

Supporting Information for

Eddy-Mediated Mixing of Oxygen in the Equatorial Pacific

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Introduction

This document includes supporting figures S1 through S4.

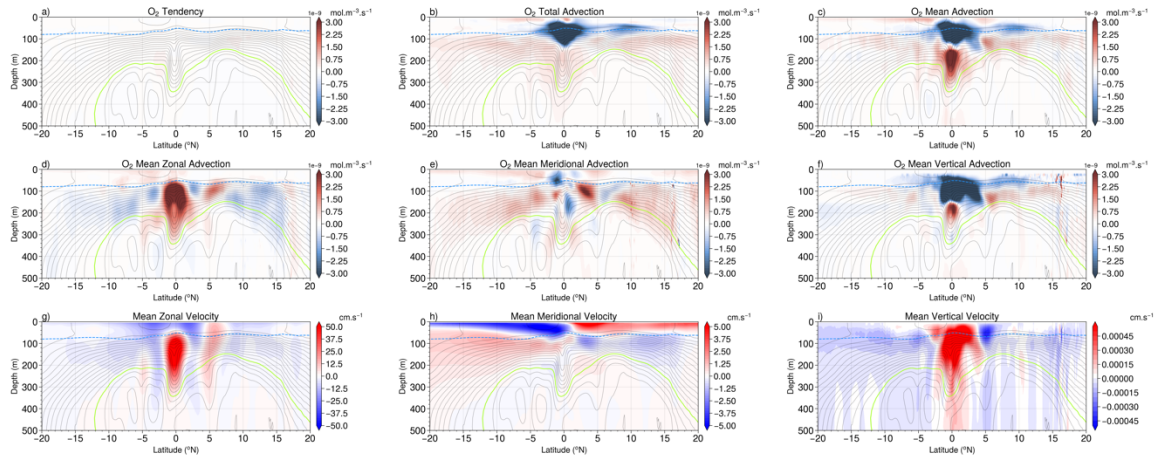


Figure S1. a) O₂ tendency, b) total advection, and c) mean advection terms averaged over 80°W-160°W in CESM. The decomposition of the mean advection term is shown for d) zonal, e) meridional, f) vertical advection, along with climatological mean g) zonal, h) meridional, and i) vertical velocities in CESM averaged over 80°W-160°W. Positive velocities in g-i) denote eastward, northward, and downward flow, respectively.

