	3.35	3.01	0.00	0.00	17.51	16.09	14.15	12.62	11.85	35.68	35.63	35.73	35.60	35.56
TN54	S11	Dec-95	1995.9	a						6.20	3.44	2.22	0.04	0.02	18.43	15.86	13.05	12.40	11.77	35.70	35.63	35.48	35.49	35.51
SK140	18	Dec-98	1998.9	a	0.06	0.06	0.05	0.07	0.08	3.48	2.64	2.24	0.00	0.00	16.88	14.92	13.13	12.20	11.63	35.68	35.61	35.55	35.53	35.54
AB	329	May-64	1964.4	b	0.02	0.01				1.04	1.62	1.82	0.10		19.73	17.64	14.52	12.67	11.04	35.79	35.88	35.85	35.62	35.51
SK91 **means**	DRIFT1	Apr-94	1994.3	b	0.32	0.18		0.22	0.28	0.00	0.00	1.21	0.00	0.00	18.33	16.79	14.34	12.77	11.94	35.82	35.86	35.77	35.63	35.58
ME32/3	242	May-95	1995.4	b						0.02	0.02	0.02	0.02											
ME32/3	253	May-95	1995.4	b						0.03	0.02		0.03			17.88	14.30	12.84	12.17		35.80	35.65	35.59	35.59
SS141	3444	Apr-96	1996.3	b		0.00		0.18	0.19	3.27	3.22	2.85	0.00	0.00	18.43	16.27	13.67	12.54	12.10	35.86	35.70	35.67	35.61	35.66
SONNE 119	3	May-97	1997.4	b						0.00	3.92	3.55			19.22	16.97	14.36			35.56	35.58	35.67		
AT8	67	Aug-63	1963.6	c	0.15	0.12	0.12	0.09	0.12						20.05	17.59	14.79	12.94	11.93	35.79	35.85	35.92	35.70	35.61
SC		Jun-72	1972.5	c		0.12									18.13	16.12	13.65	12.38		35.71	35.64	35.75	35.52	
SC		Aug-72	1972.6	c		0.20			0.14						19.55	16.44	14.01	13.88	11.86	35.83	35.66	35.66	35.59	35.55
SK24	66	Aug-86	1986.6	c		0.22	0.29		0.21	0.12	0.00	0.00		0.00	20.68	17.89	14.33		12.18	35.74	35.74	35.66		35.59
TN39	12	Sep-94	1994.7	c						0.08	0.31	0.23	0.01	0.00	19.21	17.17	13.85			35.92	35.81	35.65		
ME32/5	414	Jul-95	1995.5	c								0.00	0.00	0.00			14.91	13.23	12.28			35.85	35.73	35.66
ME32/5	419	Jul-95	1995.5	c						0.02		0.10		0.01	20.54		15.27		12.45	35.89		35.90		35.69
SK103	15	Jul-95	1995.5	c			0.05	0.07	0.09	0.37	0.41	2.17	0.08	0.00	20.12	17.22	14.49	13.38	12.24	35.82	35.77	35.77	35.74	35.62
SK103	16	Jul-95	1995.5	c	0.24			0.09	0.13	0.09	5.25	2.02	0.06	0.00		17.32	14.97	12.84	11.96		35.65	35.79	35.56	35.55
TN49	S11	Jul-95	1995.5	c													14.68	13.04	12.16			35.85	35.72	35.65
TN49	S10	Aug-95	1995.6	c						0.02	0.00		0.00	0.00			14.48	12.90	12.17			35.83	35.68	35.66
TN49	S11	Aug-95	1995.6	c							0.00	0.01	0.00	0.00	20.59	17.43				35.95	35.83			
TN50	S11	Sep-95	1995.7	c						1.00	4.84	1.45	0.18		20.49	16.98	14.57	13.10	11.82	35.83	35.71	35.81	35.67	35.52
SK115	3	Aug-96	1996.6	c	0.31	0.09	0.00	0.09	0.14	0.00	3.52	2.25		0.00	18.88	17.40	14.47	13.01		35.53	35.72	35.81	35.70	
SK209	23	Sep-04	2004.7	c		0.15	0.04	0.05	0.12		0.05	0.27	0.06	0.00		18.47	15.12	13.15	12.37		35.58	35.69	35.57	35.54
SK209	24	Sep-04	2004.7	c	0.03	0.02	0.03	0.12	0.13	0.37	0.00	0.13	0.00	0.00	19.92	17.27	14.70	13.08	12.36	35.69	35.61	35.64	35.56	35.54
SK209	25	Sep-04	2004.7	c	0.03	0.03	0.03	0.03	0.06	0.14	2.04	0.20	0.03	0.03	20.59	16.80	13.78	12.53	11.94	35.78	35.52	35.50	35.43	35.44
TN53	S11	Nov-95	1995.8	d						4.00	0.30				18.24	15.85				35.67	35.65			
SS150	3790	Nov-96	1996.8	d	0.07		0.04	0.28	0.06	5.11	4.32	2.20	0.00	0.00	17.28	15.01	13.32	12.19	11.52	35.78	35.72	35.63	35.55	35.52
	Medians				**0.07**	**0.11**	**0.04**	**0.09**	**0.13**	**0.13**	**0.81**	**1.17**	**0.00**	**0.00**	**18.92**	**16.80**	**14.24**	**12.81**	**11.94**	**35.78**	**35.71**	**35.69**	**35.61**	**35.56**
	n				**9**	**12**	**9**	**11**	**13**	**30**	**34**	**32**	**29**	**29**	**28**	**34**	**36**	**32**	**31**	**28**	**34**	**36**	**32**	**32**
Box D2, 15°N																								
AT	2349	Jan-77	1977.1	a				0.14	0.11	0.55	3.89	2.98			18.72	16.39	14.13	12.49	11.70	35.83	35.74	35.73	35.56	35.54
GV69	1362	Feb-80	1980.2	a			0.11	0.11	0.13	4.84	2.79	0.12	0.07	0.00										
GV69	1363	Feb-80	1980.2	a											17.27	15.64	13.05	12.06	11.57	35.77	35.74	35.58	35.55	35.61
VE22	6749	Mar-80	1980.2	a						2.24	4.18	0.00	0.00		19.61	16.45	13.53	12.43	11.57	35.79	35.68	35.57	35.56	35.51
GV114	2524	Dec-82	1982.9	a						0.00	0.00	0.00	0.00	0.00	18.58	15.77	13.44	12.46	11.79	35.74	35.56	35.55	35.53	35.55
GV114	2526	Dec-82	1982.9	a							0.00	0.19	0.15	0.00		16.09	13.71	12.35	11.83		35.77	35.66	35.50	35.55
SK13	42	Mar-85	1985.2	a																			35.70	35.60
SK38	I14	Feb-88	1988.2	a		0.05	0.14	0.21	0.17	0.00	2.67	0.07	0.00	0.00		16.20	13.73	12.61	11.76		35.74	35.66	35.59	35.52
SK38	I15	Feb-88	1988.2	a	0.08	0.10	0.25	0.22	0.19	1.68	3.39	0.00	0.00	0.00	18.49	16.15	13.68	12.73	11.74	35.78	35.75	35.60	35.59	35.51
SK47	I15	Dec-88	1988.9	a	0.08	0.09	0.11	0.12	0.22	1.77	0.71	0.00	0.00	0.00	18.16	15.51	13.24	11.97	11.39	35.85	35.70	35.53	35.42	35.42
SS98	2514	Feb-92	1992.2	a					0.16	1.65	4.25	3.63	0.23	0.06	19.37	16.42	14.09	12.42	11.78	35.85	35.74	35.68	35.51	35.52
SS106	14	Jan-93	1993.1	a		0.16	0.09	0.11		0.02	0.00	1.43	0.02	0.21	15.89	14.04	13.40	12.57	11.89	35.33	35.32	35.54	35.54	35.53
SS106	15	Jan-93	1993.1	a	0.14		0.09	0.11	0.18	0.13	4.13	1.14	0.01	0.01										

