Supplementary Table 1. Box numbers, geographic regions, boundaries of latitude and longitude, and designations (abbreviation) in HAM-global.

Box	Area	Lon_w	Lon_e	Lat_s	Lat_n	Code
1	subarctic North Pacific Ocean			40	90	subarctic NPO
2	western North Pacific Ocean		180	25	40	western NPO
3	eastern North Pacific Ocean	180		25	40	eastern NPO
4	western subtropical North Pacific Ocean		180	5	25	subtropical western NPO
5	eastern subtropical North Pacific Ocean	180		5	25	subtropical eastern NPO
6	western equatorial Pacific Ocean		180	–5	5	equatorial western PO
7	eastern equatorial Pacific Ocean	180		–5	5	equatorial eastern PO
8	western subtropical South Pacific Ocean		180	–25	–5	subtropical western SPO
9	eastern subtropical South Pacific Ocean	180		–25	–5	subtropical eastern SPO
10	western South Pacific Ocean		180	–40	–25	western SPO
11	eastern South Pacific Ocean	180		–40	–25	eastern SPO
12	eastern Southern Ocean	180		–60	–40	eastern SO
13	Antarctic	0	360	–90	–60	ANT
14	Sea of Japan					SOJ
15	Arabian Sea	40	100	–10	20	ARB
16	Indian Ocean			–35	–10	IO
17	Southern Ocean			–60	–35	SO
18	Arctic Ocean			70	90	AO
19	not assigned					no data
20	Barents Sea					BARE
21	Baltic Sea					BALT
22	North Sea					NORS
23	Irish Sea					IRIS
24	English Channel					ENGC
25	northern North Atlantic Ocean			45	70	NNA
26	Black Sea					BLAS
27	Mediterranean Sea					MEDS
28	North Atlantic Ocean			15	45	NAO
29	Central Atlantic Ocean			–30	15	CAO
30	South Atlantic Ocean			–60	–30	SAO
31	Sea of Okhotsk					SOO
32	East China Sea					ECS
33	South China Sea					SCS
34	Bering Sea					BERS

Supplementary Table 2. 0.5-y average values for ^{137}Cs concentrations (Bq m^{-3}) in each Box from 1957 to 2005.

Year	Box1	Box2	Box3	Box4	Box5	Box6	Box7	Box8	Box9	Box10	Box11	Box12	Box13	Box14
1955														
1955.5														
1956														
1956.5														
1957	62													
1957.5	63													
1958	54	21		52		30								
1958.5	46	15		58		27								
1959	41	26	14	62		23								
1959.5	38	30	11	49		18								
1960		31	6.0		11	11	4.7	6.1						
1960.5		28	8.6		4.5	5.7	2.0	5.3						
1961	12	19	9.2	11	5.7		3.3		3.8		2.7	2.6	3.2	
1961.5	8.9	12	8.9	5.1	6.7		5.2		3.7		2.8	3.1	4.0	
1962		13	11	4.1	8.6	2.7	7.1	3.9					4.9	
1962.5		18	20	4.6	10	2.6	8.9	3.8					5.5	
1963	16	19	20	6.9	11		10		2.6					17
1963.5	18	20	17	8.9	10		10		2.3					21
1964	25	21	16		9.5									24
1964.5	26	19	20		13									25
1965	25	16	26	12										18
1965.5	23	15	29	12										15
1966	20	15	32	11	19	5.9	7.4	4.5	4.1	4.5	5.3	5.4	5.7	13
1966.5	23	13	29	9.9	15	5.4	5.2	4.3	4.2	4.7	5.6	5.3	5.2	13
1967	25	11	26	8.6	12	5.1	4.8	4.3	4.1					13
1967.5	25	11	21	8.4	11	5.1	5.0	4.3	4.0					12
1968	18	11	17	8.3	9.4		5.2		3.8		4.0			9
1968.5	15	10	18	8.1	9.3		4.8		3.6		3.5			10
1969	14	10	16	8.0	8.0		4.9	4.3	3.4		3.1	2.3	3.3	10
1969.5	12	9.6	14	7.9	8.8		4.6	4.2	3.3		3.0	2.4	3.2	10
1970	11	9.4	13	8.0	9.4									9.9
1970.5	9.6	8.9	15	7.8	10									9.1
1971	10	8.6	16		10		4.6		3.9		3.5	2.9		8.2
1971.5	9.4	7.9	14		9.0		4.8		4.1		3.7	3.0		7.6
1972	8.2	7.3	12	7.4	7.6	4.3	5.0		4.2	3.4	3.8		2.3	7.3
1972.5	9.1	6.6	12	9.0	11	4.2	6.4		4.0	3.1	3.9		2.4	7.4
1973	9.6	6.0	12	9.9	13	5.2							2.5	7.5
1973.5	8.5	6.8	10	7.4	8.8	4.7							2.7	7.9
1974	6.9	7.9	9.2		7.6		4.7		4.1					8.1
1974.5	6.5	8.4	8.8		7.1		3.3		4.2					7.6
1975	6.2	8.9		5.4		5.4								7.0
1975.5	5.5	7.3		5.9		5.2								6.0
1976	4.8	6.0		5.8		4.9		5.3						5.2
1976.5	5.2	6.0		5.6		4.7		5.8						5.6
1977	5.4	6.4	7.8	5.4		4.8							2.1	6.2
1977.5	5.4	6.8	7.7	5.1		5.4							1.7	6.2
1978	5.2	7.2		4.9	5.5	6.2	4.7	6.9	6.5	5.5			1.5	6.1
1978.5	5.6	6.6		4.9	6.9	6.9	5.8	7.0	6.7	5.5			2.0	5.9
1979	5.8	6.2	7.3	5.6		5.4								5.7
1979.5	5.7	6.3	7.5	5.9		4.5								6.0

There is no value indicated for years without reported measurements.

Supplementary Table 2 (continued).

Year	Box1	Box2	Box3	Box4	Box5	Box6	Box7	Box8	Box9	Box10	Box11	Box12	Box13	Box14
1980	5.2	6.5	7.7	5.5	13	3.7								6.2
1980.5	4.2	6.3	7.3	5.5	11	3.4								5.7
1981	4.1	6.2		4.8	9.8	3.0								5.4
1981.5	3.8	5.3		4.9	8.3	3.5								5.0
1982	3.4	4.5	5.7	4.8		3.8			4.6					4.8
1982.5	3.9	4.7	5.4	5.2		3.5			4.3					4.6
1983	4.2	4.9		5.5		3.2			3.9					4.4
1983.5	3.9	4.7		5.0		4.1			3.6					4.4
1984	3.4	4.4		4.5		5.0			3.3					4.4
1984.5	3.3	4.4		4.7		5.0			3.2					4.2
1985	3.1	4.5	4.8	5.0					3.2					4.3
1985.5	2.9	4.9	4.9	5.3					3.3					4.4
1986	3.2	5.3	5.0	5.5		4.0			3.2					5.0
1986.5	3.9	5.6	4.7	6.2		5.5			3.1					6.4
1987	4.4	5.7	4.3	6.2	14	6.7	9.5		3.1					7.8
1987.5	4.7	5.2	4.4	6.3	12	6.8	9.6		3.0					6.5
1988	3.4	4.5	4.4	5.6		6.3			2.9					4.9
1988.5	3.2	4.1	4.3	5.5		6.0			2.8					4.0
1989	3.3	3.7		4.9					2.7					3.5
1989.5	4.0	3.5		3.6					2.5					3.7
1990	3.3	3.2		2.4					2.4					3.8
1990.5	2.4	2.9		2.6					2.3					3.3
1991	2.5	2.8		2.9										2.9
1991.5	2.7	2.8		2.9										2.9
1992	2.7	2.7	3.3		2.8				2.0	1.9	1.3	0.7		2.9
1992.5	2.3	2.3	2.9		2.8				2.0	1.8	1.2	0.7		2.7
1993	1.8	2.0		2.7		2.7	2.2		2.0					2.5
1993.5	1.6	2.2		2.6		2.7	2.2		1.9					2.6
1994	1.6	2.4						2.0					0.6	2.9
1994.5	2.7	2.7						2.0					0.6	3.0
1995	2.7	2.9		2.4										3.0
1995.5	2.4	2.8		2.3										2.9
1996	2.1	2.7		2.4		2.4								3.0
1996.5	2.1	2.6		2.4		2.4								3.1
1997		2.6		2.3		2.4								3.2
1997.5		2.6		2.4		2.3								3.0
1998	1.9	2.5		2.5		2.2				1.4				2.7
1998.5	1.9	2.4		2.2		2.1				1.4				2.5
1999	1.8	2.4		2.1										2.2
1999.5	1.8	2.3		2.2										2.1
2000	1.9	2.3			1.9									2.2
2000.5	2.1	2.3												2.2
2001	2.3	2.3		3.0										2.3
2001.5	2.4	2.2		2.7										2.2
2002	2.0	2.0		2.3										2.0
2002.5	1.6	2.0		1.7										1.9
2003	1.6	2.0		1.5										1.9
2003.5	1.7	2.0		1.4										1.9
2004	1.8	1.9												1.9
2004.5	1.9	1.8												1.9
2005	1.9	1.6												1.9

