Supplement material

Table S1. Derived *R*/*T* ratios based on the vertical particle mixing model (Equation 2)

Water mass	Station	C_t (%)	C_o (S_o=0.5)	C_s (%)	*R*/*T* (%)
CDW	S18	6.1	28.3	0.54	80
CDW	S19	2.0	27.9	0.42	94
SMW	S28	9.9	28.0	0.25	65
CDW	S29	11.2	28.0	0.22	60
CUW	S5	5.9	13.3	0.49	57
KW	S10	7.3	10.0	0.24	28
KW	S26	4.2	9.9	0.2	59

Table S2. Derived *R*/*T* ratios based on the vertical particle mixing model (Equation 2). C_t and C_o are fixed, but C_s is replaced by the predicted C_s.

Water mass	Station	C_t (%)	C_o (S_o=0.5)	C_s (%)	*R*/*T* (%)
CDW	S18	6.1	28.3	1.8	84
CDW	S19	2.0	27.9	1.8	99
SMW	S28	9.9	28.0	1.8	69
CDW	S29	11.2	28.0	1.8	64
CUW	S5	5.9	13.3	1.7	63
KW	S10	7.3	10.0	1.3	31
KW	S26	4.2	9.9	1.3	66

Table S3. Derived *R*/*T* ratios based on the vertical particle mixing model (Equation 2). C_t and C_s are fixed, but C_o is replaced by the maximum C_o.

Water mass	Station	C_t (%)	C_o (max) (S_o=0.25)	C_s (%)	*R*/*T* (%)
CDW	S18	6.1	56.1	0.54	90
CDW	S19	2.0	55.7	0.42	97
SMW	S28	9.9	55.8	0.25	83
CDW	S29	11.2	55.8	0.22	80
CUW	S5	5.9	26.1	0.49	79
KW	S10	7.3	19.8	0.24	64
KW	S26	4.2	19.7	0.2	79

Table S4. Derived R/T ratios based on the vertical particle mixing model (Equation 2). C_t and C_s are fixed, but C_o is replaced by the minimum C_o.

Water mass	Station	C_t (%)	C_o (min) (S_o=0.75)	C_s (%)	R/T (%)
CDW	S18	6.1	19.1	0.54	70
CDW	S19	2.0	18.7	0.42	92
SMW	S28	9.9	18.8	0.25	48
CDW	S29	11.2	18.7	0.22	41
CUW	S5	5.9	9.0	0.49	36
KW	S10	7.3	6.7	0.24	-9
KW	S26	4.2	6.6	0.2	38