Table S1b

Ship	Sta	Date	dYear	Season	150mO	200mO	300mO	400mO	500mO	150mN	200mN	300mN	400mN	500mN	150mT	200mT	300mT	400mT	500mT	150mS	200mS	300mS	400mS	500mS
SS128	3258	Jan-95	1995.1	a	0.06	0.09	0.07	0.09	0.15	2.07	5.00	2.33	0.03	0.02	19.48	16.51	13.45	12.35	11.61	35.76	35.41	35.53	35.52	35.49
SS128	3259	Jan-95	1995.1	a		0.07	0.06	0.07	0.09	3.66	4.52	3.05	0.04	0.00										
TN45	M1	Mar-95	1995.2	a						2.00	4.58	3.57	0.03	0.01		16.61	13.72	12.35	11.80		35.63	35.55	35.45	35.49
TN54	M1	Dec-95	1995.9	a							3.83	2.12	0.01	0.01		16.01	13.51	12.41	11.74		35.71	35.60	35.54	35.52
SK140	16	Dec-98	1998.9	a	0.07	0.07	0.07	0.07	0.10	3.40	1.76	0.00	0.00	0.00	16.18	14.61	12.61	12.07	11.55	35.62	35.57	35.45	35.50	35.50
SK140	17	Dec-98	1998.9	a	0.04	0.05	0.07	0.07	0.13	2.14	2.86	0.72	0.01	0.00	16.84	14.87	13.24	12.22	11.51	35.67	35.61	35.58	35.52	35.49
SK140	27A	Dec-98	1998.9	a	0.04	0.09	0.11	0.11	0.15	2.50	2.84	0.00	0.00	0.00	16.18	14.70	12.78	12.11	11.48	35.68	35.62	35.49	35.49	35.47
SK140	27B	Dec-98	1998.9	a	0.04	0.09		0.11		2.82	2.30		0.00		16.53	15.19		12.08		35.57	35.66		35.48	
VI	4712	Apr-60	1960.3	b	0.21	0.16	0.19	0.16	0.17						19.90	16.42	13.83	12.38	11.68	35.70	35.55	35.56	35.45	35.44
GA54	59	May-79	1979.4	b				0.06	0.05													35.64		
GV54	58	May-79	1979.4	b																	35.62	35.64		
GV75	1521	May-80	1980.4	b		0.08		0.60	0.33		2.82	1.25	0.08	0.00	20.86	17.13				35.86	35.58			
GV91	1985	Apr-81	1981.3	b							0.62			0.00	18.60					35.62				
GV118	2688	Apr-83	1983.3	b						0.03	3.98	3.14	0.59	0.12										
GV118	2689	Apr-83	1983.3	b						0.88	3.99	0.32	0.00	0.12										
SS141	3442	May-96	1996.4	b											19.44	17.20	14.02	12.74	11.97	35.86	35.83	35.68	35.61	35.58
SS141	3443	May-96	1996.4	b						2.39	2.28	2.99	0.28	0.00	19.07	16.92	13.83	12.52	11.95	35.86	35.83	35.73	35.63	35.62
AT8	68	Aug-63	1963.6	c		0.08	0.13		0.07						21.13	17.59	14.11		11.93	35.95	35.57	35.73		35.63
AT8	69	Aug-63	1963.6	c	0.13	0.09		0.15	0.17	0.04		1.30	0.16	0.04	19.82	16.89	14.18	12.50	11.75	35.65	35.58	35.74	35.55	35.20
SK01	96	Aug-83	1983.6	c				0.21	0.25	2.66	3.99	1.41	0.00	0.00	19.16	16.84	13.83	12.52	11.69	35.74	35.74	35.68	35.55	35.50
SK24	70	Jul-86	1986.5	c						0.00	3.40	0.00	0.00	0.00	20.95	17.05	15.47		11.73	36.08	35.60	35.64		35.57
SK24	68	Aug-86	1986.6	c	0.87				0.16	0.00	1.59	1.67		0.00	20.93	17.95	14.90		12.18	35.98	35.68	35.81		35.63
SK34	I14	Aug-87	1987.6	c	0.10	0.13	0.09	0.18	0.09	0.00	0.06	2.16	0.00	0.00	19.86	16.69	13.69	12.73	11.94	35.92	35.73	35.56	35.54	35.51
TN39	13	Sep-94	1994.7	c						0.94	1.40	0.96	0.00	0.00	19.70	16.87	13.99			35.84	35.70	35.62		
SK103	12	Jun-95	1995.5	c	0.05	0.05	0.05	0.05	0.11	3.88	4.42	3.35	0.01	0.00	18.46	15.80	13.49	12.43	11.85	35.76	35.56	35.52	35.49	35.50
SK103	13	Jun-95	1995.5	c	0.07	0.05	0.07	0.05	0.11	1.38	2.28	2.68	0.03	0.00	19.19	16.32	13.87	12.70	11.86	35.70	35.61	35.64	35.57	35.52
SK103	14	Jun-95	1995.5	c		0.05	0.05	0.05	0.02		3.84	3.83	0.06	0.00	19.74	16.63	13.89	12.59	11.90	35.78	35.70	35.65	35.58	35.57
TN49	M1	Jul-95	1995.5	c						4.00	4.97	0.02	0.00	0.00			13.64	12.42	11.80		35.62	35.62	35.42	35.52
TN50	M1	Aug-95	1995.6	c						4.00	5.55					16.51					35.64			
SS136	3322	Sep-95	1995.7	c		0.00		0.00	0.09	2.61	0.22	0.37	0.00	0.01	18.98	16.19	13.73	12.32	11.81	35.76	35.71	35.67	35.54	35.58
SK209	26	Sep-04	2004.7	c	0.02	0.03	0.03		0.02	0.93	2.31	2.87	0.04	0.03	18.38	16.09	13.66	12.47	11.89	35.71	35.63	35.55	35.48	35.48
SK209	27	Sep-04	2004.7	c	0.04	0.06	0.04	0.07	0.05	3.55	2.16	0.79	0.04	0.06	18.18	15.72	12.82	12.34	12.12	35.67	35.55	35.36	35.37	35.48
GV59	1227	Oct-79	1979.8	d						1.19	0.74	3.72			18.00	16.12	13.76	12.45		35.76	35.77	35.70	35.63	
GV82	1786	Nov-80	1980.8	d	0.21		0.21	0.28			0.19	0.08	0.11											
SK47	I14	Nov-88	1988.8	d				0.29	0.30	1.87	2.93	1.18	0.00	0.00	17.51	15.58	13.81	12.45	11.90	35.52	35.52	35.63	35.52	35.53
SS150	3788	Nov-96	1996.8	d	0.07	0.06	0.11	0.11	0.19	5.31	3.40	0.00	0.00	0.00	16.99	14.98	13.16	12.26	11.46	35.59	35.60	35.58	35.55	35.49
SS150	3789	Nov-96	1996.8	d			0.05	0.06	0.11	5.51	4.09	0.67	0.00	0.00		14.89	13.20	12.41	11.79		35.67	35.56	35.57	35.57
	Medians				**0.07**	**0.08**	**0.09**	**0.11**	**0.13**	**1.87**	**2.85**	**1.16**	**0.01**	**0.00**	**18.85**	**16.20**	**13.71**	**12.43**	**11.79**	**35.76**	**35.64**	**35.62**	**35.54**	**35.52**
	n				**18**	**22**	**22**	**28**	**29**	**37**	**42**	**40**	**38**	**37**	**34**	**39**	**37**	**34**	**35**	**34**	**41**	**39**	**35**	**36**
Box E1, 18°N																								
SH		Feb-69	1969.2	a		0.12	0.11								17.63	15.98	13.80							
AT93-17	2358	Feb-77	1977.2	a	0.07	0.05	0.08	0.06	0.07	0.41	0.41	3.08	0.30	0.00	19.35	17.30	14.90	13.24		35.94	35.87	35.97	35.71	35.61
SK38	K15	Jan-88	1988.1	a											20.03	17.26	14.50			35.98	35.73	35.73		
SK38	K16	Jan-88	1988.1	a											19.56	16.98	15.56	13.88	12.42	36.02	35.82	36.08	35.91	35.70
PV30	4357	Mar-90	1990.2	a	0.21				0.21	0.11	0.86	3.58	3.36	0.05	18.97	17.16	14.53	13.12	12.22	35.80	35.88	35.74	35.66	35.60
PV30	4423	Mar-90	1990.2	a						0.34	0.31	3.57	1.36	0.29	19.22	17.14	14.31	12.86	12.09	36.03	35.91	35.77	35.65	35.60
PV30	4427	Mar-90	1990.2	a	0.12				0.15	0.11	4.21	3.57	0.54	0.04	20.15	16.70	14.69	13.15	12.27	35.88	35.73	35.84	35.68	35.63
SK99	14	Feb-95	1995.2	a						0.02		0.53	0.32	0.00	19.76		14.99	13.94		35.71		35.82	35.86	
SS161	4004	Jan-98	1998.1	a		0.12	0.06		0.11		0.00	1.81	1.59	0.13		17.77	14.83	13.41	12.36		36.11	36.01	35.82	35.71
VI	4720	Apr-60	1960.3	b	0.35	0.15	0.12		0.13	0.00			1.42	0.00	20.49	17.49		13.26	12.33	35.86	35.86		35.76	35.69
AB	328	May-64	1964.4	b				0.08		0.61	3.61	2.78	1.30	0.14	19.71	17.33	14.80	13.26		35.73	35.74	35.82	35.72	
PI		May-73	1973.4	b							0.00					16.85		13.25			35.79		35.71	
SK91	HY20	May-94	1994.4	b												19.14	16.21				35.92	36.06		
SK91	20	May-94	1994.4	b			0.10	0.13	0.14	0.00	0.34	0.00	0.00	0.00	21.13	18.99	15.71	13.85	12.82	36.83	35.96	36.11	36.10	35.73
ME32/3 **means**	243-252	May-95	1995.4	b						0.04	3.54	2.86	2.36	0.21	20.94	17.54	15.10	13.57	11.49	35.94	35.62	35.82	35.76	35.57
SC		Jul-70	1970.5	c					0.11		10.22		4.72		20.90	16.88	14.65	13.25	12.00	35.95	35.78	35.67	35.71	35.62
SC		Jul-71	1971.5	c	0.17			0.19							19.69	16.77	14.76	12.97	11.94	35.86	36.09	36.09	35.83	35.65
SC		Aug-72	1972.6	c		0.15			0.15						19.70	16.86	14.94	13.17	12.16	36.09	36.02	35.94	35.71	35.67
SK34	K16	Jun-87	1987.5	c	0.12		0.10	0.09		0.00	4.30	3.23	1.03		19.01	16.80	14.61	13.13	12.07	35.74	35.67	35.79	35.70	35.58
SK34	K15	Jun-87	1987.5	c	0.23	0.11				0.00	0.00	2.95			19.58	18.75				35.55	35.69			
SK104	44	Aug-95	1995.6	c						0.00	0.22	0.31	0.25		21.31	18.77	16.06	14.08		36.10	35.98	36.15	35.94	
SK115	6	Aug-96	1996.6	c	0.33	0.05			0.09	0.00	1.93	3.41	1.03	0.00	19.74	17.22	14.28	12.93	12.06	35.86	35.89	35.77	35.68	35.61
AB	200	Nov-63	1963.8	d	0.76			0.05		0.10	0.38	1.68	1.33		21.44	17.62	15.77	13.44		36.08	35.66	35.96	35.80	
SK47	K16	Nov-88	1988.8	d	0.99	0.13		0.09		0.00	0.00	0.53	2.62			18.00	14.53	13.35			35.96	35.78	35.76	
	Medians				**0.22**	**0.12**	**0.10**	**0.09**	**0.13**	**0.02**	**0.40**	**2.86**	**1.32**	**0.04**	**19.73**	**17.26**	**14.80**	**13.26**	**12.16**	**35.94**	**35.87**	**35.83**	**35.74**	**35.63**
	n				**10**	**8**	**6**	**7**	**9**	**15**	**16**	**15**	**16**	**11**	**20**	**23**	**21**	**20**	**13**	**19**	**22**	**20**	**20**	**14**
Box E2, 18°N																								
AB	12	Mar-63	1963.2	a			0.19	0.11	0.11	0.86	1.94	0.02	0.03	0.04	19.07	16.47	13.32	12.81	11.92	35.71	35.62	35.44	35.62	35.58
SK38	K14	Jan-88	1988.1	a	0.40	0.06			0.20	0.00	4.05	3.20	0.48	0.00	20.49	16.98	14.19	12.84	12.14	36.09	35.82	35.74	35.63	35.61
SK38	K13	Jan-88	1988.1	a	0.05	0.04			0.11	0.00	2.42	2.00	1.91	0.00	18.56	16.76	14.72	13.24	12.53	35.67	35.72	35.82	35.68	35.67
SK47	K13	Dec-88	1988.9	a				0.09		0.34	3.36	2.64	0.90	0.26	18.67	16.61	14.09	12.75	12.22	35.85	35.82	35.71	35.61	35.90
SK47	K14	Dec-88	1988.9	a	0.49	0.15			0.27	0.00	0.00	2.42	2.15	0.10	20.62	17.53	14.14	12.74	12.16	36.12	35.86	35.70	35.59	35.59
SS98	2496	Feb-92	1992.2	a	0.36			0.07	0.11	0.00	0.00	2.00	2.00	0.00	19.83		13.82	12.76	12.22	35.52	35.70	35.55	35.59	35.61
TN43	N8	Jan-95	1995.1	a						2.54	3.62	3.53	1.28	0.01	18.68	16.70	14.49	13.02	11.98	35.76	35.83	35.70	35.69	35.59
TN45	N8	Mar-95	1995.2	a							4.41	3.29	1.66	0.06		17.02	14.38	13.19	12.48		35.68	35.70	35.67	35.66
TN54	N8	Dec-95	1995.9	a							3.17	2.79	0.09	0.00		16.08	13.74	12.52	11.86		35.86	35.71	35.61	35.60
VI	4718	Apr-60	1960.3	b	0.19	0.16	0.13	0.13		0.00			0.10	1.64	20.81	17.91	15.00	14.86	13.14	35.73	35.64	35.75	35.75	35.72
VI	4719	Apr-60	1960.3	b	0.18		0.13			0.00	3.14		2.07	0.29	20.56	17.71	15.16	13.44	12.44	35.85	35.63	35.82	35.73	35.66
GV118	2704	Apr-83	1983.3	b						0.00	1.48	2.66	2.35	0.41										
SS119	3202	Apr-94	1994.3	b	0.44				0.16	0.15	2.58	2.18	2.06	0.19		17.13	13.92	12.97	12.12		35.46	35.59	35.59	35.57
SK34	K13 (33)	Jul-87	1987.5	c					0.08	0.00	1.55	3.22	0.78	0.00			14.30	13.42	12.42			35.77	35.78	35.69
SK34	K14 (32)	Jul-87	1987.5	c	0.17				0.12		4.86	3.23	2.13	0.67	18.67	16.57	14.39	13.53	12.67	35.76	35.67	35.76	35.78	35.73
TN49	N8	Jul-95	1995.5	c						2.03	2.47					17.51				35.87	35.97			
TN50	N8	Aug-95	1995.6	c						2.50	1.55					16.78					35.97			
TN39	17	Oct-94	1994.8	d						2.05	1.79	2.74	0.68	0.00	18.18	16.15	13.78			35.74	35.78	35.64		