There is no value indicated for years without reported measurements.

Supplementary Table 2 (continued).

Box15	Box16	Box17	Box18	Box20	Box22	Box25	Box28	Box29	Box30	Box31	Box32	Box33	Box34
													29
													21
7.3	5.6	3.8				55					17		
7.6	5.6	3.4				63					6.7		
	5.8	3.2				75	23	2.7	5.1				
	5.9	3.8				92	31	2.3	5.4				
	6.0	4.4				114							
	5.7	4.9				139							
						160	52					7.9	
						153	69					8.8	
					52								
					38								
					26	146							
					30	158							
		7.6			35	160				19			18
		8.2			34	163				18			18
					28	171						12	
					21	174						11	
					26								
					31								
		5.3			36	79			10.0		9.4		
		4.7			42	54			9.2		9.0		
4.8					60	38					8.7		11
4.6					75	41					8.4		9.2
4.4	4.7				73	46						7.1	
4.5	4.6				66	47						6.4	
4.4	4.2	3.6	7.8		60	46	22	11	4.7		7.9		
4.3	3.8	3.5	5.8		56	44	17	7.0	3.4		7.7		
					54	42	14	6.2	2.8		7.6		8.3
					53	40	16	7.1	3.4		7.3		8.6
					50	40	19						
					48	40	23						
					48	44					6.5	5.7	
					50	54					6.3	6.0	
4.1	4.9				58	68	38				6.1	6.2	
4.0	5.1				69	84	41				6.0	6.4	
3.9	5.3	3.4			80	99	42	14				6.6	
3.9	5.3	3.3			94	105	40	13				7.0	
		3.4			108	110		13		6.0		7.4	
		3.4			124	114		14		5.6		6.7	
			15	33	135	117							
			13	26	129	111							

There is no value indicated for years without reported measurements.

Supplementary Table 2 (continued).

Box15	Box16	Box17	Box18	Box20	Box22	Box25	Box28	Box29	Box30	Box31	Box32	Box33	Box34
				28	122	102	44				5.5		
				30	119	92	41				5.4		
			13	29	118	84	38						
			13	25	107	82	38						
			11	23	99	81	39				5.0		
			8.9	21	95	80	39				4.8		
			9.1	25	93	78	39				4.7		
			9.7	29	87	76	37				4.6		
				31	81	72	34				4.5		
				31	77	69	32				4.6		
			8.0	30	73	66					4.7		
			6.7	29	65	62					4.9		
					57	59				5.7	5.2		
					49	56				5.9	5.4		
			6.9	23	43	52				6.0	5.4		
			6.3	21	37	45				5.8	5.2		
			6.5		32	37					4.7		2.8
			6.7		28	30					4.3		3.1
					25	25					3.9		
					21	21					3.6		
			6.2		19	17					3.4		
			5.8		17	13					3.3		
					15	11				3.9	3.1		
					14	9.2				3.7	3.0		
			5.7	7.5	13	8.4	5.1	4.8	3.4		2.9		
			5.6	6.5	13	7.7	3.7	3.5	2.3		2.8		
					14	7.2	3.0	2.5	1.5		2.7		
					14	7.6	2.8	1.9	1.1		2.7		
	2.3	1.3			15	8.0				2.6	2.7		
	2.2	1.3			16	8.1				2.4	2.7		
			3.7	4.5	17	7.7				2.2	2.7		
			3.5	3.4	15	7.4				2.0	2.8		
1.8					12	6.8				1.9		2.5	
1.7					9.9	5.9				1.9		2.6	
1.7	2.3	1.5			8.5	5.1	2.6			1.9		2.7	
1.7	2.3	1.5			7.8	4.9	2.7			2.0		2.6	
	2.2	1.6			7.4	5.0				2.0			
	2.0	1.5			7.4	5.0				2.1			
					7.3	4.9				2.1	2.4		
					6.5	4.8				2.0	2.3		
					5.7	4.5				1.9	2.3		
					4.9	4.1				1.7	2.2		
					4.3					1.5	2.2		
					3.8					1.3	2.1		
					3.5		2.5			1.3	2.0		
					3.1		2.3			1.4	2.0		
					2.9					1.4	1.9		
					2.6					1.5	1.9		
					2.4					1.5	1.9		
					2.1					1.5	1.8		
					1.9						1.8		

There is no value indicated for years without reported measurements.

Supplementary Table 3. The apparent and physical oceanographic half-residence times for each box.

Box	Latitude	Start (year)	End (year)	Apparent half-residence times	Physical Oceanographic half-residence times
1	65	1970	2005	15.3 ± 0.5	31.2 ± 1.1
2	35	1970	2005	15.1 ± 0.4	30.2 ± 0.8
3	35	1970	1992	10.5 ± 0.5	16.1 ± 0.8
4	15	1970	2003	17.1 ± 0.8	39.4 ± 1.9
5	15	1970	1992	23.5 ± 12.6	106 ± 57
6	0	1972	1998	20.5 ± 5.6	63.9 ± 17.4
7	0	1971	1993	30.5 ± 18.3	-3100 ± -1800
8	-15	1976	1993	9.1 ± 2.6	13.0 ± 3.8
9	-15	1971	1993	36.8 ± 23.5	-167 ± -106
10	-35	1972	1998	20.6 ± 6.5	64.7 ± 20.4
11	-35	1971	1992	10.8 ± 2.0	16.8 ± 3.0
12	-50	1971	1992	9.1 ± 1.2	13.0 ± 1.7
13	-75	1972	1994	4.5 ± 0.6	5.4 ± 0.8
14	35	1970	2005	16.3 ± 0.5	35.6 ± 1.0
15	0	1970	1998	20.4 ± 1.4	63.3 ± 4.2
16	-20	1971	1998	21.9 ± 4.0	80.0 ± 14.4
17	-50	1972	1998	15.9 ± 5.5	33.6 ± 11.5
28	30	1980	1997	3.7 ± 0.3	4.3 ± 0.4
29	0	1977	1993	5.9 ± 0.4	7.3 ± 0.5
30	-50	1972	1993	21.8 ± 13.0	40.7 ± 24.2
31	50	1978	2004	11.8 ± 1.3	19.3 ± 2.1
32	30	1971	2005	17.4 ± 1.4	41.1 ± 3.4
33	20	1978	1997	21.3 ± 12.2	31.0 ± 17.7
34	60	1970	1988	9.9 ± 1.2	14.8 ± 1.8

Error means 95% confidence level.

Supplementary Table 4a. List of reference codes from the HAM-global used for each box.

