

Corrections were made after publication. For details see www.int-res.com/abstracts/meps/v695/c_p203-216/
 This corrected version June 8, 2023

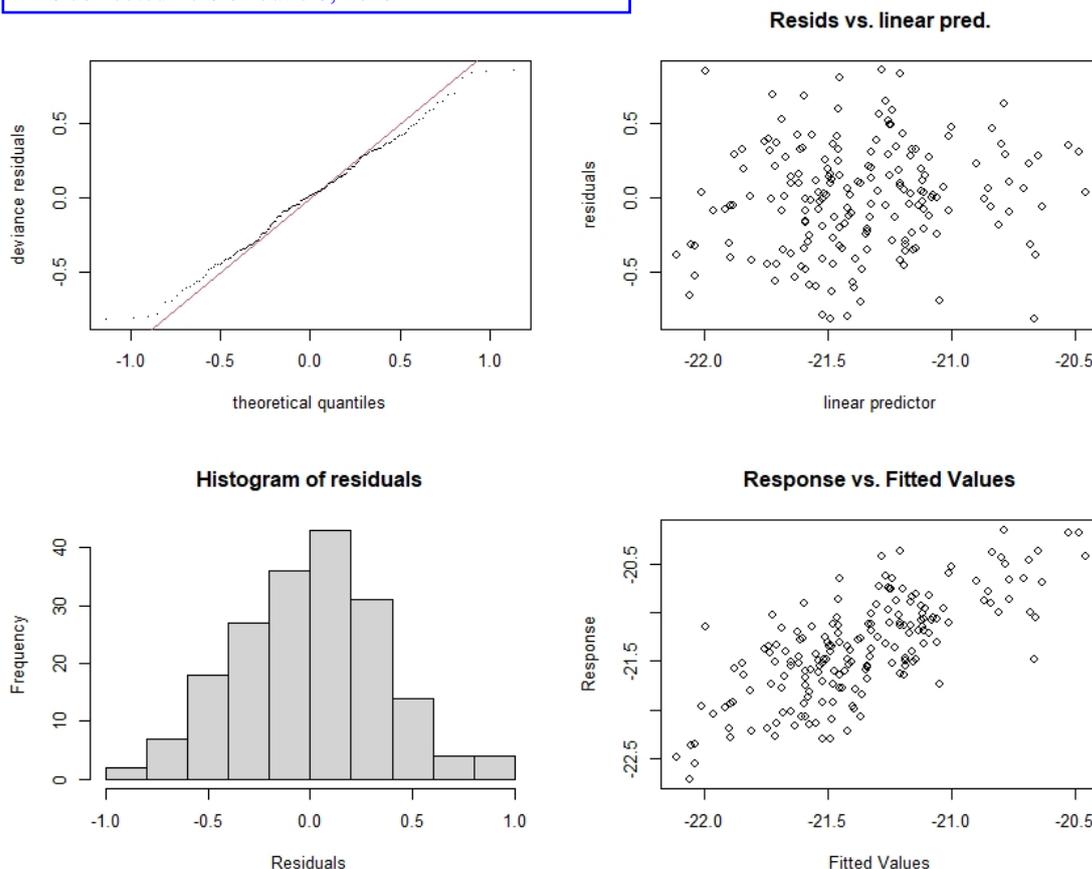


Figure S1 Basic residual plots for checking the Generalized Additive Model (GAM) ($\delta^{13}\text{C} \sim \text{s}[\text{oni3}] + \text{s}[\text{sam2}] + \text{year} + \text{sst} + \text{krill} + \text{oni1} + \text{oni2} + \text{sam1} + \text{sam3} + \text{local} + \text{s}[\text{ind, re}]$) fitting. The GAM was used to model the relationship between environmental variables/climate anomalies and bulk dentine $\delta^{13}\text{C}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) from 1979- 2015. Covariates are abbreviated as follows: oni1 (oni2, oni3) = Oceanic Niño Index (ONI) lagged by 1 (2, 3) yr; sam1 (sam2, sam3): Marshall Southern Annular Mode (SAM) Index lagged by 1 (2, 3) yr; sst: sea surface temperature; krill: Antarctic krill *Euphausia superba* numerical density; local: sampling location; ind: individual; re: random effect. All models included an autocorrelation structure (corAR1)