Table S1b

Ship	Sta	Date	dYear	Season	150mO	200mO	300mO	400mO	500mO	150mN	200mN	300mN	400mN	500mN	150mT	200mT	300mT	400mT	500mT	150mS	200mS	300mS	400mS	500mS
SS150	3792	Nov-96	1996.8	d	0.04	0.06	0.03	0.04	0.03	3.87	4.07	3.63	0.23	0.07	17.97	16.42	14.75	13.52	12.34	35.80	35.85	35.91	35.85	35.73
	Medians				**0.19**	**0.06**	**0.13**	**0.09**	**0.11**	**0.08**	**2.53**	**2.74**	**1.28**	**0.06**	**18.88**	**16.77**	**14.25**	**13.02**	**12.22**	**35.76**	**35.78**	**35.71**	**35.67**	**35.66**
	n				**9**	**5**	**4**	**5**	**9**	**16**	**18**	**15**	**17**	**17**	**12**	**16**	**16**	**15**	**15**	**13**	**17**	**16**	**15**	**15**
Box F1, 20°N																								
AM		Feb-73	1973.2	a							0.03													
AM		Mar-73	1973.2	a							0.05													
AT	2347	Jan-77	1977.1	a	0.14					0.03	2.85	2.20	2.44	2.66	19.83	17.32	15.16	13.67	12.40	35.91	35.78	35.84	35.72	35.54
GEOSECS	416	Dec-77	1977.9	a							3.94	3.00		0.60		17.88	14.71				35.94	35.89		
SK38	L15	Jan-88	1988.1	a	0.13	0.06			0.11	0.00	1.04	2.80	2.14	0.03	19.42	17.66	15.66	13.63	12.63	36.03	35.96	36.05	35.82	35.73
SK38	L14	Jan-88	1988.1	a	0.29	0.16	0.19	0.13	0.11						20.06	17.30	15.11	13.98	12.85	36.06	35.72	35.85	35.86	35.75
SK47	L15	Dec-88	1988.9	a	0.34					0.00	0.81	1.33	1.40	0.72	19.78	17.81	15.72	13.56	12.55	36.04	35.95	36.01	35.82	35.71
PV30	4377	Mar-90	1990.2	a			0.10	0.15	0.14	3.57	1.79	3.51	0.11	0.05	18.75	16.68	15.15	13.74	13.01	35.83	35.96	35.93	35.81	35.82
PV30	4389	Mar-90	1990.2	a	0.47	0.30	0.16	0.25	0.16	0.05	0.04	0.07	0.07	0.07	19.22	17.13	15.05	13.97	13.02	36.00	35.97	36.01	35.89	35.82
PV30	4391	Mar-90	1990.2	a	0.50	0.25	0.14	0.14		0.01	0.04	0.01	0.01	0.73	19.89	17.97	15.74	14.20	13.15	36.08	35.90	35.95		35.81
PV30	4393	Mar-90	1990.2	a	0.26	0.15	0.21			0.02	0.05	0.05	1.71	0.21	19.11	17.77	16.15	13.65	12.81	35.90	36.02	36.22	35.82	35.75
PV30	4395	Mar-90	1990.2	a	0.68	0.14				0.05	0.09	1.71	2.07	2.01	20.67	18.47	15.48	13.81	12.75	36.02	35.92	35.99	35.86	35.75
PV30	4397	Mar-90	1990.2	a	0.46	0.10				0.05	2.71	1.71	1.51	0.51	20.36	17.76	15.24	13.61	12.50	36.07	35.92	35.96	35.87	35.73
PV30	4399	Mar-90	1990.2	a	0.20	0.24		0.10		0.06	0.05	1.57	1.36	0.43	18.62	17.00	15.34	13.98	12.63	35.76	35.80	35.94	35.86	35.73
PV30	4401	Mar-90	1990.2	a	0.71	0.33			0.13	0.11	0.14	1.07	1.79	0.01	20.97	17.32	15.61	14.02	12.95	36.14	35.73	36.00	35.89	35.79
PV30	4403	Mar-90	1990.2	a	1.81			0.18	0.19	0.04	3.86	0.41	0.03	0.04	20.90	18.03	15.37	14.15	13.00	36.17	35.95	35.77	35.93	35.78
SS98	2499	Feb-92	1992.2	a		0.14				0.69	0.10	3.95	1.61	0.50	19.12	17.35	14.78	13.42	12.41	35.91	36.00	35.88	35.78	35.67
TN43	N6	Jan-95	1995.1	a							3.43	2.95	1.85	1.12		16.38	14.52	13.35	12.37		35.83	35.86	35.78	35.68
SK99	C012	Feb-95	1995.2	a						1.22	0.04	0.07	1.50	1.61	19.20	17.79	15.56	13.89	12.61	35.94	35.96	36.08	35.90	35.74
TN45	N6	Mar-95	1995.2	a							2.20	3.44	1.89	1.13		17.59	15.04	13.46	12.72		35.93	35.92	35.83	35.74
TN54	N6	Dec-95	1995.9	a						2.00	2.00	2.25	1.00	0.95		17.33	14.98	13.50	12.41		36.03	36.00	35.86	35.71
SS161	4005	Jan-98	1998.1	a	0.15	0.06	0.07	0.07	0.04	0.00	1.54	2.29	2.03	1.30	18.90	17.13	15.00	13.35	12.50	35.83	35.78	35.99	35.79	35.73
AAS42	18	Feb-02	2002.2	a	0.10	0.10	0.10	0.10	0.10	2.74	4.56	1.10	0.29	0.00	18.86	17.41	15.23	13.80	12.42	35.84	35.91	35.98	35.87	35.68
PI		May-73	1973.4	b							0.00			0.68	20.40	18.18	15.82	13.84	12.79	36.17	35.95	35.97	35.88	35.71
GV118	2694	Apr-83	1983.3	b						0.04	2.76	0.03	0.00	0.00										
PV30	4453	Apr-90	1990.3	b	0.34	0.22	0.26	0.03		0.07	0.09	0.01	0.93		19.65	17.60	14.73	13.68	12.89	36.04	36.10	35.97	35.92	35.86
PV30	4459	Apr-90	1990.3	b						0.09	1.71	1.64	0.79		18.95	17.53	15.13	13.67	12.52	35.83	35.95	36.00	35.89	35.75
PV30	4461	Apr-90	1990.3	b	0.34	0.26		0.27		0.03	0.03	0.25	0.01		19.12	17.60	15.59	14.06	13.09	35.80	35.87	36.11	35.93	35.86
PV30	4463	Apr-90	1990.3	b	0.71					0.01	3.36	1.57			21.58	18.73	16.17	14.31	12.86	36.22	35.94	36.17	36.02	35.77
SS119	3204	Apr-94	1994.3	b	0.18	0.14	0.12	0.11	0.09	0.00	0.00	0.00	0.00	0.00		17.46	15.25	13.64	12.44		36.13	36.05	35.87	35.73
SK91	HY22	May-94	1994.4	b											21.59	17.81	15.28	13.96	12.59	35.78	35.92	36.10	35.96	35.87
ME32/3	238	May-95	1995.4	b						0.03	1.52	0.33	1.16		20.53	18.10	16.25	14.39	13.08	35.94	35.82	36.16	35.97	35.82
SS141	3447	May-96	1996.4	b	0.33	0.18	0.17			0.10	0.00	0.10	1.50	1.60	21.76	19.33	16.03	14.20	12.79	36.25	35.94	36.22	36.00	35.82
SONNE 119	6	May-97	1997.4	b							0.00				19.25	17.58				35.85	36.10			
AT	77	Aug-63	1963.6	c	0.10	0.08		0.12	0.10	0.03	0.02	1.36		0.35	19.00	17.54	14.60	13.32	12.39	35.80	36.06	35.91	35.80	35.71
ML		Jun-66	1966.5	c					0.13								15.96		12.49			36.13		35.66
SC		Jul-70	1970.5	c										0.02	19.47		16.31		13.01	35.96		36.13		35.82
SK34	L15	Jul-87	1987.5	c					0.07		3.06			0.30					12.31		35.80			35.69