Box1	Box2	Box3	Box4	Box5	Box6	Box7
Aoyama2001a,b	Aoyama1995	Bourlat1996	Aoyama1995	Aoyama1995	Aoyama1995	Aoyama1995
Broecker1968	Aoyama2001	Bowen1982	Aoyama2001	Bourlat1996	Aoyama2001a,b	Bourlat1996
Folsom1968	Broecker1968	Folsom1960a	Bourlat1996	Domanov1984	Bourlat1996	Broecker1966
Folsom1975	BSH9999	Folsom1968	BSH9999	Folsom1960a	Broecker1968	Broecker1968
Folsom1979	Folsom1968	Folsom1970	Domanov1984	Folsom1968	Domanov1984	Domanov1984
Hirose2000c	Folsom1970	Folsom1975	Folsom1968	Folsom1970	Folsom1968	Folsom1968
Ikeuchi1999	Folsom1979	Folsom1979	Folsom1979	Folsom1975	Hirose2000c	Folsom1979
Livingston1985	Hirose2000c	Livingston1985	Hirose1992	Folsom1979	Hirose2001	Livingston1985
meri2005	Hirose2001	Nagaya1984	Hirose2000c	Livingston1985	Livingston1985	Saruhashi1975
meri2006	Ikeuchi1999	Nagaya1987	Hirose2001	Noshkin1974a	Miyake1988	
Miyake1961	Livingston1985	Noshkin1974a	Livingston1985	Noshkin1974b	Noshkin1999	
Miyake1988	meri2005	Noshkin1978	Livingston2000	Noshkin1999	Saruhashi1975	
msa1965	meri2006	Noshkin2000	Miyake1961	Saruhashi1975	Yamada2006	
msa1966	Miyake1961	Pillay1964	Miyake1988			
msa1967	Miyake1963	Saruhashi1975	msa1965			
msa1968	Miyake1988	Shirasawa1968	msa1967			
msa1969	msa1965	Wong1971	msa1986			
msa1970	msa1966	Wong1992	msa1991			
msa1971	msa1967		msa1992			
msa1976	msa1968		msa1993			
msa1977	msa1969		msa1995			
msa1978	msa1970		msa1997			
msa1979	msa1971		msa2000			
msa1980	msa1976		msa2001			
msa1981	msa1977		msa2003			
msa1982	msa1978		msa2004			
msa1983	msa1979		msa2005			
msa1984	msa1980		Nagaya1981			
msa1985	msa1981		Nagaya1984			
msa1986	msa1982		Noshkin1976			
msa1987	msa1983		Noshkin1987			
msa1988	msa1984		Noshkin1999			
msa1989	msa1985		Noshkin2000			
msa1990	msa1986		Saruhashi1975			
msa1991	msa1987		Yamada2006			
msa1992	msa1988					
msa1993	msa1989					
msa1994	msa1990					
msa1995	msa1991					
msa1996	msa1992					
msa1997	msa1993					
msa1998	msa1994					
msa2000	msa1995					
msa2001	msa1996					
msa2002	msa1997					
msa2003	msa1998					
msa2004	msa1999					
msa2005	msa2000					
msa2006	msa2001					
Nagaya1965	msa2002					
Nagaya1984	msa2003					
Nagaya1987	msa2004					
Nagaya1993	msa2005					
Saruhashi1975	msa2006					
Shirasawa1968	Nagaya1965					
	Nagaya1970					
	Nagaya1976					
	Nagaya1981					
	Nagaya1984					
	Nagaya1987					
	Nagaya1993					
	Saruhashi1975					
	Shirasawa1968					
	Yamada2006					

Supplementary Table 4a. (continued)

Box8	Box9	Box10	Box11	Box12	Box13	Box14
Bourlat1996	Bourlat1992	Delfanti2000	Bourlat1996	Bourlat1996	Bourlat1996	Bourlat1996
Broecker1968	Bourlat1996	Folsom1968	Broecker1968	Broecker1968	Folsom1968	Folsom1979
Domanov1984	Broecker1966	Folsom1979	Folsom1968	Folsom1968	Folsom1979	Hirose1999
Folsom1968	Broecker1968	Miyake1988	Folsom1979	Folsom1979	Miyake1988	Hirose2002
Folsom1979	Domanov1984		Saruhashi1975	Saruhashi1975	Nagaya1964	Hong1999
Miyake1988	Folsom1968				Saruhashi1975	Ikeuchi1999
Saruhashi1975	Folsom1970					Ito2003
	Folsom1979					ito2005
	Saruhashi1975					JKRJE1995
						Kang1997
						meri2005
						meri2006
						Miyake1988
						Miyao1998
						msa1965
						msa1966
						msa1967
						msa1968
						msa1969
						msa1970
						msa1971
						msa1976
						msa1977
						msa1978
						msa1979
						msa1980
						msa1981
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						msa1994
						msa1995
						msa1996
						msa1997
						msa1998
						msa1999
						msa2000
						msa2001
						msa2002
						msa2003
						msa2004
						msa2005
						msa2006
						Nagaya1965
						Nagaya1970
						Nagaya1981
						Nagaya1987
						Saruhashi1975

Supplementary Table 4a. (continued)

Box15	Box16	Box17	Box18	Box20	Box21	Box22
Delfanti2000	Bourlat1996	Bourlat1996	Aarkrog1989	Aarkrog1989	BSH9999	Aarkrog1994
Folsom1968	Delfanti2000	Delfanti2000	Aarkrog1992	BSH9999	DHIG9997	Bailly Bois9999
Folsom1979	Folsom1968	Folsom1968	Aarkrog1994	Casso1984	IMWM9999	BSH9999
Miyake1988	Folsom1979	Folsom1979	BSH9999	Kautsky1985	Kautsky1981	Casso1984
Yamada2006	Miyake1988	Miyake1988	Casso1984	Kautsky1986	Kautsky1982	DHIG9997
	Nagaya1964	Nagaya1964	Kautsky1987	Kautsky1987	MAFF9999	DHIG9998
	Yamada2006	Saruhashi1975	Livingston1985	MAFF9999	NBNSRP9999	Kautsky1981
		Yamada2006	MAFF9999	Nikitin9999	RISO9999	Kautsky1982
			Nikitin9999			Kautsky1985
						Kautsky1986
						Kautsky1987
						MAFF9999
						NBNSRP9999
						RISO9999

Supplementary Table 4a. (continued)

Box23	Box24	Box25	Box26	Box27	Box28
Bailly Bois9999	Bailly Bois9999	Aarkrog1989	Busseler1991	BALLESTRA1984	Bourlat1996
BSH9999	BSH9999	Aarkrog1992	Domanov1984	Bourlat1996	Broecker1966
MAFF9999	Kautsky1985	Aarkrog1994	Vakulovsky1982	BSH9999	Broecker1968
	Kautsky1986	Bailly Bois9999		Delfanti2000	BSH9999
	MAFF9999	Bourlat1996		Domanov1984	Cochran1987
		BSH9999		franic1993	Dahlgaard1995
		Casso1984		Fukai1979	Domanov1984
		Dahlgaard1995		Fukai1980	Folsom1979
		Kautsky1985		Fukai1981	Livingston1985
		Kautsky1986			
		Kautsky1987			
		Livingston1985			
		Livingston1985b			
		MAFF9999			
		NIES1989			

Supplementary Table 4a. (continued)

Box29	Box30	Box31	Box32	Box33	Box34
Bourlat1996	Bourlat1996	Aoyama1995	Folsom1960b	Domanov1984	Folsom1968
Broecker1968	Broecker1968	Folsom1968	Folsom1979	Folsom1968	Folsom1979
Cunha1995	Cunha1995	Ikeuchi1999	meri2005	Folsom1979	Nagaya1993
Domanov1984	Folsom1979	Miyake1988	meri2006	Miyake1988	Saruhashi1975
Folsom1979	Livingston1985	msa1993	msa1969	Yamada2006	
Fukai1980	Nagaya1964	msa1996	msa1970		
Livingston1985		msa1997	msa1976		
		msa1998	msa1977		
		msa1999	msa1981		
		msa2000	msa1983		
		msa2001	msa1984		
		msa2002	msa1985		
		msa2003	msa1986		
		msa2004	msa1987		
		msa2005	msa1988		
		msa2006	msa1989		
			msa1990		
			msa1991		
			msa1992		
			msa1993		
			msa1994		
			msa1995		
			msa1996		
			msa1997		
			msa2001		
			msa2002		
			msa2003		
			msa2004		
			msa2005		
			msa2006		
			Saruhashi1975		

Supplementary Table 4b. Reference list for the HAM-global references used in this study.