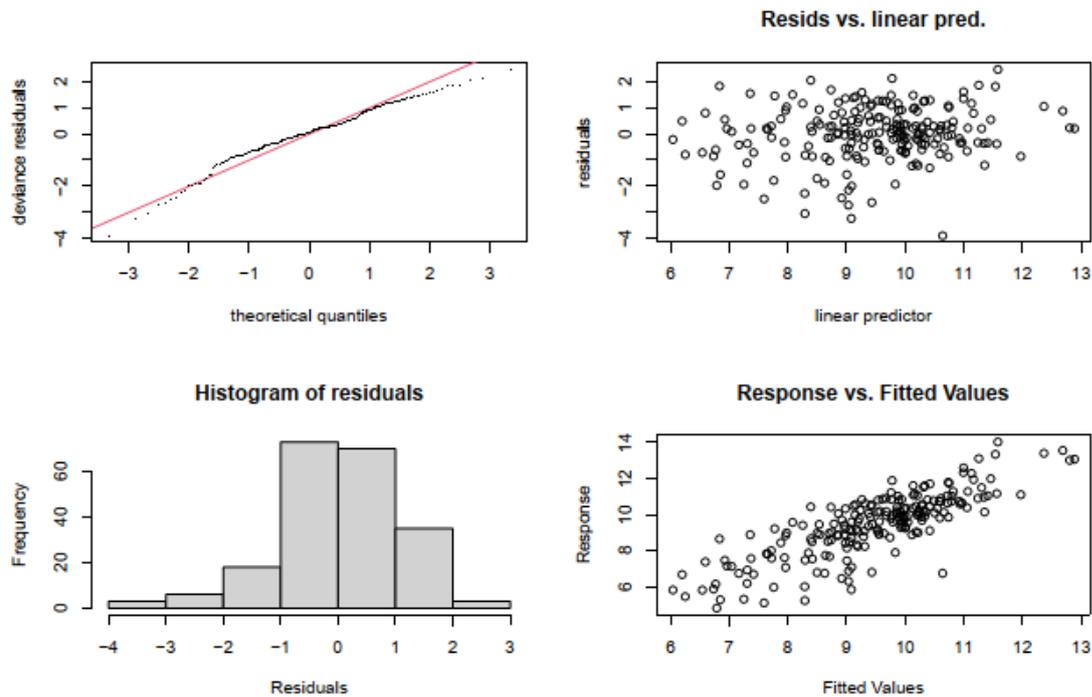


Figure S2 Basic residual plots for checking the Generalized Additive Model (GAM) ($\delta^{15}\text{N} \sim s[\text{year}] + s[\text{sst}] + s[\text{oni2}] + \text{krill} + \text{oni1} + \text{oni3} + \text{sam1} + \text{sam2} + \text{sam3} + \text{local} + s[\text{ind, re}]$) fitting. The GAM was used to model the relationship between environmental variables/climate anomalies and bulk dentine $\delta^{15}\text{N}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) from 1974- 2015. Covariates are abbreviated as follows: oni1 (oni2, oni3) = Oceanic Niño Index (ONI) lagged by 1 (2, 3) yr; sam1 (sam2, sam3): Marshall Southern Annular Mode (SAM) Index lagged by 1 (2, 3) yr; sst: sea surface temperature; krill: Antarctic krill *Euphausia superba* numerical density; local: sampling location; ind: individual; re: random effect. All models included an autocorrelation structure (corAR1)