SK34	L14	Jul-87	1987.5	c								2.70	1.56		20.27	18.63				36.14	36.16			
SK103	25	Jul-95	1995.5	c	0.22	0.15	0.23	0.09	0.09	0.00	0.00	0.00	0.00	0.00	20.71	18.57	16.94	14.23	12.97	36.07	36.01	36.32	35.97	35.79
TN49	N6	Jul-95	1995.5	c							4.73	3.11	2.19	1.23			14.51	13.29	12.43		35.87	35.88	35.80	35.72
TN50	N6	Aug-95	1995.6	c						0.02	4.98	3.33	2.53	1.50		16.89	14.86	13.64	12.54		35.83	35.90	35.82	35.72
WOCE I07N	815	Aug-95	1995.6	c						0.03	0.26	2.34	1.16	0.01	20.38	18.01	15.39	13.86	12.69	36.00	36.04	36.04	35.93	35.77
SS136	3321	Sep-95	1995.7	c	0.03	0.00	0.09	0.08	0.09	0.56	0.03	1.20	0.70	0.00	19.69	17.56	15.56	13.80	12.64	35.99	35.98	36.15	35.94	35.79
WOCE I07N	818	Sep-95	1995.7	c						0.17	2.13	0.90	0.15	0.28	19.90	17.76	16.61	13.70	12.63	36.00	35.95	36.08	35.89	35.77
SK115	8	Aug-96	1996.6	c	0.22	0.01	0.05	0.05		0.00	0.00	1.36	1.76		19.53	17.79	15.45	13.77		36.00	36.12	36.10	35.90	
SK209	2	Sep-04	2004.7	c	0.04	0.04	0.01	0.03	0.04	0.06	0.03	0.33	0.06	0.06	18.63	17.90	15.45	13.76	12.58	35.73	35.98	35.90	35.71	35.55
VI	4854	Nov-60	1960.8	d		0.13				0.36	0.01	2.14	1.38	0.44	18.97	17.21	14.49	12.52	12.04	35.86	36.03	35.86	35.74	35.66
TN39	19	Oct-94	1994.8	d						0.01	0.01	0.00	0.00	0.00	17.12	15.57	13.97	13.12	12.00	35.84	35.86	35.81	35.80	35.65
SS150	3793	Nov-96	1996.8	d	0.27	0.05	0.00	0.02	0.07	0.00	1.68	3.36	2.30	1.62	19.78	17.39	15.41	13.81	12.58	36.02	35.99	36.06	35.91	35.73
	Medians				**0.27**	**0.14**	**0.12**	**0.10**	**0.10**	**0.04**	**0.14**	**1.36**	**1.37**	**0.43**	**19.67**	**17.60**	**15.36**	**13.76**	**12.63**	**36.00**	**35.95**	**36.00**	**35.87**	**35.74**
	n				**25**	**23**	**15**	**17**	**16**	**36**	**45**	**41**	**38**	**37**	**38**	**43**	**44**	**41**	**43**	**38**	**45**	**44**	**40**	**43**
Box F2, 20°N																								
AT	586	Mar-65	1965.2	a	0.11	0.07	0.05	0.06	0.03	0.06	1.35	2.82			20.62	18.25	14.92	13.59	12.66	35.87	35.77	35.78	35.76	35.69
ME	222	Mar-65	1965.2	a	0.06	0.06	0.06	0.06	0.10	0.07	0.05	2.67	0.87	0.95	19.63	17.79	14.58	13.39	12.43	35.85	35.84	35.79	35.74	35.65
ME	223	Mar-65	1965.2	a	0.06	0.06	0.06	0.04	0.06						18.76	16.59	15.26	13.94	12.81	35.63	35.61	35.90	35.85	35.73
ME	224	Mar-65	1965.2	a	0.60	0.12	0.10	0.06	0.08	0.03	0.04	1.90	1.44	1.25	19.64	17.72	15.52	14.13	12.80	35.78	35.84	35.93	35.87	35.74
SK38	L13	Jan-88	1988.1	a	0.30	0.09			0.16	0.00	1.74	4.14	2.55	0.00	19.90	17.52	15.33	13.19	12.70	36.10	35.86	35.95	35.68	35.70
SK38	L12	Jan-88	1988.1	a		0.13	0.17	0.22	0.18								14.92	13.62	12.81		35.85	35.79	35.76	35.74
SK38	L14	Jan-88	1988.1	a											20.06	17.30	15.11	13.98	12.85	36.06	35.72	35.85	35.86	35.75
SK47	L12	Dec-88	1988.9	a	0.20				0.17		2.71	2.09	0.83		18.15	16.08	14.81	13.32	12.37	35.69	35.64	35.94	35.76	35.66
SK47	L13	Dec-88	1988.9	a	0.15			0.10	0.12		1.85	2.50	1.18		19.48	17.43	14.40	13.21	12.53	35.96	35.96	35.85	35.78	35.75
GV118	2702	Apr-83	1983.3	b						0.07	4.40	3.87	2.30	0.05										
AT8	75	Aug-63	1963.6	c	0.08	0.09	0.09	0.08	0.09						18.96	17.06	14.76	13.51	12.42	35.80	35.80	35.87	35.78	35.69
SK34	26	Jul-87	1987.5	c	0.33		0.09		0.11		3.08	3.15			19.65	16.74			11.98	36.03	35.74			35.65
SK148	60	Sep-99	1999.7	c	0.04		0.04	0.05	0.05	0.33	0.30	3.81	2.81	1.64	18.92	17.57	14.32	13.22	12.33	35.99	36.27	35.79	35.75	35.69
	Medians				**0.13**	**0.09**	**0.08**	**0.06**	**0.10**	**0.07**	**1.74**	**2.82**	**1.44**	**0.95**	**19.63**	**17.43**	**14.92**	**13.51**	**12.60**	**35.87**	**35.82**	**35.85**	**35.76**	**35.70**
	n				**10**	**7**	**8**	**8**	**11**	**6**	**9**	**9**	**7**	**5**	**11**	**11**	**11**	**11**	**12**	**11**	**12**	**11**	**11**	**12**
Box G1, 21°N																								
RQ865	AS50	Mar-61	1961.2	a											19.05	17.28	15.09	13.29		35.87	35.94	36.05	35.83	
RQ865	AS49	Mar-61	1961.2	a											20.40	17.99			12.37	35.95	35.79	36.19		35.72
AT	594	Mar-65	1965.2	a	0.08	0.06	0.03	0.07	0.01	0.50	1.10	0.47	1.43	1.17	18.62	17.18	15.05	13.13	12.45	35.82	36.00	36.00	35.72	35.69
SK13	4	Feb-85	1985.2	a						0.00	0.00	0.90	0.60	1.20	20.61	17.29	16.08			36.02	35.76	36.08		
SK13	5	Feb-85	1985.2	a											20.32	18.19	16.53		13.07	35.91		36.00		35.81
SK13	6	Feb-85	1985.2	a										0.60	19.58	18.19				35.89	35.88			35.81
SK38	M13	Jan-88	1988.1	a	0.68	0.08	0.15	0.14		0.00	0.00	0.00	0.05	0.48		18.34	16.46	14.53	13.18		35.99	36.24	36.05	35.84
SK38	M14	Jan-88	1988.1	a	0.30					0.00	0.27				19.29	17.26			12.12	36.05	36.08			35.70
PV30	4359	Mar-90	1990.2	a											19.38	17.85	15.57	13.83	12.81	36.10	35.99	36.12	35.91	35.82
PV30	4361	Mar-90	1990.2	a		0.13				0.41	0.01	1.29	1.14	0.54	18.32	16.98	15.41	13.82	12.65	35.84	36.00	36.10	35.94	35.81
PV30	4367	Mar-90	1990.2	a	0.26		0.22	0.16	0.14	0.07	3.71	0.03	0.02	0.06	18.91	16.97	15.24	13.69	12.66	35.88	35.91	36.02	35.90	35.78