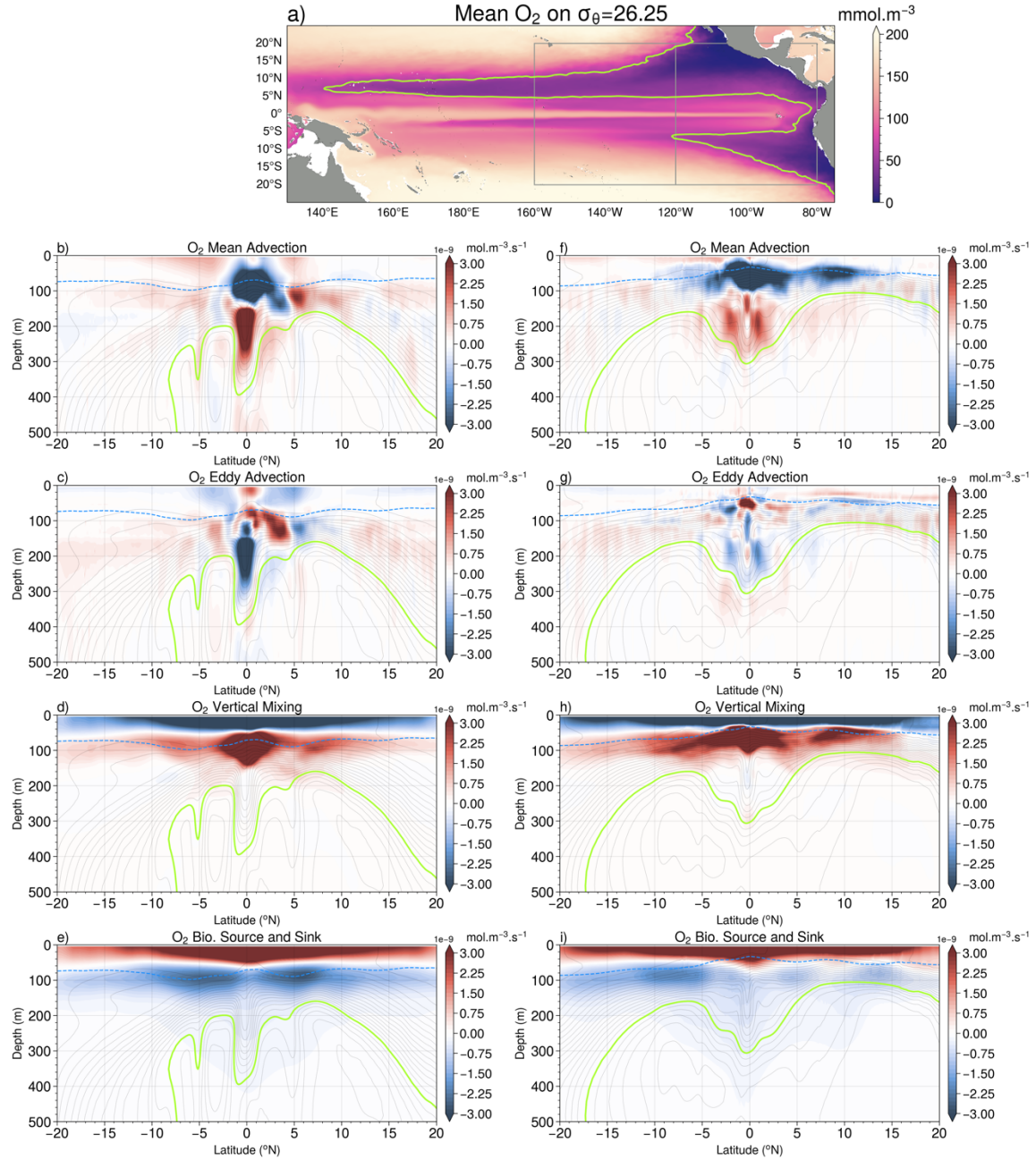


Figure S2. Mean O_2 budget decomposition averaged over the central (left panels) and eastern (right panels) equatorial Pacific in CESM, including a) mean O_2 concentrations on the 26.25 isopycnal, and contributions of b) mean advection, c) eddy advection, d) vertical mixing, and e) biogeochemical (production - consumption) sources and sinks for the central (160°W-120°W) equatorial Pacific. Panels f-i) same as b-e) but for the eastern (120°W-80°W) equatorial Pacific. Grey boxes in a) outline these two regions.

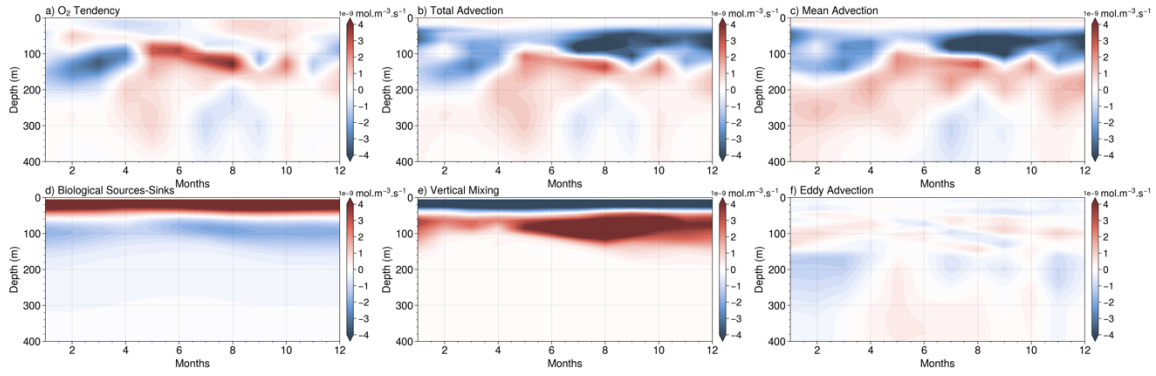


Figure S3. Seasonal O_2 budget balance averaged over the eastern and central equatorial Pacific ($7^{\circ}S$ - $7^{\circ}N$ and $80^{\circ}W$ - $160^{\circ}W$) in CESM, including a) O_2 tendency, b) total advection, c) mean advection, d) biological sources and sinks, e) vertical mixing, and f) eddy advection.

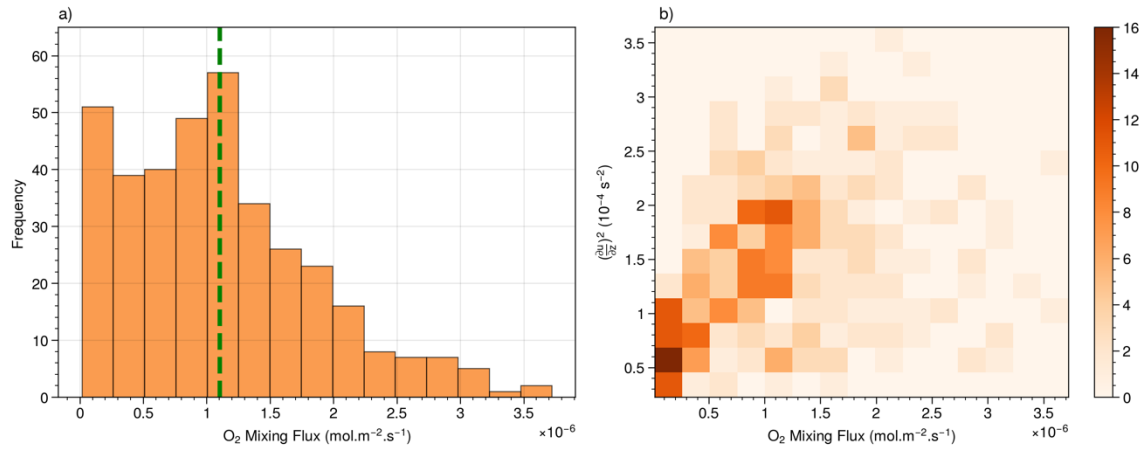


Figure S4. a) Histogram of the vertical turbulent mixing flux of O_2 at 0° $140^{\circ}W$ for the 5 year CESM simulation, with the climatological mean value outlined by the green dashed vertical line. b) 2d histogram of the vertical turbulent mixing flux of O_2 vs the squared vertical shear of zonal velocity at 0° $140^{\circ}W$ averaged vertically over the low-Ri layer. The vertical O_2 mixing flux term shown in a) and b) represent the depth-maximum in the downward local turbulent mixing flux of O_2 .