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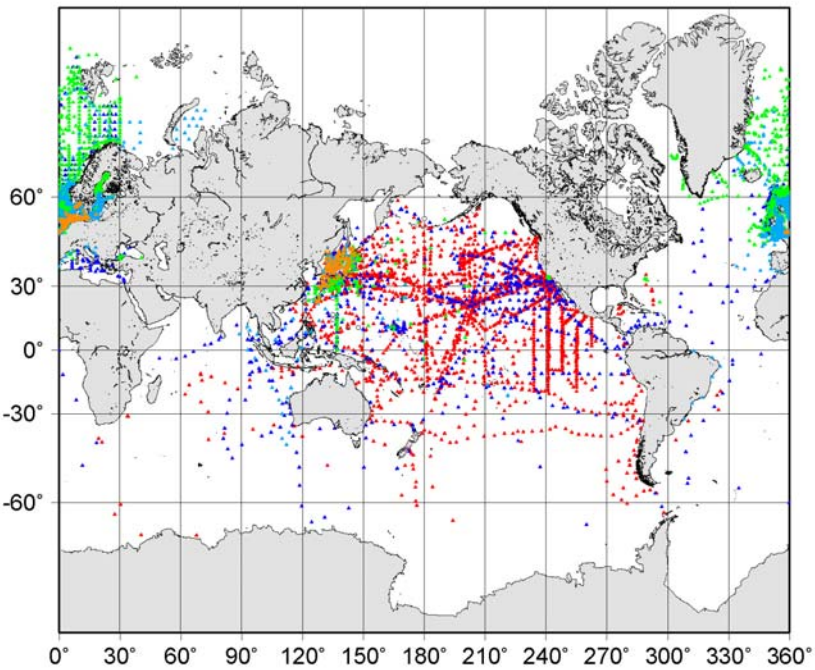
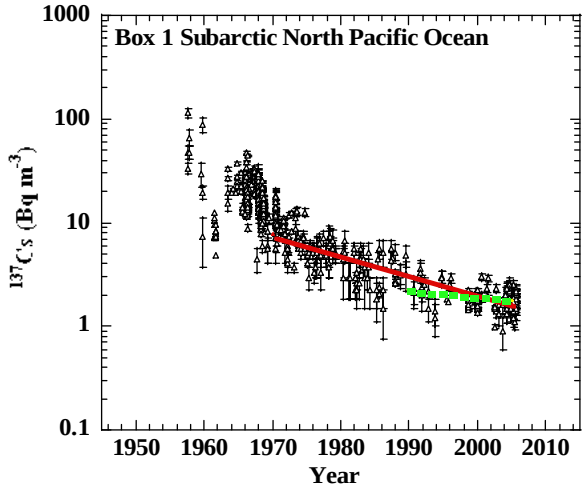
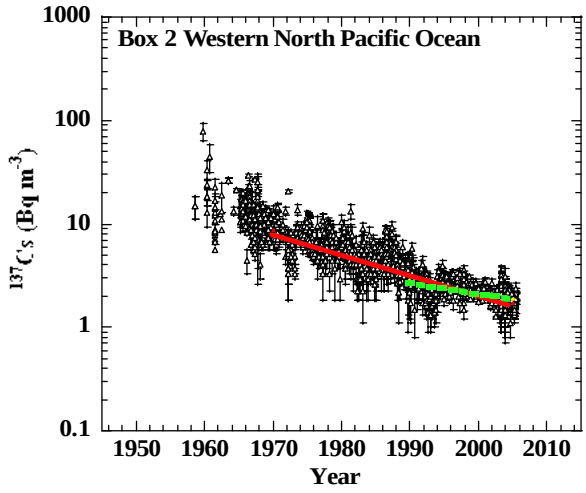
MAFF, personal communication.
Bailly Bois, personal communication.
DHIG, personal communication.
RISO, personal communication.

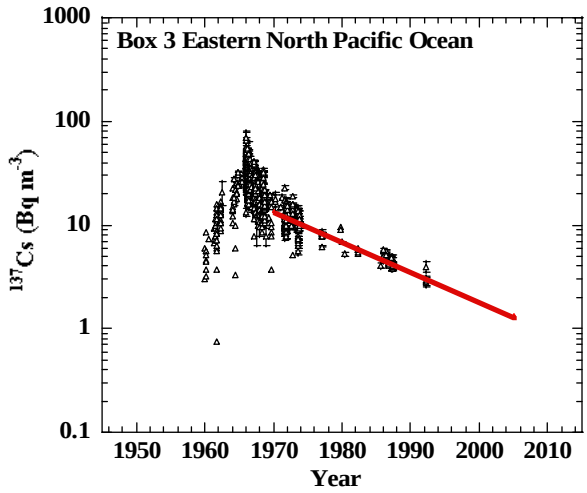
BSH, personal communication.
V. E. Noshkin, personal communication.
K. M. Wong, personal communication.
NBNSRP, personal communication.
Nikitin, personal communication.
IMWM, personal communication.

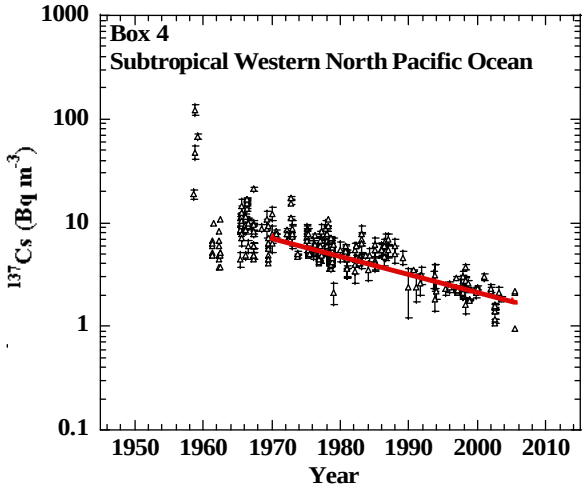


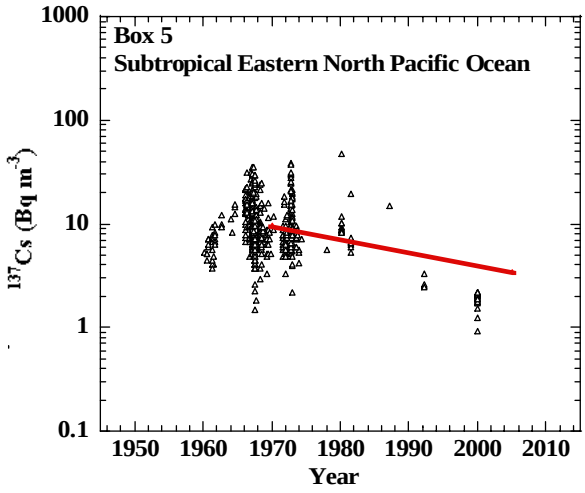
Supplementary Figure 1. Sampling locations for surface seawater data used in this study, based on HAM-global. Colors correspond to the sampling years: black, 1950s; red, 1960s; blue, 1970s; green, 1980s; cyan, 1990s; and orange, 2000s.