Table S1b

Ship	Sta	Date	dYear	Season	150mO	200mO	300mO	400mO	500mO	150mN	200mN	300mN	400mN	500mN	150mT	200mT	300mT	400mT	500mT	150mS	200mS	300mS	400mS	500mS
PV30	4369	Mar-90	1990.2	a	0.33	0.26	0.37			0.01	0.02	0.02			19.24	17.63	15.48	13.79	12.84	35.98	36.00	36.12	35.90	35.80
PV30	4371	Mar-90	1990.2	a	0.47					0.03	3.29	0.43	1.11	0.48	19.22	17.02	15.15	13.72	12.61	36.17	35.97	36.04	35.86	35.76
PV30	4373	Mar-90	1990.2	a	0.65					0.04		0.53	2.07	0.52	20.72	17.66	16.03	13.80	12.87	36.12	35.74	36.13	35.84	35.79
PV30	4375	Mar-90	1990.2	a	0.26					0.02	1.71	2.01	2.07	0.64	18.21	17.09	14.50	13.72	12.99	35.92	35.96	35.84	35.83	35.78
PV30	4379	Mar-90	1990.2	a	0.21		0.16	0.15		0.02	4.14	0.05	0.03	0.54	18.42	17.13	14.86	14.00	13.05	35.86	35.93	35.89	35.90	35.78
TN43	N5	Jan-95	1995.1	a							0.00		1.97	0.71		17.64	15.36	13.87	12.89		36.05	36.06	35.88	35.78
SK99	10	Feb-95	1995.2	a											19.08	17.57	15.84			35.96	36.06	36.14		
SK99 **means**	DRIFT11	Feb-95	1995.2	a						0.61	0.44	0.11	0.02	0.01						35.89	36.07	36.15		
TN45	N5	Mar-95	1995.2	a							0.19	2.08	0.38	0.02		18.28	16.04	14.29	13.03		35.89	36.10	35.97	35.81
TN54	N5	Dec-95	1995.9	a							4.25	2.18	1.80	0.69		17.03	14.89	13.53	12.60		35.93	36.00	35.84	35.75
SK121 **means**	DRIFT8	Feb-97	1997.2	a	0.25	0.04	0.06	0.05	0.06	0.03	0.57	0.38	0.85	0.34	20.23	18.08	15.78	14.05	13.06	35.93	35.89	36.03	35.85	35.76
GV118	2697	Apr-83	1983.3	b						0.04	0.00	0.04	0.00	1.26										
GV118	2699	Apr-83	1983.3	b						0.00	2.53	0.07	2.22	0.00										
PV30	4448	Apr-90	1990.3	b	0.65	0.31	0.32	0.19		0.02	0.05	0.02	0.06		20.35	17.92	16.52	14.15	13.07	36.24	35.95	36.33	36.01	35.86
PV30	4452	Apr-90	1990.3	b		0.26	0.15	0.22		0.06	0.11	0.03	0.04		21.15	18.84	15.75	14.49	13.11	36.23	35.99	36.01	36.09	35.88
PV30	4465	Apr-90	1990.3	b	0.50	0.27	0.15			0.02	0.02	0.02	1.09		20.92	19.13	16.73	14.40	13.03	36.25	36.12	36.33	36.06	35.84
SK91	HY23	Apr-94	1994.3	b			0.09				1.18	0.01			20.00	18.89	15.68	13.38	12.67	35.18	36.31	36.08	35.80	35.79
ME32/3	237	May-95	1995.4	b						0.07	0.88	0.98	0.02		20.49	18.05	16.13	14.67	13.00	36.07	35.97	36.15	36.05	35.81
AAS42	19	Feb-02	2002.2	b	0.15	0.07	0.15	0.13	0.10						19.70	17.80	16.10	14.11	12.93	35.91	35.99	36.21	35.96	35.79
ML19	1510	Jun-66	1966.5	c		0.21		0.18		0.00	0.00	1.01	0.00	0.76	21.30	18.38	15.49	13.78	12.56	36.15	35.86	36.00	35.86	35.75
SC		Jun-72	1972.5	c							0.15													
SK34	M13	Jul-87	1987.5	c		0.19		0.06				3.55	2.44	0.81		18.16	15.57	14.35	12.81		36.16	36.06	35.97	35.79
SK34	M14	Jul-87	1987.5	c		0.03			0.02	0.00	2.98			0.10	21.33	17.80			12.80	36.24	35.71			35.79
TN49	N5	Jul-95	1995.5	c						0.62		1.31	1.20	0.00	19.35		15.50	13.75	12.60	35.96		36.10	35.99	35.76
TN50	N5	Aug-95	1995.6	c							3.10	2.34	0.92	0.64		17.64	15.45	13.60	12.50		35.90	36.05	35.86	35.72
WOCE I07N	819	Aug-95	1995.6	c								1.10		0.82										
SK115	8	Aug-96	1996.6	c	0.45	0.07	0.05	0.02																
SK115	9	Aug-96	1996.6	c						0.00	0.00	0.00	0.00			17.75	16.33	13.80	12.87	36.08	35.99	36.29	35.88	35.77
SONNE 119		May-97	1997.4	c											19.23	17.57				35.85	36.10			
VI	4855	Nov-60	1960.8	d	0.19					0.02	1.60	2.28	1.78	1.58	20.01	17.64	14.94	13.74	12.70	35.97	35.89	35.95	35.79	35.77
AB	185	Oct-63	1963.8	d	0.28	0.23				0.03	0.02		1.37		18.77	17.73		13.56		35.82	36.03		35.87	
AB	186	Oct-63	1963.8	d	0.53			0.28		0.06	0.01		0.08		18.91	17.30		13.63		35.91	35.89		35.89	
SK47	M14	Nov-88	1988.8	d	0.42				0.11	0.00	1.32		0.45	0.09	20.42	17.86		13.52	12.50	36.16			35.85	35.70
SK47	M13	Nov-88	1988.8	d	0.13	0.12				0.00	0.00	1.61	0.64	0.00	19.37	17.95	15.92	14.02		35.93	36.05	36.12	35.93	
TN39	21	Oct-94	1994.8	d						0.09	0.12	1.00	0.09	0.46										
TN39	20	Oct-94	1994.8	d						1.19	1.73	0.75	1.20	1.01	18.57	17.05	15.44	13.50	12.45	35.98	36.04	36.12	35.85	35.73
	Medians				**0.30**	**0.13**	**0.15**	**0.15**	**0.08**	**0.03**	**0.23**	**0.53**	**0.75**	**0.54**	**19.38**	**17.73**	**15.57**	**13.80**	**12.81**	**35.96**	**35.98**	**36.09**	**35.89**	**35.78**
	n				**19**	**15**	**12**	**12**	**6**	**30**	**34**	**31**	**32**	**28**	**33**	**39**	**32**	**32**	**32**	**35**	**38**	**34**	**32**	**33**
Box G2, 21°N																								
RQ865	AS52	Mar-61	1961.2	a											19.97	17.64	15.20	13.52		35.73	35.71	35.98	35.82	
RQ865	AS51	Mar-61	1961.2	a											19.73	17.93	15.33	13.41	12.36	35.82	35.88	36.02	35.83	35.73
ME	225	Mar-65	1965.2	a	1.12	0.04	0.04	0.04	0.04						20.60	17.84	16.03	13.92	12.70	36.00	35.68	36.07	35.89	35.75
ME	226	Mar-65	1965.2	a	0.68	0.06	0.06	0.04	0.08	0.07	0.06	2.08	1.14	1.52	19.11	17.33	15.00	13.64	12.93	35.92	35.89	35.95	35.86	35.78
AT	2354	Jan-77	1977.1	a	0.37	0.20				0.01		2.21			21.99	18.99	15.28			35.63	35.94	36.02		
AT	2342	Jan-77	1977.1	a		0.19						3.32	2.01	0.77		18.61	15.82	14.04	12.67		35.60	35.93	35.90	35.75
AT	2353	Jan-77	1977.1	a	0.33	0.08					0.09	3.35	2.38	0.90	20.29	17.45	15.31	14.12	12.78	35.55	35.56	35.81	35.87	35.75
SK13	2	Feb-85	1985.2	a						0.00	0.50	2.80	2.20		20.04	17.83	15.28			35.92	35.91	35.95		
SK13	3	Feb-85	1985.2	a																	35.85			
SK38	M12	Jan-88	1988.1	a											19.99	17.75	15.23	13.56	12.74	36.09	35.96	35.98	35.82	35.77
SK38	M11	Jan-88	1988.1	a											20.18	17.18	15.03	13.29	12.27	36.04	35.96	36.02	35.82	35.75
SK38	M10	Jan-88	1988.1	a											20.55	18.57				35.94	35.96			
SK38	M9	Jan-88	1988.1	a											22.20	19.04		14.27	13.24	36.34	35.81		35.89	35.78
SS98	2500	Jan-92	1992.1	a	0.43					0.00	1.00	3.00	2.00	2.00	20.45	17.82	15.47	14.03	12.83	36.06	35.96	36.03	35.91	35.78
SK99	7	Feb-95	1995.2	a						0.20	3.09	2.87			20.05	17.05	15.20			35.85	35.81	35.85		
SK99	8	Feb-95	1995.2	a						0.06	0.42	0.61				17.72				35.82	36.02			
GV118	2701	Apr-83	1983.3	b						0.00	0.31	2.50	1.42	1.36										
ML19	1509	Jun-66	1966.5	c	0.44					0.00	0.24	0.71	1.36	1.43	20.04	17.75	15.23	13.64	12.46	36.02	35.97	35.97	35.90	35.73
SK34	M9	Jul-87	1987.5	c		0.27		0.10		0.06	0.05		2.08	1.16	20.43	17.65			12.67	36.18	35.89			35.78
SK34	M12	Jul-87	1987.5	c							1.40	4.00	1.96	1.26	20.23			13.32		36.17			35.84	
SK34	M11	Jul-87	1987.5	c		0.15		0.02	0.02				1.93	0.88				13.10	12.48				35.81	35.74
SK34	M10	Jul-87	1987.5	c	0.31								1.38	0.79	20.84	17.73			12.39	36.32	36.16			35.69
SK87	13	Sep-93	1993.7	c						0.01	0.56	3.17	0.74	1.05	18.86	17.02	13.83	13.47	12.25	36.20	36.25	36.13	36.00	35.82
SK148	61	Sep-99	1999.7	c	0.04	0.04	0.04	0.05	0.05	0.15	2.67	2.53	2.06	1.32	18.09	16.48	14.39	13.31	12.35	35.91	35.94	35.86	35.80	35.71
SK47	M8	Nov-88	1988.8	d											21.46	18.85	15.00			36.20	35.87	35.79		
SK47	M10	Nov-88	1988.8	d	1.02	0.08					0.39	2.28	2.26	1.50	21.64	18.44	15.41	14.58	13.69	36.29	35.82	35.88	35.87	35.82
SK47	M11	Nov-88	1988.8	d						0.80	1.30													
	Medians				**0.43**	**0.08**	**0.04**	**0.04**	**0.05**	**0.04**	**0.46**	**2.67**	**1.98**	**1.26**	**20.23**	**17.75**	**15.23**	**13.60**	**12.67**	**36.01**	**35.89**	**35.97**	**35.87**	**35.75**
	n				**9**	**9**	**3**	**5**	**4**	**12**	**14**	**14**	**14**	**13**	**21**	**22**	**17**	**16**	**16**	**22**	**23**	**17**	**16**	**16**

Table S.1.c. Sample statistics for the 200- to 500-m horizons in the OMZ (boxes D1 through G2).

	Oxygen (mL L^{-1})				Nitrite (µM)			
Depth	200m	300m	400m	500m	200m	300m	400m	500m
values	103	80	93	95	210	195	189	175
minimum	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
maximum	0.33	0.37	0.60	0.33	10.22	4.14	4.72	2.66
median	0.09	0.09	0.09	0.11	1.40	1.67	0.30	0.04
75%ile	0.16	0.15	0.15	0.16	3.16	2.80	1.50	0.62
25%ile	0.06	0.05	0.06	0.08	0.05	0.22	0.02	0.00
Total values			371				769	

	Temperature (˚C)				Salinity			
Depth	200m	300m	400m	500m	200m	300m	400m	500m
values	227	214	201	197	232	217	201	201
minimum	14.04	12.61	11.89	11.04	35.32	35.36	35.37	35.20
maximum	19.33	16.94	14.86	13.69	36.31	36.33	36.10	35.90
median	17.29	14.81	13.35	12.39	35.83	35.85	35.76	35.69
75%ile	17.78	15.41	13.79	12.70	35.96	36.02	35.87	35.75
25%ile	16.65	14.02	12.74	11.94	35.71	35.69	35.69	35.61
Total values			839				851	

Table S.2. Median temperatures (˚C) for all boxes near the indicated depths (number of values in parentheses; data in Table S.1.b).

Box	150m		200m		300m		400m		500m	
A1+A2	17.84	(15)	15.02	(15)	12.28	(16)	11.27	(11)	10.72	(13)
B1	19.19	(17)	15.62	(23)	12.80	(22)	11.69	(20)	11.11	(18)
C1	20.12	(14)	15.98	(23)	13.26	(18)	11.96	(15)	11.45	(16)
D1	18.92	(28)	16.80	(34)	14.24	(36)	12.81	(32)	11.94	(31)
E1	19.73	(20)	17.26	(23)	14.80	(21)	13.26	(20)	12.16	(13)
F1	19.67	(38)	17.60	(43)	15.36	(44)	13.76	(41)	12.63	(43)
G1	19.38	(33)	17.73	(39)	15.57	(32)	13.80	(32)	12.81	(32)
B2	18.90	(14)	15.53	(13)	12.79	(13)	11.60	(12)	11.05	(12)
C2	17.99	(4)	15.65	(5)	12.93	(4)	12.09	(4)	11.37	(3)
D2	18.85	(34)	16.20	(39)	13.71	(37)	12.43	(34)	11.79	(35)
E2	18.88	(12)	16.77	(16)	14.25	(16)	13.02	(15)	12.22	(15)
F2	19.63	(11)	17.43	(11)	14.92	(11)	13.51	(11)	12.60	(12)
G2	20.23	(21)	17.75	(22)	15.23	(17)	13.60	(16)	12.67	(16)

Table S.2.1. Field comparison between two methods of endpoint detection in the Winkler procedure (*n*, number of observations; *p*, significance level of difference by one-tailed rank test; *sign*, the *p* values could not be looked up, but since the VED and AED data do not overlap, the difference is clearly significant; *ns*, not significant).