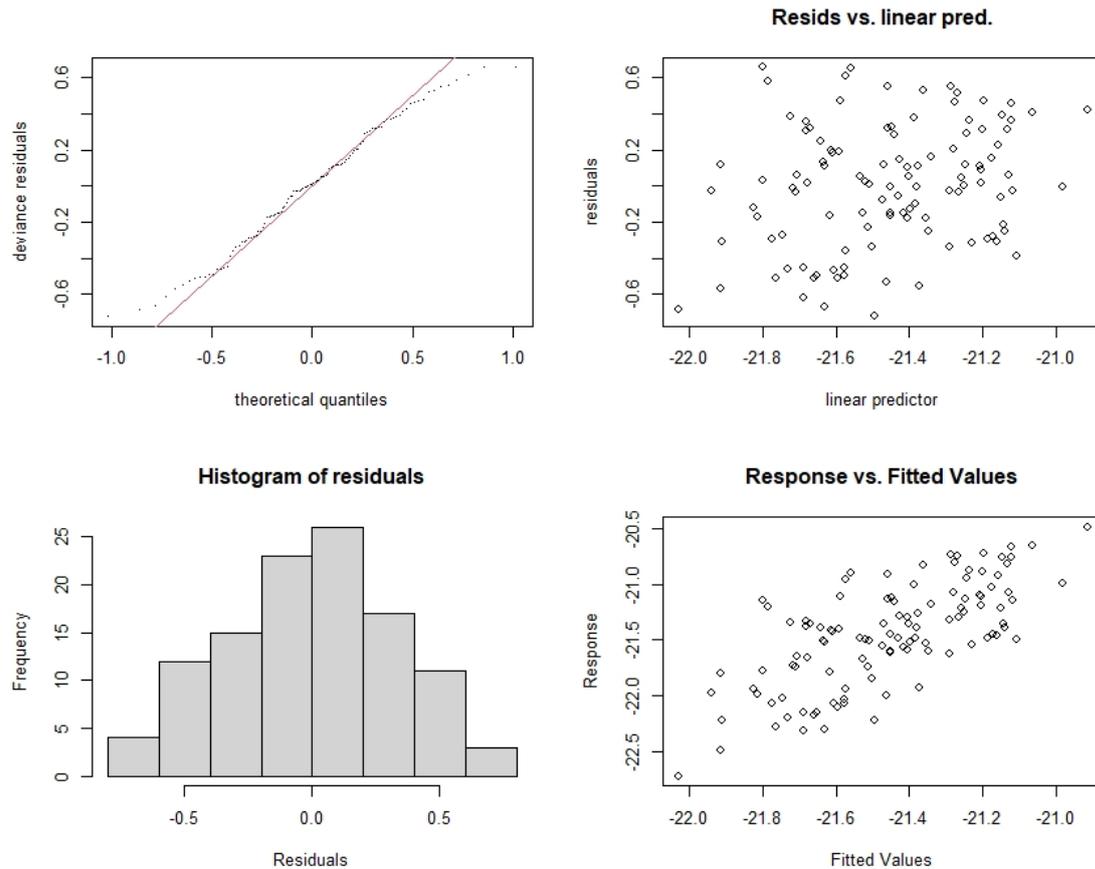


Figure S3 Basic residual plots for checking the Generalized Additive Model (GAM) ($\delta^{13}\text{C} \sim \text{s[sam2]} + \text{s[sam3]} + \text{chl} + \text{year} + \text{krill} + \text{oni1} + \text{oni2} + \text{oni3} + \text{sam1} + \text{local} + \text{s[ind, re]}$) fitting. The GAM was used to model the relationship between environmental variables/climate anomalies and bulk dentine $\delta^{13}\text{C}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) from 1998- 2015. Covariates are abbreviated as follows: chl: chlorophyll a; oni1 (oni2, oni3) = Oceanic Niño Index (ONI) lagged by 1 (2, 3) yr; sam1 (sam2, sam3): Marshall Southern Annular Mode (SAM) Index lagged by 1 (2, 3) yr; krill: Antarctic krill *Euphausia superba* numerical density; local: sampling location; ind: individual; re: random effect. All models included an autocorrelation structure (corAR1)