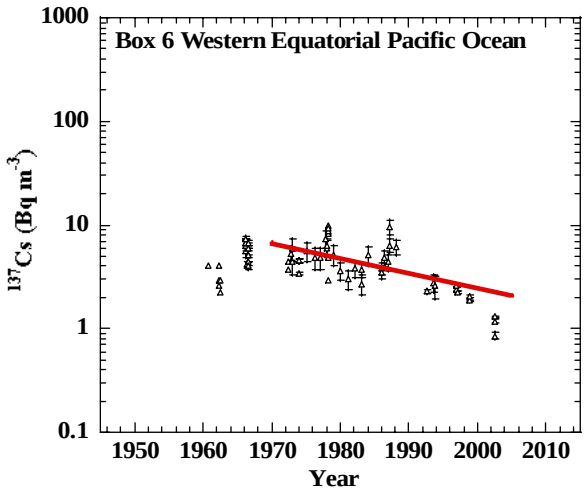

Box 1 Subarctic North Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

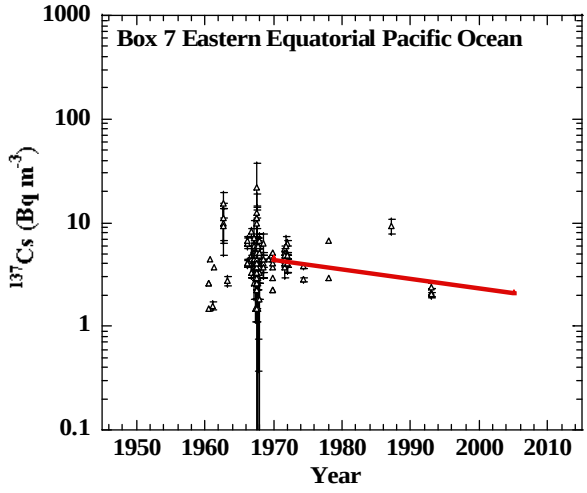

Box 2 Western North Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

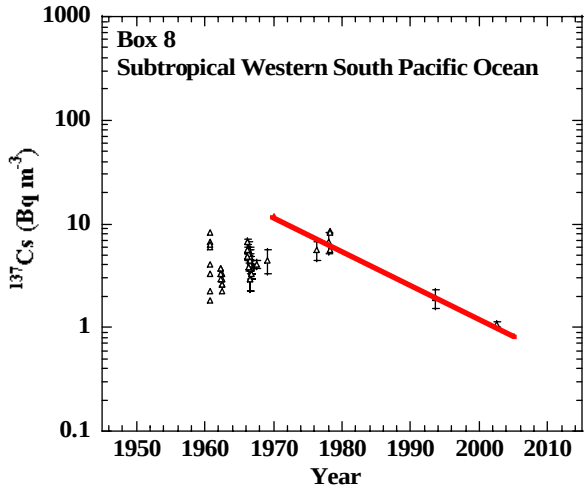

Box 3 Eastern North Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

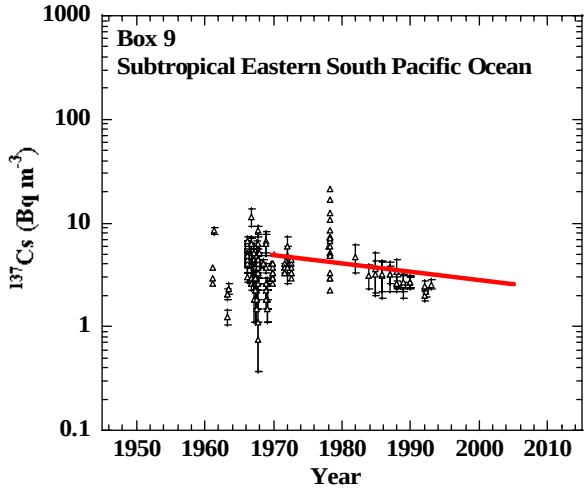

Box 4
Subtropical Western North Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

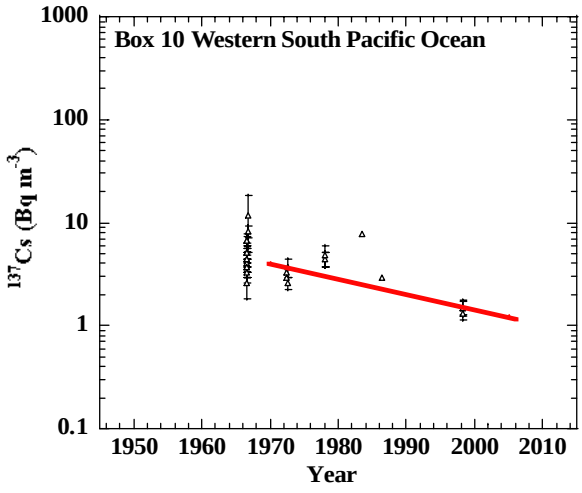

Box 5
Subtropical Eastern North Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

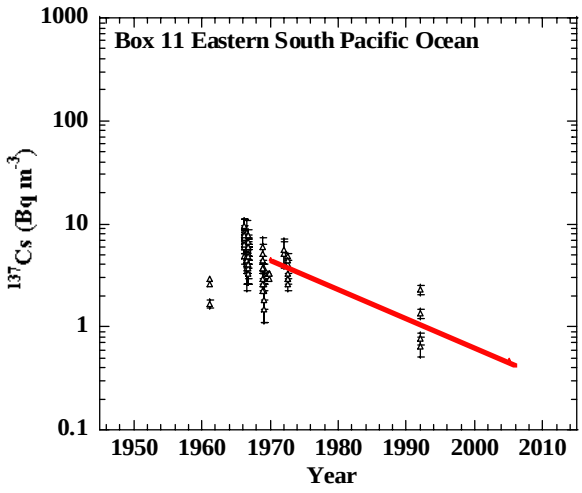

Box 6 Western Equatorial Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

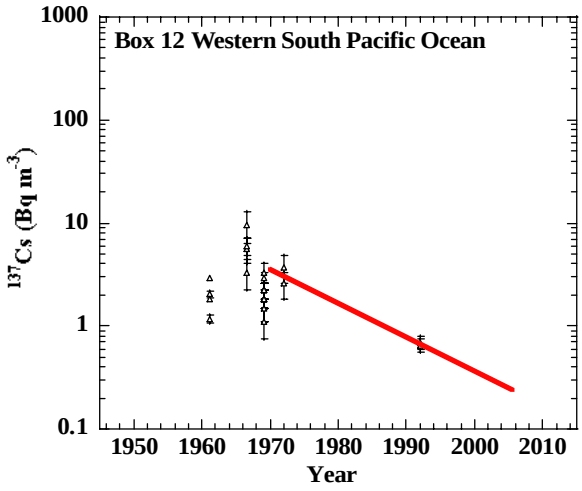

Box 7 Eastern Equatorial Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

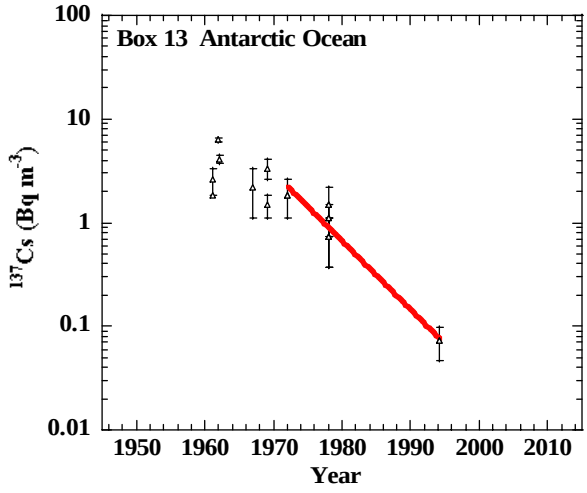

Box 8
Subtropical Western South Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