Date, Box	200 m		300 m		400 m		500 m	
	values	*n*	values	*n*	values	*n*	values	*n*
October–March, 1994-1995								
Box D1 (centered at 15˚N, 65˚E)								
VED	—		—		0.08	2	0.11	2
AED	—		—		0.025	3	0.06	3
p					*0.10*		*0.10*	
Box D2 (centered at 15˚N, 67˚E)								
VED	0.06	2	0.055	3	0.08	2	0.12	2
AED	0.05	2	0.025	2	0.025	2	0.035	2
p	*ns*		*sign*		*sign*		*sign*	
June–September, 1995								
Boxes D1+F1 (centered at 20˚N, 65˚E)								
VED	0.075	2	0.04	3	0.085	4	0.09	4
AED	0.065	5	0.010	4	0.025	4	0.045	4
p	*ns*		*ns*		*0.01*		*0.01*	
Box D2 (centered at 15˚N, 67˚E)								
VED	0.03	4	0.04	3	0.05	4	0.10	4
AED	0.02	4	0.02	3	0.020	3	0.04	3
p	*ns*		*ns*		*ns*		*ns*	

Table S.3. Median salinities (psu) for all boxes near the indicated depths (number of values in parentheses; data in Table S.1.b).

Box	150m		200m		300m		400m		500m	
A1+A2	35.38	(15)	35.27	(15)	35.22	(16)	35.21	(11)	35.24	(13)
B1	35.53	(16)	35.35	(23)	35.32	(21)	35.33	(18)	35.33	(17)
C1	35.72	(14)	35.61	(21)	35.48	(17)	35.40	(14)	35.41	(15)
D1	35.78	(28)	35.71	(34)	35.69	(36)	35.61	(32)	35.56	(32)
E1	35.94	(19)	35.87	(22)	35.83	(20)	35.74	(20)	35.63	(14)
F1	36.00	(38)	35.95	(45)	36.00	(44)	35.87	(40)	35.74	(43)
G1	35.96	(35)	35.98	(38)	36.09	(34)	35.89	(32)	35.78	(33)
B2	35.56	(14)	35.32	(13)	35.28	(13)	35.28	(12)	35.30	(12)
C2	35.53	(4)	35.34	(5)	35.35	(4)	35.40	(3)	35.38	(3)
D2	35.76	(34)	35.64	(41)	35.62	(39)	35.54	(35)	35.52	(36)
E2	35.76	(13)	35.78	(17)	35.71	(16)	35.67	(15)	35.66	(15)
F2	35.87	(11)	35.82	(12)	35.85	(11)	35.76	(11)	35.70	(12)
G2	36.01	(22)	35.89	(23)	35.97	(17)	35.87	(16)	35.75	(16)

Table S.4. Slopes of regressions of salinity on year for mostly three to four decades (*p* of slope: *, ≤ 0.20; **, ≤ 0.10; ***, ≤ 0.05; *n*: number of values; S.E., Standard Error of regression).

Box	Depth (m)	Year (add 1900)	Slope (a^{-1})	*p*	*n*	S.E.
A1 + A2	150	'64 - '95	0.00865	0.03***	15	0.151
	200	'64 - '95	0.00320	0.14*	15	0.081
	300	'64 - '95	0.00185	0.11*	16	0.046
	400	'64 - '95	0.00384	0.02***	11	0.052
	500	'70 - '95	0.00130	0.37	13	0.046
B1	150	'59 - '97	0.00258	0.19*	16	0.100
	200	'59 - '97	-0.00088	0.52	23	0.086
	300	'59 - '97	0.00138	0.09**	21	0.049
	400	'59 - '97	0.00373	<0.001***	18	0.041
	500	'59 - '95	0.00220	0.01***	17	0.045
C1	150	'60 - '95	0.00610	0.004***	14	0.082
	200	'60 - '95	0.00400	0.07**	21	0.116
	300	'60 - '95	0.00464	0.06**	17	0.115
	400	'60 - '95	0.00126	0.07**	14	0.031
	500	'60 - '95	0.00180	0.04***	15	0.038
D1	150	'63 - '104	-0.00115	0.55	28	0.107
	200	'63 - '104	-0.00184	0.03***	34	0.110
	300	'63 - '104	-0.00346	0.12*	36	0.132
	400	'63 - '104	-0.00076	0.64	32	0.095
	500	'63 - '104	0.00037	0.76	32	0.070
E1	150	'60 - '96	0.00288	0.58	19	0.264
	200	'60 - '96	0.00191	0.47	22	0.141
	300	'60 - '96	0.00086	0.78	20	0.151
	400	'60 - '96	0.00221	0.29	20	0.111
	500	'60 - '96	-0.00053	0.68	14	0.053
F1	150	'60 - '104	-0.00033	0.89	38	0.136
	200	'60 - '104	-0.00066	0.73	45	0.105
	300	'60 - '104	0.00184	0.34	44	0.121
	400	'60 - '104	0.00232	0.0**	40	0.071
	500	'60 - '104	0.00111	0.34	43	0.071
G1	150	'60 - '102	0.00084	0.76	35	0.193
	200	'60 - '102	0.00279	0.08**	38	0.113
	300	'60 - '102	0.00398	0.07**	34	0.108
	400	'60 - '102	0.00291	0.06**	32	0.090
	500	'60 - '102	0.00108	0.28	33	0.050
B2	150	'63 - '92	-0.00111	0.77	14	0.146
	200	'63 - '92	0.00349	0.12*	13	0.080
	300	'63 - '92	0.00157	0.17*	13	0.041
	400	'63 - '92	0.00281	0.05***	12	0.048
	500	'63 - '92	0.00087	0.52	12	0.050

Table S.4 (continued)

D2	150	'60 - '104	-0.00273	0.23	34	0.140
	200	'60 - '104	0.00001	0.97	41	0.104
	300	'60 - '104	-0.00373	0.004***	39	0.079
	400	'60 - '104	-0.00126	0.27	35	0.065
	500	'60 - '104	0.00130	0.28	36	0.075
E2	150	'60 - '96	0.00092	0.80	13	0.168
	200	'60 - '96	0.00509	0.05***	17	0.122
	300	'60 - '96	0.00087	0.72	16	0.116
	400	'60 - '96	-0.00091	0.61	15	0.085
	500	'60 - '96	-0.00029	0.88	15	0.090
F2	150	'63 - '99	0.00685	0.05***	11	0.129
	200	'63 - '99	0.00582	0.14*	12	0.160
	300	'63 - '99	-0.00015	0.93	11	0.069
	400	'63 - '99	-0.00137	0.33	11	0.057
	500	'63 - '99	0.00144	0.88	12	0.040
G2	150	'65 - '99	0.00461	0.37	22	0.222
	200	'65 - '99	0.00581	0.04***	23	0.145
	300	'65 - '99	-0.00022	0.94	17	0.121
	400	'65 - '99	0.00027	0.81	16	0.053
	500	'65 - '95	0.00094	0.82	16	0.164

Table S.5. Seasonal regressions of salinity on year in the OMZ with medians and slopes ≥ 15 years spanned by data and n ≥ 5 (*p* of slope: *, ≤ 0.20; **, ≤ 0.10; ***, ≤ 0.05; *n*: number of values; S.E., Standard Error of regression). See Fig. 3 for names of seasons and months.

Box	Depth	Season	Year (add 1900)	Median	Slope (a^{-1})	*p*	*n*	S.E.
D1	150	NEM	'80 - '95	35.70	-0.00409	0.45	10	0.099
	200	NEM	'80 - '98	35.675	-0.00674	0.25	14	0.137
	300	NEM	'80 - '98	35.655	-0.00546	0.41	14	0.159
	400	NEM	'80 - '98	35.595	-0.00123	0.78	14	0.108
	500	NEM	'80 - '98	35.55	0.00137	0.64	14	0.072
	200	SI	'64 - '97	35.80	-0.00518	0.30	5	0.116
	300	SI	'64 - '97	35.67	-0.00523	0.06**	5	0.050
	150	SWM	'63 - '104	35.805	0.000	0.99	12	0.120
	200	SWM	'63 - '104	35.71	-0.00304	0.17*	13	0.096
	300	SWM	'63 - '104	35.78	-0.00271	0.27	16	0.112
	400	SWM	'63 - '104	35.67	-0.00084	0.71	13	0.100
	500	SWM	'63 - '104	35.59	-0.00121	0.50	13	0.072
E1	150	NEM	'77 - '95	35.94	-0.00974	0.31	7	0.117
	200	NEM	'77 - '98	35.87	0.00978	0.29	7	0.126
	300	NEM	'77 - '98	35.83	-0.00226	0.80	8	0.143
	400	NEM	'77 - '98	35.71	0.00495	0.50	7	0.110
	500	NEM	'77 - '98	35.62	0.00363	0.33	6	0.049
	200	SI	'60 - '95	35.83	0.00079	0.85	6	0.139
	400	SI	'60 - '95	35.76	0.00592	0.29	5	0.151
	150	SWM	'70 - '96	35.86	-0.00300	0.70	7	0.209
	200	SWM	'70 - '96	35.89	-0.00383	0.57	7	0.175
	300	SWM	'70 - '96	35.87	0.00157	0.85	6	0.212
	400	SWM	'70 - '96	35.71	0.00167	0.70	6	0.112
	500	SWM	'70 - '96	35.62	-0.00197	0.23	5	0.031
F1	150	NEM	'77 - '102	36.00	-0.00620	0.30	17	0.118
	200	NEM	'77 - '102	35.93	0.00228	0.55	21	0.094
	300	NEM	'77 - '102	35.96	0.00450	0.25	21	0.096
	400	NEM	'77 - '102	35.86	0.00326	0.17*	19	0.049
	500	NEM	'77 - '102	35.735	0.00308	0.30	20	0.063
	150	SI	'73 - '97	35.94	-0.00860	0.39	9	0.190
	200	SI	'73 - '97	35.945	0.00173	0.75	10	0.109
	300	SI	'73 - '96	36.10	0.00806	0.08**	9	0.078
	400	SI	'73 - '96	35.93	0.00351	0.22	9	0.051
	500	SI	'73 - '96	35.82	0.00460	0.15*	9	0.055
	150	SWM	'63 - '104	36.00	0.00131	0.71	9	0.134
	200	SWM	'63 - '104	35.98	-0.00212	0.57	11	0.118
	300	SWM	'63 - '104	36.08	-0.00060	0.86	11	0.146
	400	SWM	'63 - '104	35.89	0.00062	0.83	9	0.090
	500	SWM	'63 - '104	35.72	-0.00060	0.74	11	0.080
G1	150	NEM	'61 - '97	35.93	0.00257	0.26	18	0.100
	200	NEM	'61 - '97	35.96	0.00197	0.29	21	0.096
	300	NEM	'61 - '97	36.07	-0.00058	0.77	20	0.057
	400	NEM	'61 - '97	35.88	0.00337	0.08**	15	0.068
	500	NEM	'61 - '97	35.78	0.00224	0.03***	18	0.036

Table S.5 (continued)