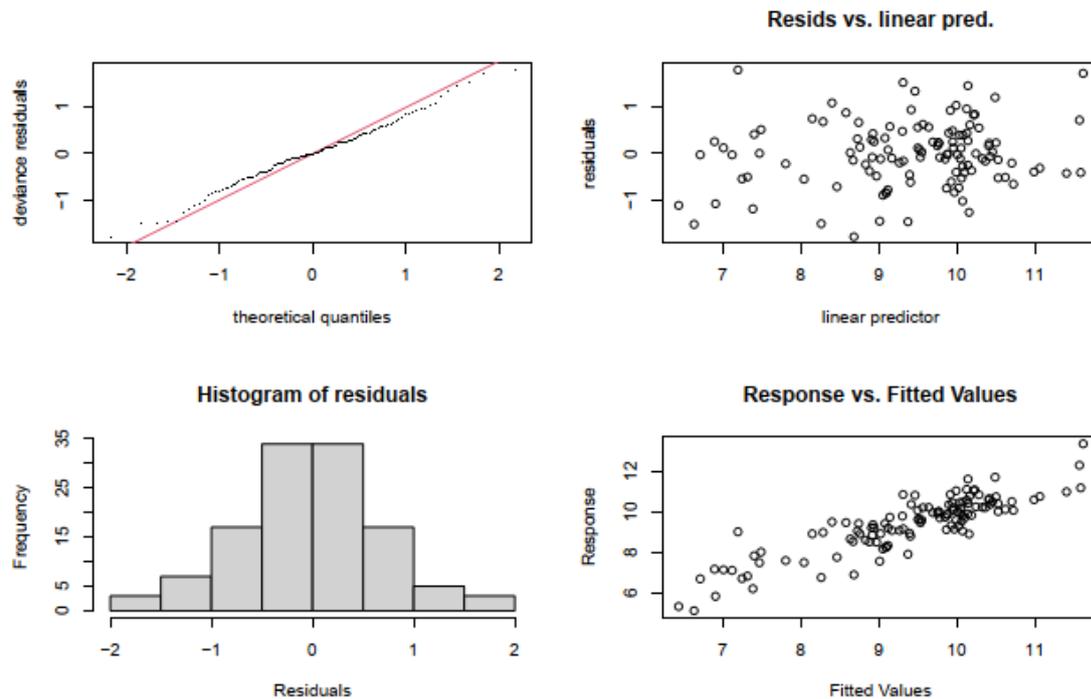


Figure S4 Basic residual plots for checking the Generalized Additive Model (GAM) ($\delta^{15}\text{N} \sim s[\text{sam2}] + \text{chl} + \text{year} + \text{krill} + \text{oni1} + \text{oni2} + \text{oni3} + \text{sam1} + \text{sam3} + \text{local} + s[\text{ind}, \text{re}]$) fitting. The GAM was used to model the relationship between environmental variables/climate anomalies and bulk dentine $\delta^{15}\text{N}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) from 1998-2015. Covariates are abbreviated as follows: chl: chlorophyll a; oni1 (oni2, oni3) = Oceanic Niño Index (ONI) lagged by 1 (2, 3) yr; sam1 (sam2, sam3): Marshall Southern Annular Mode (SAM) Index lagged by 1 (2, 3) yr; krill: Antarctic krill *Euphausia superba* numerical density; local: sampling location; ind: individual; re: random effect. All models included an autocorrelation structure (corAR1)