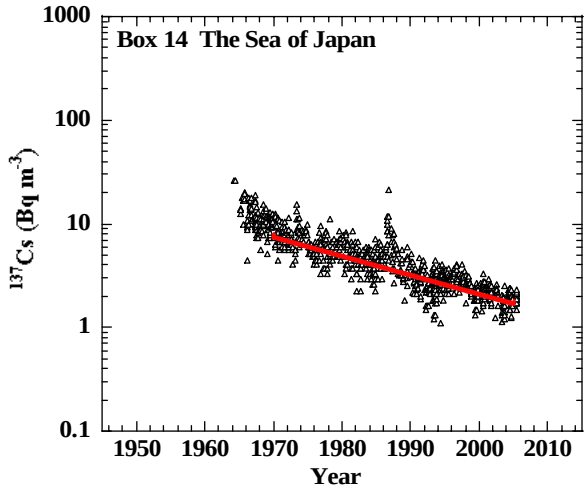

Box 9
Subtropical Eastern South Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

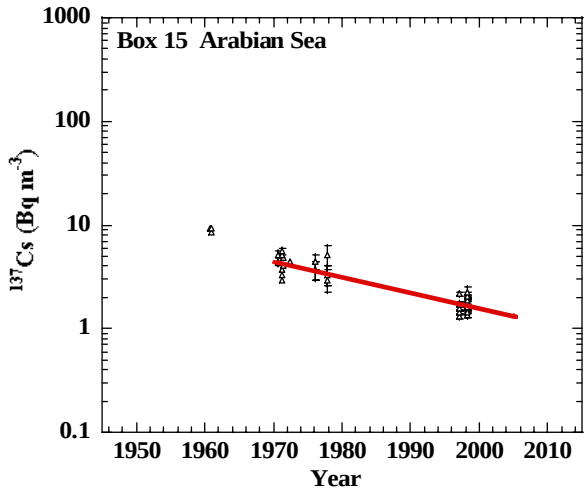

Box 10 Western South Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

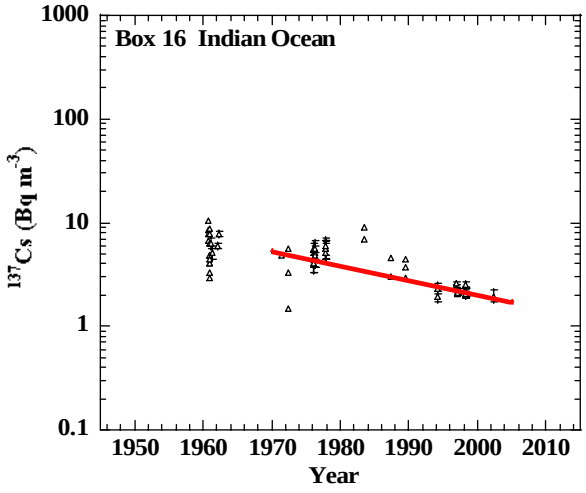

Box 11 Eastern South Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

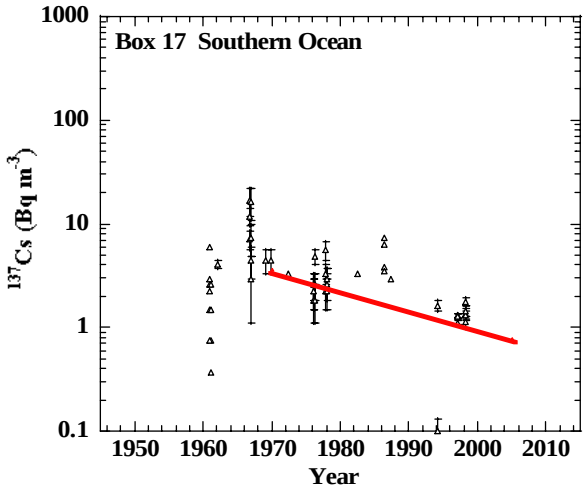

Box 12 Western South Pacific Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

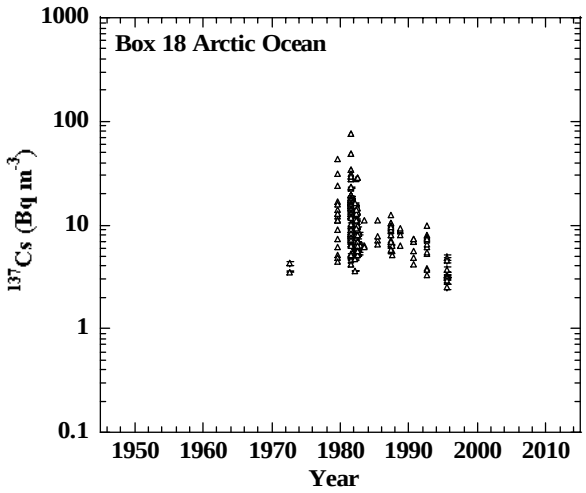

Box 13 Antarctic Ocean
^{137}Cs (Bq m^{-3})
100
10
1
0.1
0.01
1950 1960 1970 1980 1990 2000 2010
Year

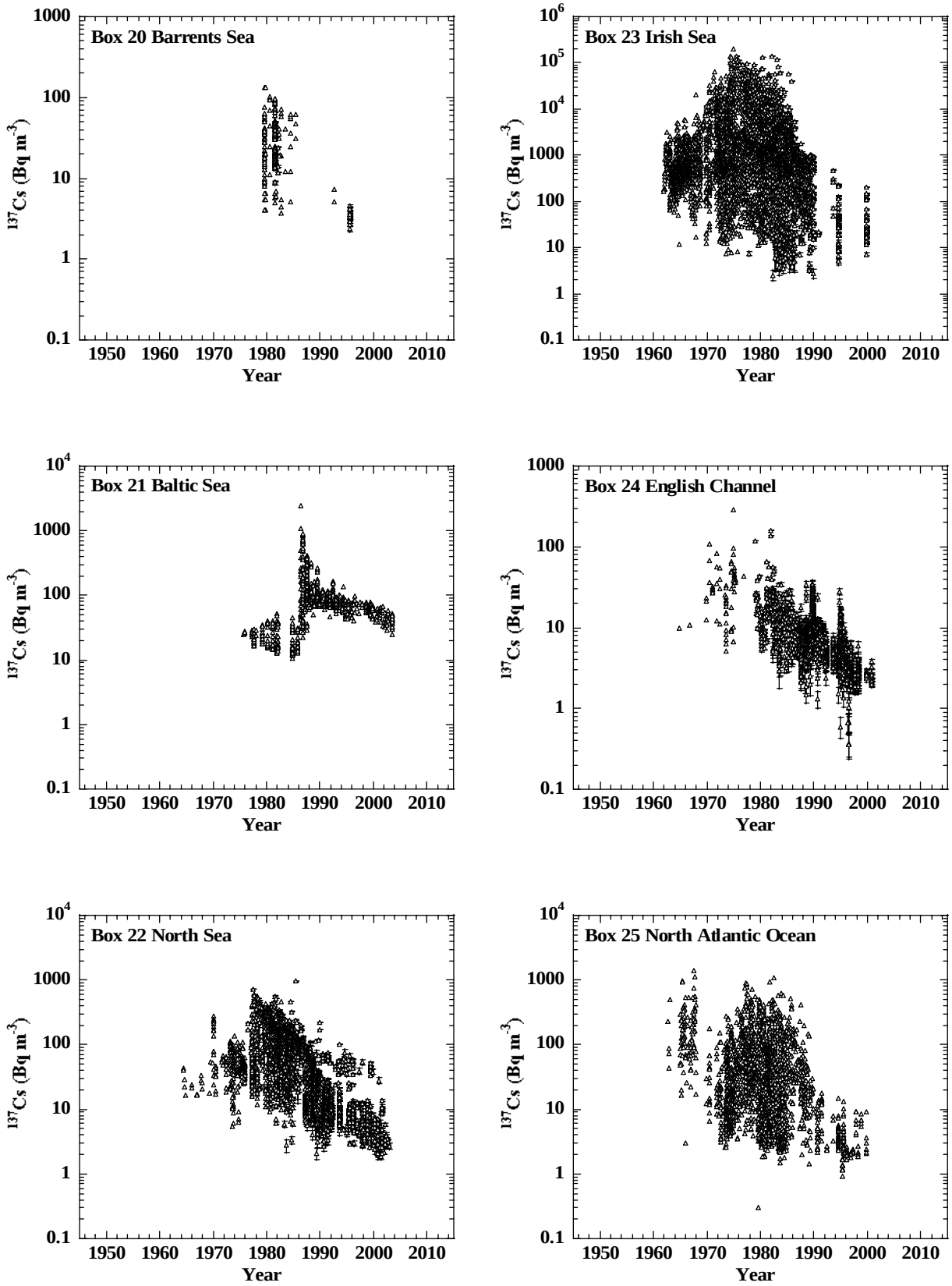

Box 14 The Sea of Japan
^{137}Cs (Bq m^{-3})
1000
100
10
1
0.1
1950 1960 1970 1980 1990 2000 2010
Year

