

Text S1: Auxiliary Material to “N-loss isotope effects in the Peru oxygen minimum zone studied using a mesoscale eddy as a natural tracer experiment”

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Background excess [N₂] calculation (supplement to section 2.4.2):

Background excess [N₂] ([N₂]_{excess_bkgd}) was derived from the relationship between [N₂]_{excess} and potential density (σ_θ) at a background station unaffected by N-loss ([O₂] > 10 $\mu\text{mol L}^{-1}$) located north of the OMZ (1.67°N, 85.83°W) sampled during the M90 cruise (Figure S1):

$$[\text{N}_2]_{\text{excess_bkgd}} (\mu\text{mol L}^{-1}) = 1 \times 10^{-9} e^{0.84\sigma_\theta}$$

Background excess [N₂] ([N₂]_{excess_bkgd}) calculated with this equation agreed fairly well with the one derived in Chang et al. (2010) for the ETSP, with differences generally < 1.5 $\mu\text{mol L}^{-1}$.

Reference

Chang B. X., A. H. Devol and S. R. Emerson (2010), Denitrification and the nitrogen gas excess in the eastern tropical South Pacific oxygen deficient zone, *Deep-Sea Res. PT I*, 57, 1092–1101.

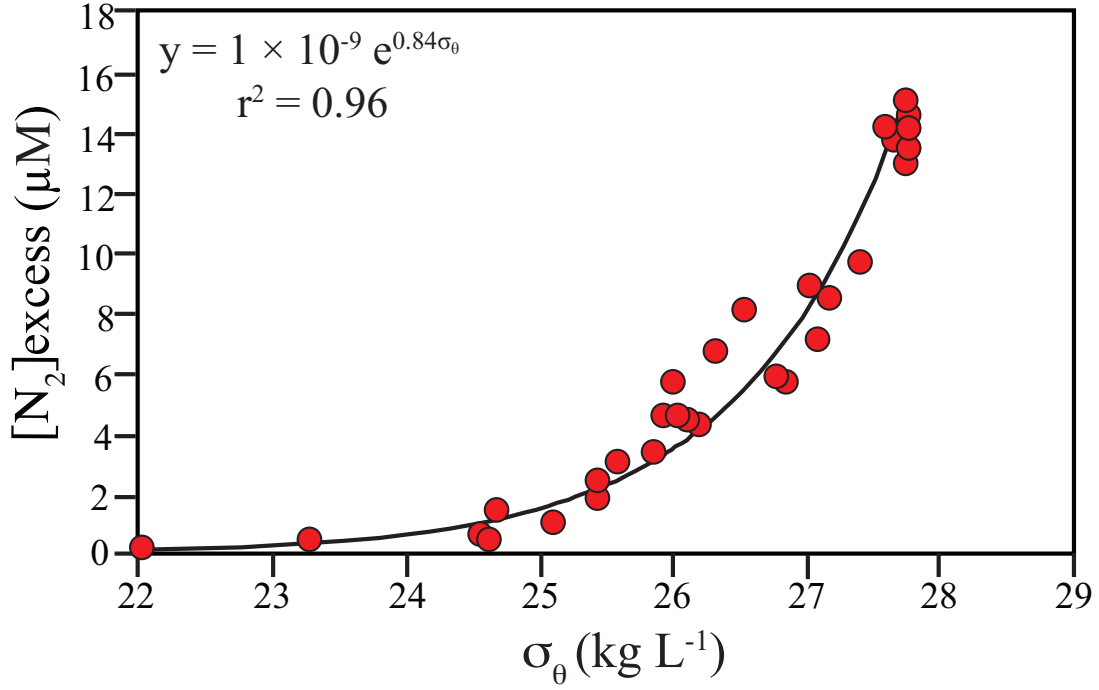


Figure S1. $[N_2]_{\text{excess}}$ versus σ_θ at a background station unaffected by N-loss located north of the OMZ (1.67°N , 85.83°W) sampled in November 2012 (M90 cruise).