	150	SWM	'66 - '97	36.08	-0.00670	0.32	5	0.146
	200	SWM	'66 - '97	35.945	0.00485	0.51	6	0.173
	300	SWM	'66 - '96	36.06	0.00525	0.29	5	0.104
	400	SWM	'66 - '96	35.88	0.00155	0.61	5	0.069
	500	SWM	'66 - '96	35.765	-0.00001	0.97	6	0.030
	150	FI	'63 - '94	35.95	0.00391	0.27	6	0.106
	200	FI	'60 - '94	36.03	0.00375	0.16*	5	0.065
	400	FI	'60 - '94	35.86	0.00094	0.55	6	0.050
D2	150	NEM	'77 - '98	35.76	-0.00870	0.09**	13	0.131
	200	NEM	'77 - '98	35.68	-0.00672	0.11*	17	0.117
	300	NEM	'77 - '98	35.58	-0.00555	0.03***	16	0.063
	400	NEM	'77 - '98	35.53	-0.00347	0.09**	18	0.057
	500	NEM	'77 - '98	35.52	-0.00351	0.02***	17	0.037
	200	SI	'60 - '96	35.62	0.00835	0.03***	5	0.067
	300	SI	'60 - '96	35.64	0.00400	0.01***	5	0.021
	150	SWM	'63 - '104	35.76	-0.00312	0.30	13	0.135
	200	SWM	'63 - '104	35.63	0.00067	0.65	15	0.066
	300	SWM	'63 - '104	35.64	-0.00572	0.01***	14	0.086
	400	SWM	'63 - '104	35.54	-0.00280	0.15*	10	0.064
	500	SWM	'63 - '104	35.52	0.00217	0.39	13	0.108
E2	150	NEM	'63 - '95	35.76	0.00201	0.84	7	0.241
	200	NEM	'63 - '95	35.82	0.00509	0.11*	9	0.078
	300	NEM	'63 - '95	35.70	0.00755	0.05***	9	0.089
	400	NEM	'63 - '95	35.62	0.00073	0.63	9	0.040
	500	NEM	'63 - '95	35.61	0.00127	0.75	9	0.106
F2	150	NEM	'65 - '88	35.86	0.00710	0.18*	8	0.153
	200	NEM	'65 - '88	35.84	0.00176	0.62	9	0.118
	300	NEM	'65 - '88	35.85	0.00115	0.60	9	0.071
	400	NEM	'65 - '88	35.76	-0.00159	0.42	9	0.064
	500	NEM	'65 - '88	35.73	0.00073	0.55	9	0.040
G2	150	NEM	'61 - '95	35.93	0.00600	0.23	14	0.197
	200	NEM	'61 - '95	35.89	0.00544	0.07**	16	0.128
	300	NEM	'61 - '95	35.97	-0.00162	0.42	12	0.077
	400	NEM	'61 - '92	35.87	0.00071	0.50	10	0.037
	500	NEM	'61 - '92	35.75	0.00079	0.15*	9	0.016
	150	SWM	'66 - '99	36.175	0.00014	0.98	6	0.162
	200	SWM	'66 - '99	35.97	0.00248	0.75	5	0.175
	400	SWM	'66 - '99	35.84	-0.00109	0.79	5	0.094
	500	SWM	'66 - '99	35.735	0.00056	0.80	6	0.053

Table S.6. Slopes of regressions of O_2 (mL L^{-1}) on year for mostly three to four decades, with $n \geq 5$ (p of slope: *, $\leq$ 0.20; **, $\leq$ 0.10; ***, $\leq$ 0.05; n: number of values; S.E., Standard Error of regression).

Box	Depth (m)	Year (add 1900)	Slope (mL L^{-1} a^{-1})	*p*	*n*	S.E.
A1	200	'64 - '86	0.00328	0.83	5	0.286
B1	150	'59 - '85	0.00157	0.89	8	0.298
	200	'59 - '85	0.00266	0.69	13	0.177
	300	'59 - '85	-0.00061	0.97	7	0.364
	400	'59 - '85	0.00203	0.85	8	0.280
	500	'59 - '85	0.00266	0.58	9	0.124
C1	200	'60 - '96	0.00686	0.07**	6	0.080
	500	'60 - '96	-0.00137	0.56	6	0.058
D1	150	'63 - '104	0.00044	0.89	9	0.131
	200	'63 - '104	-0.00105	0.50	12	0.079
	300	'63 - '104	-0.00300	0.15*	9	0.080
	400	'63 - '104	-0.00045	0.85	11	0.081
	500	'63 - '104	-0.00088	0.57	13	0.064
E1	150	'60 - '98	-0.00373	0.67	10	0.318
	200	'60 - '98	-0.00129	0.27	8	0.038
	300	'60 - '98	-0.00104	0.12*	6	0.017
	400	'63 - '94	0.00080	0.66	7	0.051
	500	'60 - '98	0.00027	0.82	9	0.043
F1	150	'63 - '104	-0.00259	0.79	25	0.367
	200	'60 - '104	-0.00111	0.58	23	0.092
	300	'88 - '104	-0.01027	0.01***	15	0.062
	400	'63 - '104	-0.00266	0.20*	7	0.069
	500	'63 - '104	-0.00129	0.18*	16	0.039
G1	150	'60 - '102	0.00236	0.52	19	0.187
	200	'63 - '102	-0.00100	0.53	15	0.098
	300	'65 - '102	0.00170	0.65	12	0.107
	400	'63 - '102	-0.00230	0.21	12	0.074
	500	'65 - '102	0.00236	0.23	6	0.048

B2	150	'63 - '92	0.01574	0.02***	10	0.196
	200	'59 - '92	0.01842	0.003***	13	0.201
	300	'59 - '92	0.00285	0.73	11	0.311
	400	'63 - '92	-0.00674	0.50	9	0.322
	500	'63 - '92	-0.00033	0.96	12	0.268
C2	200	'79 - '94	0.00383	0.80	5	0.176
D2	150	'60 - '104	-0.00499	0.20*	18	0.189
	200	'60 - '104	-0.00142	0.03***	22	0.034
	300	'60 - '104	-0.00322	0.001***	22	0.044
	400	'60 - '104	-0.00437	0.03***	28	0.107
	500	'60 - '104	-0.00158	0.20*	29	0.073

Table S.6 (continued)

E2	150	'60 - '96	0.00300	0.59	19	0.176
	200	'60 - '96	-0.00266	0.23	5	0.049
	400	'60 - '96	-0.00187	0.03***	5	0.016
	500	'63 - '96	-0.00015	0.96	9	0.075
F2	150	'63 - '99	-0.00065	0.88	10	0.182
	200	'63 - '88	0.00100	0.24	7	0.026
	300	'63 - '99	-0.00007	0.96	8	0.054
	400	'63 - '99	0.00119	0.49	8	0.062
	500	'63 - '99	0.00073	0.62	11	0.061
	500	'65 - '102	0.00236	0.23	6	0.048
G2	150	'65 - '99	-0.01290	0.20*	9	0.331
	200	'65 - '99	0.00111	0.69	9	0.087

Table S.7. Slopes of regressions of NO_2^- (μM) on years in the OMZ for values ≥0.5 and ≥1.5 μM with n ≥ 5 (*p* of slope: *, ≤ 0.20; **, ≤ 0.10; ***, ≤ 0.05; *n*: number of values; S.E.: Standard Error of regression).

		≥0.5 μM					≥1.5 μM				
Box	Depth (m)	Year (add 1900)	Slope (μM a^{-1})	*p*	*n*	S.E.	Year (add 1900)	Slope (μM a^{-1})	p	n	S.E.
D1	150	'64-'98	0.0580	0.33	11	1.87	'80-'98	-0.0122	0.88	8	1.20
	200	'64-'104	0.0498	0.18*	18	1.31	'64-'104	0.0368	0.22	16	1.02
	300	'64-'98	0.0202	0.31	17	0.63	'64-'98	0.0253	0.12*	14	0.49
E1	200†	'64-'96	-0.0319	0.60*	6	1.48	'64-'96	-0.0213	0.63	5	1.05
	300	'63-'98	0.0018	0.19	13	1.14	'63-'98	0.0204	0.27	11	0.65
	400	'60-'98	-0.0074	0.79	12	1.24	'70-'98	-0.1035	0.01***	5	0.44
F1	150	'90-'102	0.0082	0.96	6	1.34	—				
	200	'77-'102	0.0059	0.90	21	1.25	'77-'102	-0.0085	0.84	19	1.16
	300	'60-'102	0.0184	0.73	27	0.90	'60-'98	0.0184	0.35	20	0.74
	400	'60-'96	-0.0003	0.98	26	0.51	'77-'98	-0.0105	0.53	17	0.34
	500	'73-'98	0.0042	0.84	17	0.61	'77-'96	-0.0570	<0.01***	6	0.08
G1	200	'60-'97	0.0224	0.48	15	1.25	'60-'95	0.0466	0.16*	10	0.92
	300	'60-'95	-0.0079	0.70	16	0.81	'60-'95	-0.0038	0.87	7	0.66
	400	'60-'97	-0.0069	0.58	18	0.57	'60-'95	0.0045	0.61	7	0.25
	500	'60-'95	-0.0168	0.01***	16	0.25	—				
D2	150	'77-'104	0.0466	0.19*	27	1.34	'79-'104	0.0216	0.61	21	1.19
	200	'77-'104	0.0147	0.63	34	1.31	'77-'104	-0.0200	0.44	30	1.04
	300	'63-'104	0.0016	0.95	24	1.06	'77-'104	-0.0017	0.94	15	0.67
E2	150	'63-'96	0.0560	0.08**	6	0.71	'94-'96	0.8363	0.05***	5	0.41
	200	'60-'96	0.0159	0.55	16	1.12	'60-'96	0.0121	0.64	15	1.09
	300	'83-'96	0.0308	0.41	14	0.55	'83-'96	0.0308	0.41	14	0.55
	400	'60-'95	-0.0201	0.31	12	0.59	'60-'95	-0.0057	0.44	8	0.20
F2	200	'65-'88	0.0398	0.52	6	1.19	'83-'88	-0.0404	0.05***	5	0.61
	300	'65-'99	0.0307	0.18	9	0.74	'65-'99	0.0307	0.18	9	0.74
	400	'65-'99	0.0340	0.22	7	0.77	—				
G2	200	'85-'99	0.1371	0.10**	7	0.81	—				
	300	'65-'99	0.0188	0.46	14	0.96	'65-'99	0.0127	0.49	12	0.58
	400	'65-'99	0.0110	0.45	14	0.49	'77-'99	-0.0076	0.35	9	0.15
	500	'65-'99	-0.0058	0.96	13	0.37	—				

†without 1970 outlier of 10.72 μM

Table S.8. Seasonal regressions of NO_2^- ≥ 0.5 μM on year in OMZ with medians and slopes with n ≥ 5 (*p* of slope: *, ≤ 0.20; **, ≤ 0.10; ***, ≤ 0.05; *n*: number of values; S.E.: Standard Error of regression). See Fig. 3 for names of seasons and months.