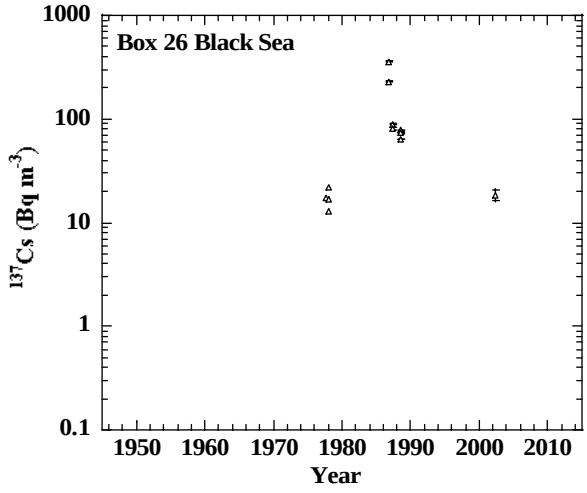

Box 15 Arabian Sea
^{137}Cs (Bq m^{-3})
1000
100
10
1
0.1
1950 1960 1970 1980 1990 2000 2010
Year

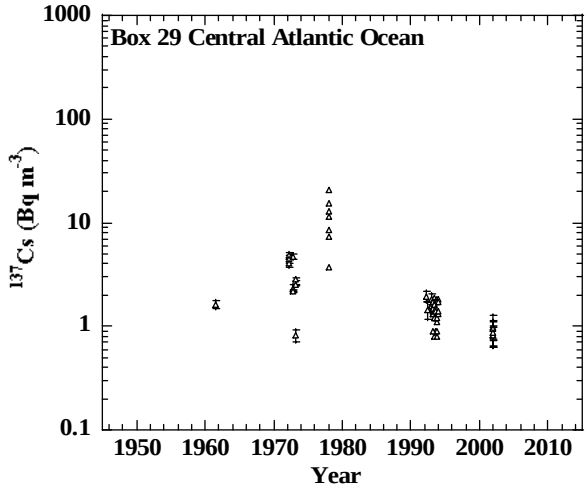

Box 16 Indian Ocean
^{137}Cs (Bq m^{-3})
1000
100
10
1
0.1
1950 1960 1970 1980 1990 2000 2010
Year

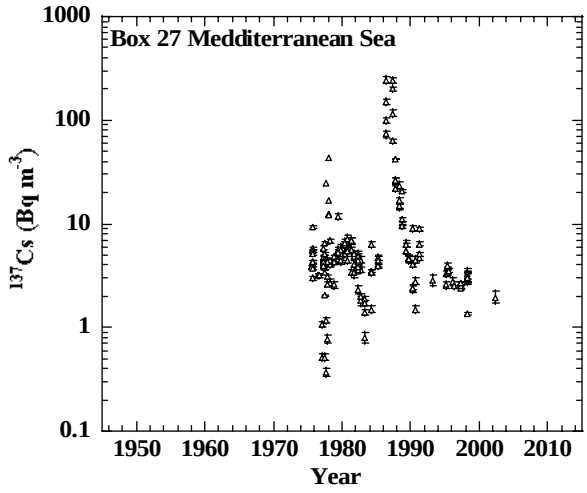

Box 17 Southern Ocean
^{137}Cs (Bq m^{-3})
1000
100
10
1
0.1
1950 1960 1970 1980 1990 2000 2010
Year

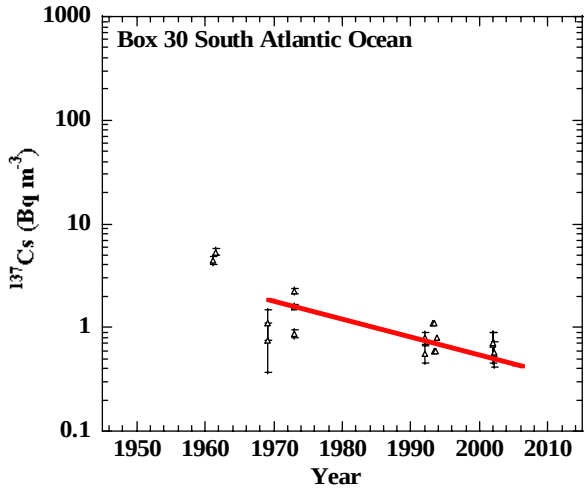

Box 18 Arctic Ocean
^{137}Cs (Bq m^{-3})
1000
100
10
1
0.1
1950 1960 1970 1980 1990 2000 2010
Year

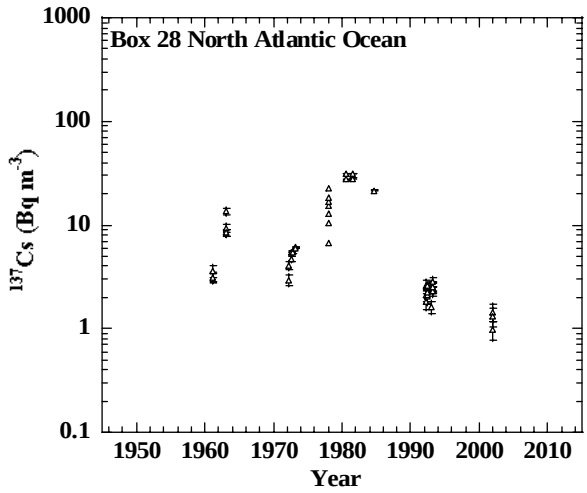

Box 20 Barrents Sea
Box 23 Irish Sea
Box 21 Baltic Sea
Box 24 English Channel
Box 22 North Sea
Box 25 North Atlantic Ocean
^{137}Cs (Bq m^{-3})
Year
0.1
1
10
100
1000
10^4
10^5
10^6
1950
1960
1970
1980
1990
2000
2010

