Supplementary

Crossover radius and split cruises

The decision to use 300km instead of 200km, as in GLODAPv2, is based on additional analyses indicating that the general impact of the radius on natural variability and thus on the determined offsets is found to be rather small (Fig. S1; Gouretski and Jancke 2001 Fig. 3). This is especially true when comparing the influence of the chosen radius against the chosen minimum crossover depths on natural variability impact.

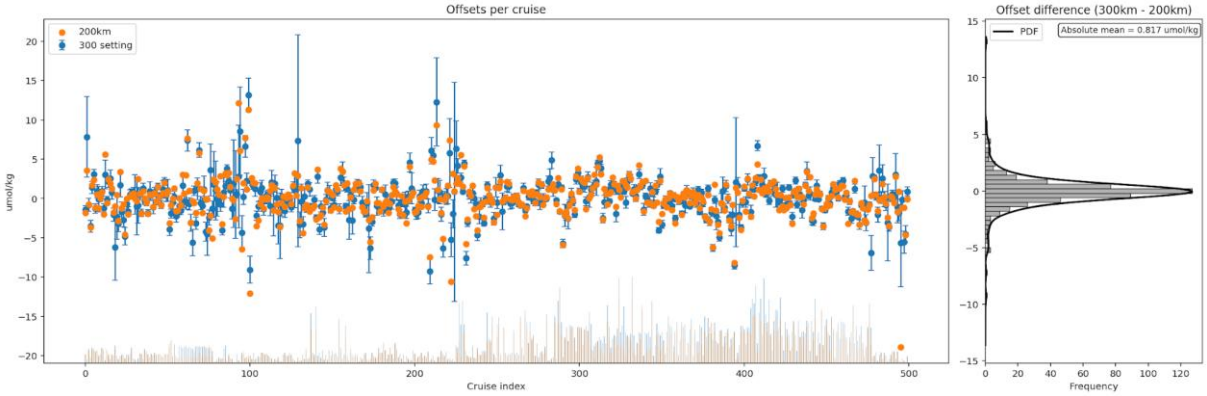

Figure S1: Influence of crossover radius selection on calculated TCO_2 CWMOs, comparing a 200 km (orange) and 300 km (blue) radius. (Left) The dots and error bars show the CWMOs and corresponding standard errors (globe region). The vertical bars indicate the number of cruise pairs used to calculate each CWMO. (Right) Frequency distribution histogram of the TCO_2 CWMO differences between the two radius configurations, yielding a mean absolute difference of 0.8 µmol kg^{-1}.

Table S1: Split up cruises for secondary QC.

Merged Expocode	Individual Expocodes	Alias
316N19720718	316N19720718	GEOSECS ATL
	316N19720813	
	316N19720907	
	316N19721011	
	316N19721105	
	316N19721204	
	316N19721231	
	316N19730211	
	316N19730312	
316N19810401	316N19810401	TTONAS
	316N19810416	
	316N19810516	
	316N19810619	
	316N19810721	
	316N19810821	

	316N19810923	
316N19821201	316N19821201	TTOTAS
	316N19821229	
	316N19830130	
316N19871123	316N19871123	SAVE
	316N19871218	
	316N19880129	
	318M19881207	
	318M19890123	
	318M19890313	
318M19730822	318M19730822	GEOSECS Pacific
	318M19730915	
	318M19731007	
	318M19731031	
	318M19731204	
	318M19740102	
	318M19740205	
	318M19740313	
	318M19740412	
	318M19740513	
318M19771204	318M19771204	GEOSECS Indian
	318M19771216	
	318M19780128	
	318M19780307	
	318M19780404	
35MF19850224	35MF19850224	INDIGO I, II, III
	35MF19860401	
	35MF19870114	
06AQ19920521	06AQ19920521	
	06AQ19920530	

316N19840111	316N19840111	
	316N19840203	
06GA20000506	06GA20000506	
	06GA20000526	
06MT19970611	06MT19970611	
	06MT19970629	
49UP20000420	49UP20000420	
	49UP20000507	
74AB20050501	74AB20050501	
	74AB20050516	
49UP20070606	49UP20070606	
	49UP20070615	