Box	Depth	Season	Year (add 1900)	Median (μM)	Slope (μM a^{-1})	*p*	*n*	S.E.
D1	150	NEM	'80 - '98	3.96	-0.0363	0.82	6	2.21
	200	NEM	'82 - '98	3.36	0.0496	0.56	10	1.49
	300	NEM	'82 - '98	2.23	0.0427	0.40	8	0.60
E1	300	NEM	'77 - '98	3.33	-0.0882	0.31	6	1.22
F1	150	NEM	'90 - '102	2.00	0.0168	0.92	5	1.33
	200	NEM	'77 - '102	2.46	-0.0003	0.99	12	1.26
	300	NEM	'77 - '102	2.25	0.0160	0.68	15	0.94
	400	NEM	'77 - '98	1.75	-0.0346	0.09**	14	0.34
	500	NEM	'77 - '98	1.03	-0.0234	0.45	12	0.67
	300	SWM	'63 - '95	1.85	0.0171	0.63	8	1.00
	400	SWM	'87 - '96	1.66	0.0125	0.90	6	0.74
G1	200	NEM	'65 - '97	3.29	0.0495	0.45	7	1.56
	300	NEM	'85 - '95	1.65	0.1261	0.11*	6	0.54
	400	NEM	'65 - '97	1.43	0.0070	0.76	9	0.59
	500	NEM	'65 - '97	0.64	-0.0195	0.05***	9	0.37
	300	SWM	'66 - '95	1.31	0.0175	0.74	5	1.22
D2	150	NEM	'77 - '98	2.14	0.0728	0.03***	13	0.68
	200	NEM	'77 - '98	2.90	-0.0284	0.60	13	1.30
	300	NEM	'77 - '98	2.61	-0.0552	0.38	8	1.04
	200	SI	'80 - '96	2.82	-0.0117	0.93	5	1.61
	150	SWM	'83 - '104	2.66	-0.0200	0.81	9	1.38
	200	SWM	'83 - '104	3.40	-0.0264	0.71	11	1.47
	300	SWM	'63 - '104	1.92	0.0257	0.41	10	1.06
E2	200	NEM	'63 - '95	3.36	0.0551	0.07***	7	0.66
	300	NEM	'88 - '95	2.72	0.0798	0.23	8	0.55
	400	NEM	'88 - '95	1.79	-0.0250	0.75	6	0.53
F2	300	NEM	'65 - '88	2.59	0.0178	0.58	6	0.85
	400	NEM	'65 - '88	1.18	0.0143	0.67	5	0.78
G2	300	NEM	'65 - '95	2.83	-0.0174	0.62	8	0.95
	400	NEM	'65 - '92	2.01	0.0306	0.24	5	0.42
	400	SWM	'66 - '99	1.93	0.0088	0.70	7	0.54
	500	SWM	'66 - '99	1.16	-0.0071	0.49	7	0.24

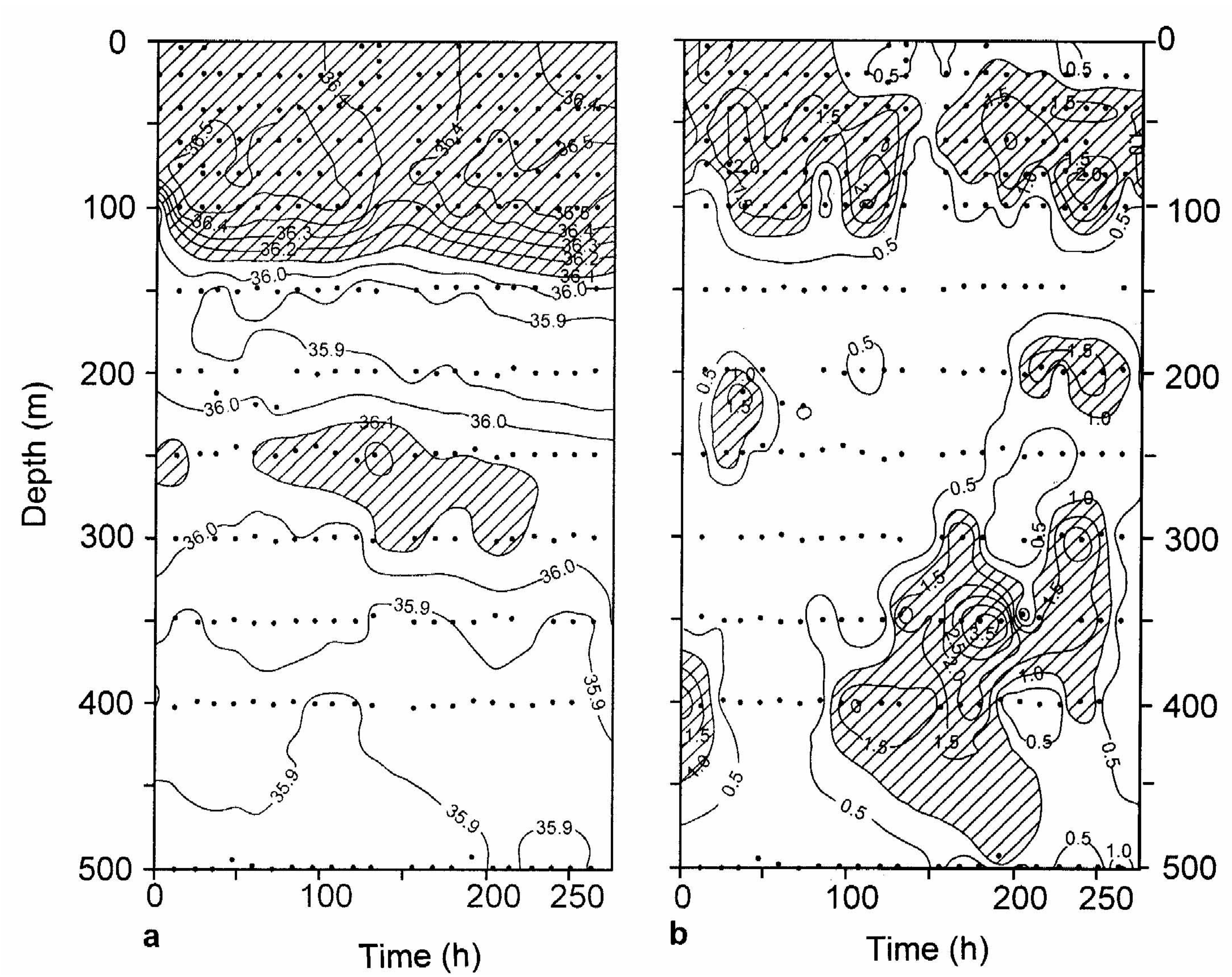

Figure S.3.1. Eleven days of a 13-day drift station of February 1987, station 8 of cruise 121 of R/V *Sagar Kanya* near 21˚N, 64˚E (see asterisk in Fig. 1 and Table 3). **a**, salinity (> 36.0, hatched) and **b**, nitrite (> 1 µM hatched) to 500 m depth. The ship drifted over about 80 km but re-occupied the central station several times.

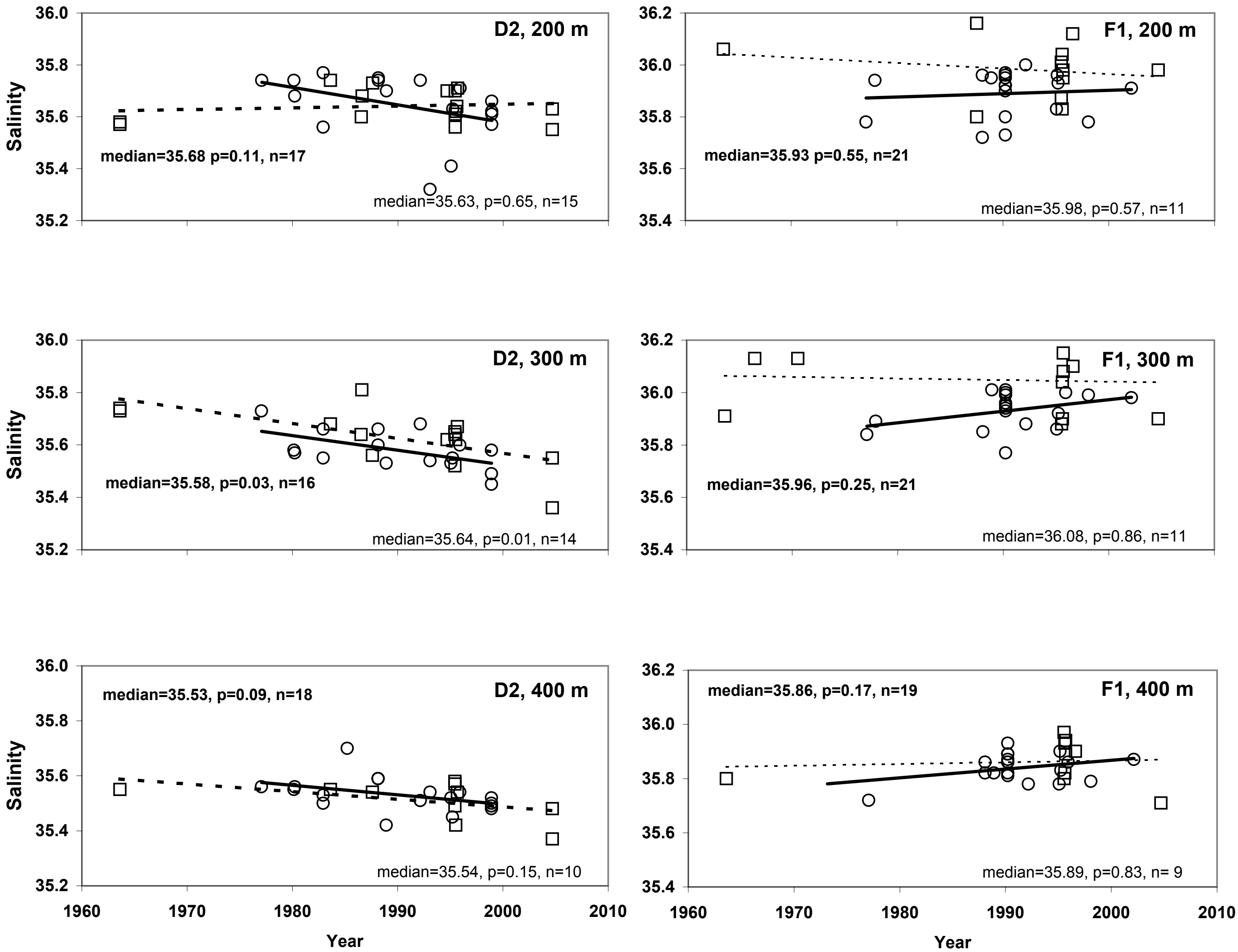

Figure S.5.1. Examples of regressions of salinity on years with data for the NEM (circles; bold line and text in upper or middle part of panels) and SWM (squares; dashed line and text in lower part of panels) for three depths each in Boxes D2 and F1, with medians, p for slopes, and number of observations.