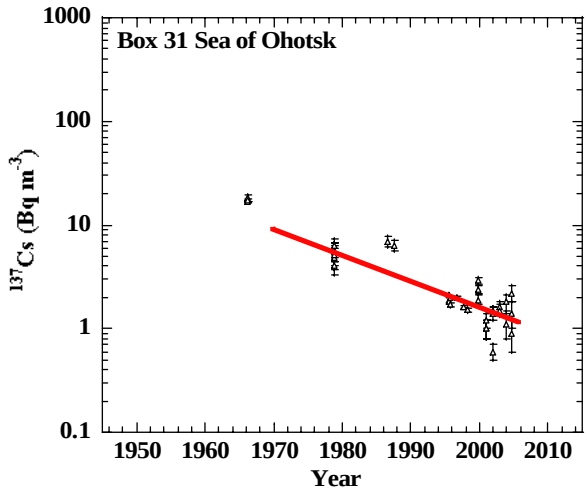

Box 26 Black Sea
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

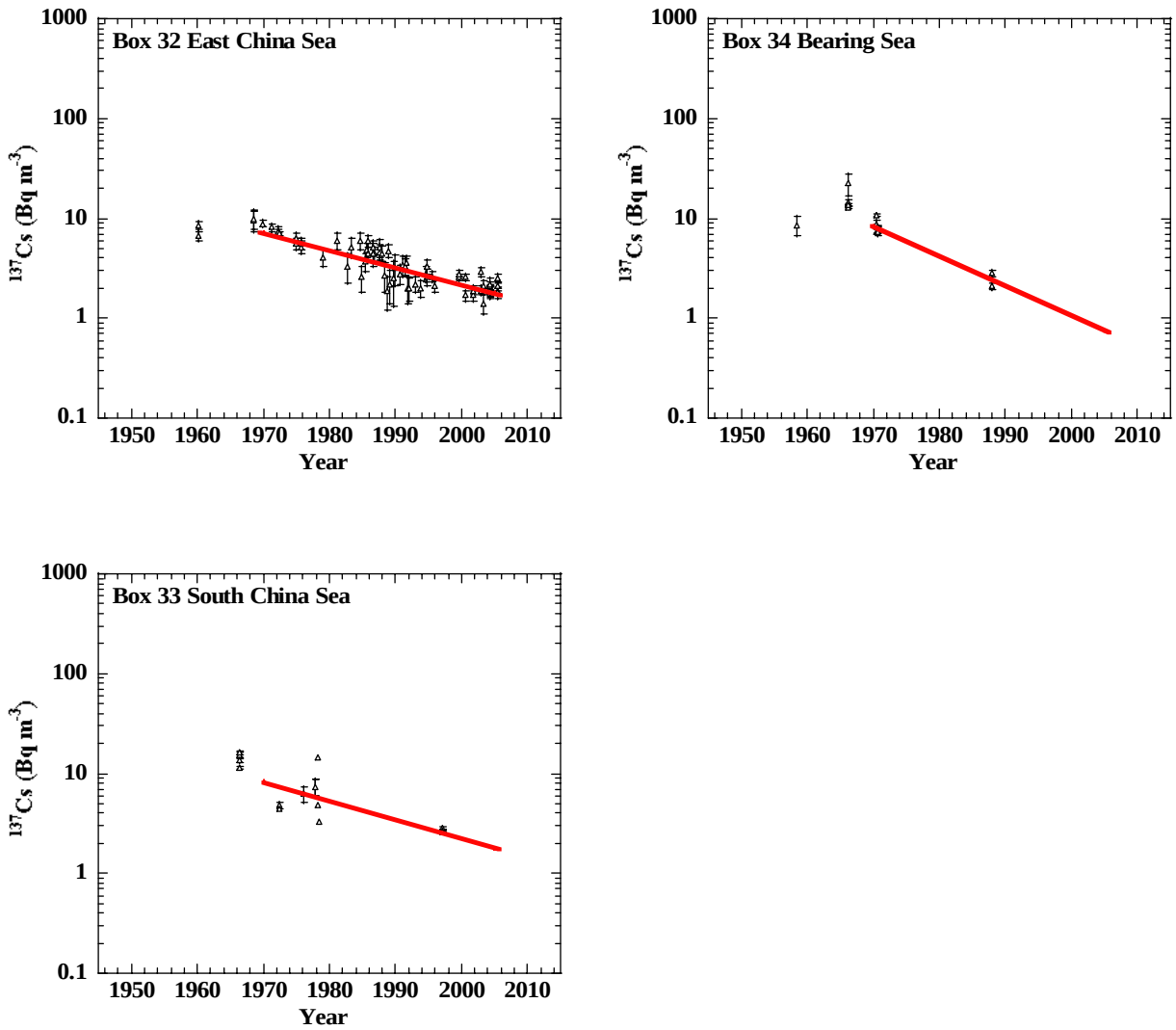

Box 29 Central Atlantic Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year


Box 27 Medditerranean Sea
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year

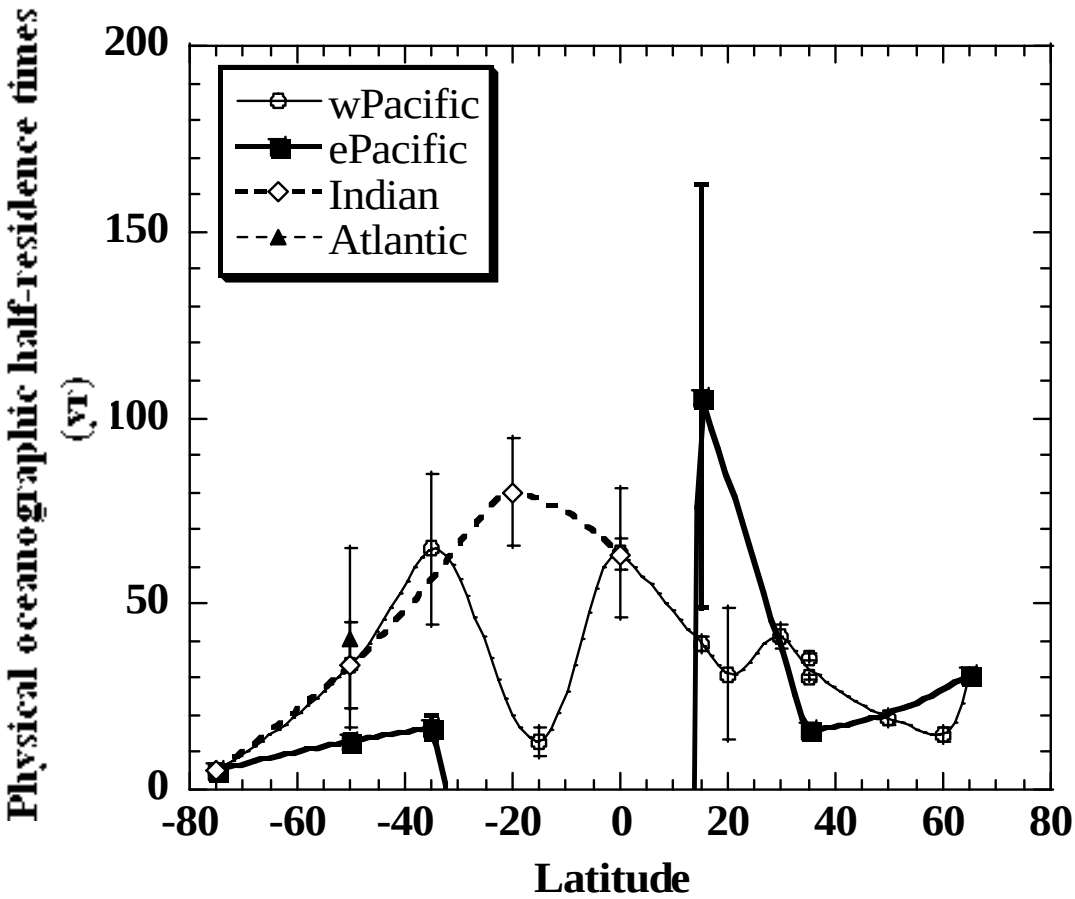

Box 30 South Atlantic Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year


Box 28 North Atlantic Ocean
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year


Box 31 Sea of Ohotsk
1000
100
10
1
0.1
^{137}Cs (Bq m^{-3})
1950 1960 1970 1980 1990 2000 2010
Year



Supplementary Figure 2. Temporal variations of surface ^{137}Cs concentrations in Boxes 1–34. There is no Box 19. The error bars were based on the HAM-global. The bold line is the exponential fitting curve after 1970. Note that the regression line after 1990 is also depicted in Box 1 and 2.



Supplementary Figure 3. Latitudinal distribution of physical oceanographic half-residence times of ^{137}Cs in surface waters in different ocean regions: eastern Pacific Ocean (Boxes 1, 3, 5, 7, 9, 11–13, 34), western Pacific Ocean (Boxes 1, 2, 4, 6, 8, 10, 13, 14, 17, 31–34), Indian Ocean (Boxes 13, 15–17), and Atlantic Ocean (Box 30).