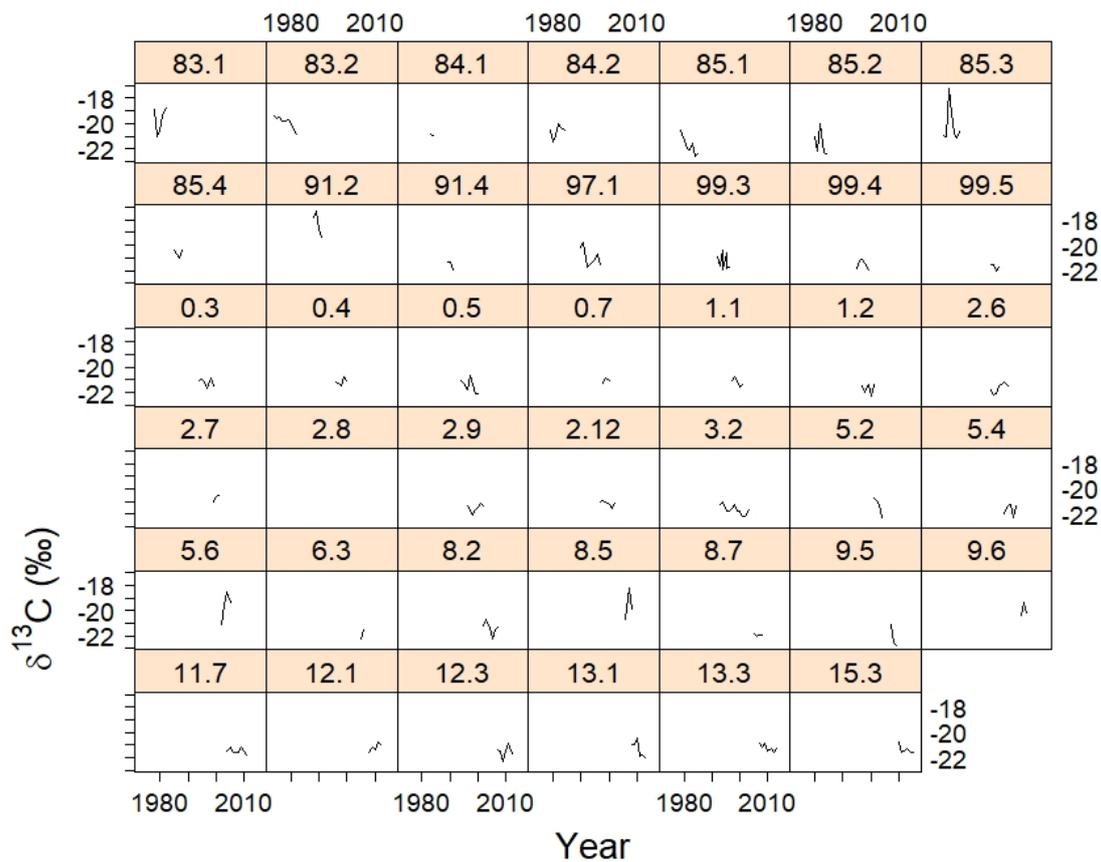


Figure S5 Individual XY plots of bulk dentine $\delta^{13}\text{C}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) versus time in years

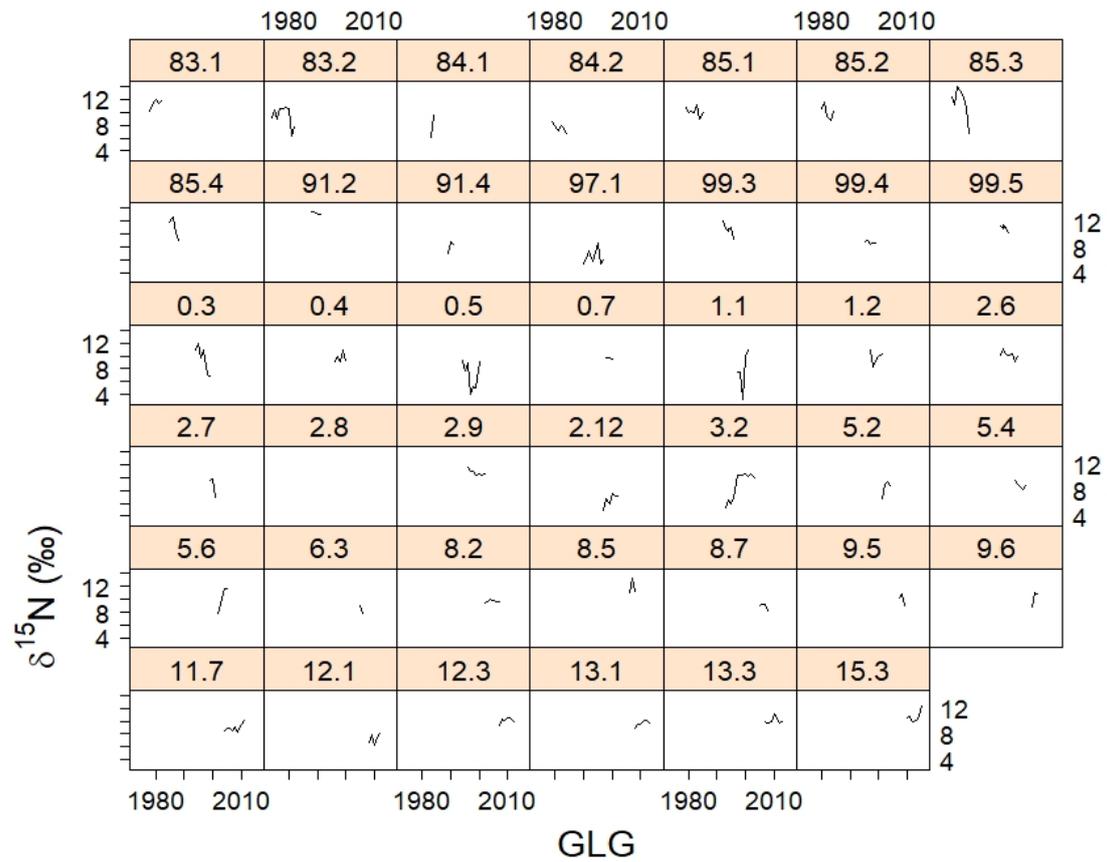


Figure S6 Individual XY plots of bulk dentine $\delta^{15}\text{N}$ values of teeth Growth Layer Groups (GLGs) of male subadult/adult Antarctic fur seals (*Arctocephalus gazella*) versus time in years