

# Supporting Information for ”The ocean’s meridional oxygen transport”

Esther Portela<sup>1,2</sup>, Nicolas Kolodziejczyk<sup>1</sup>, Thomas Gorgues<sup>1</sup>, Jan Zika<sup>3,4</sup>,

Coralie Perruche<sup>5</sup> and Alexandre Mignot<sup>5</sup>

<sup>1</sup>Univ. Brest, CNRS, IRD, Ifremer, Laboratoire d’Oceanographie Physique et Spatiale (LOPS), Plouzane, France

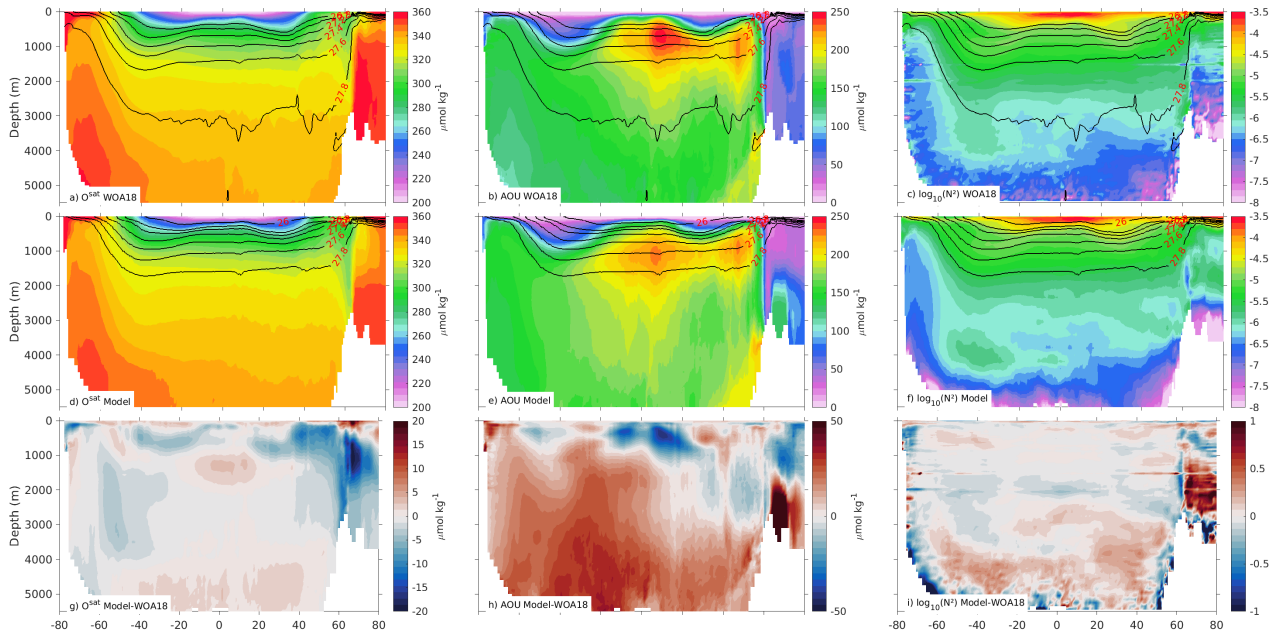
<sup>2</sup>School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom

<sup>3</sup>School of Mathematics and Statistics and UNSW Data Science Hub (uDASH), University of New South Wales, Sydney, Australia

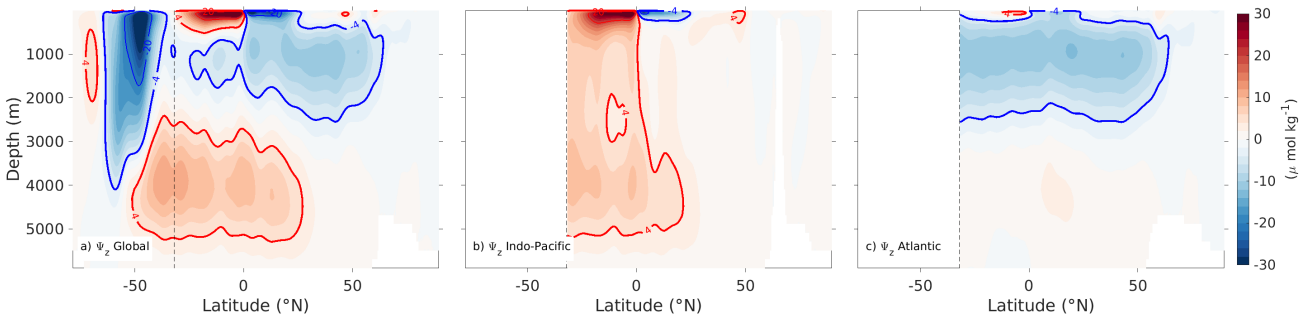
<sup>4</sup>Australian Centre for Excellence in Antarctic Science (ACEAS), University of New South Wales, Sydney, Australia

<sup>5</sup>Mercator Océan, Ramonville Saint-Agne, France

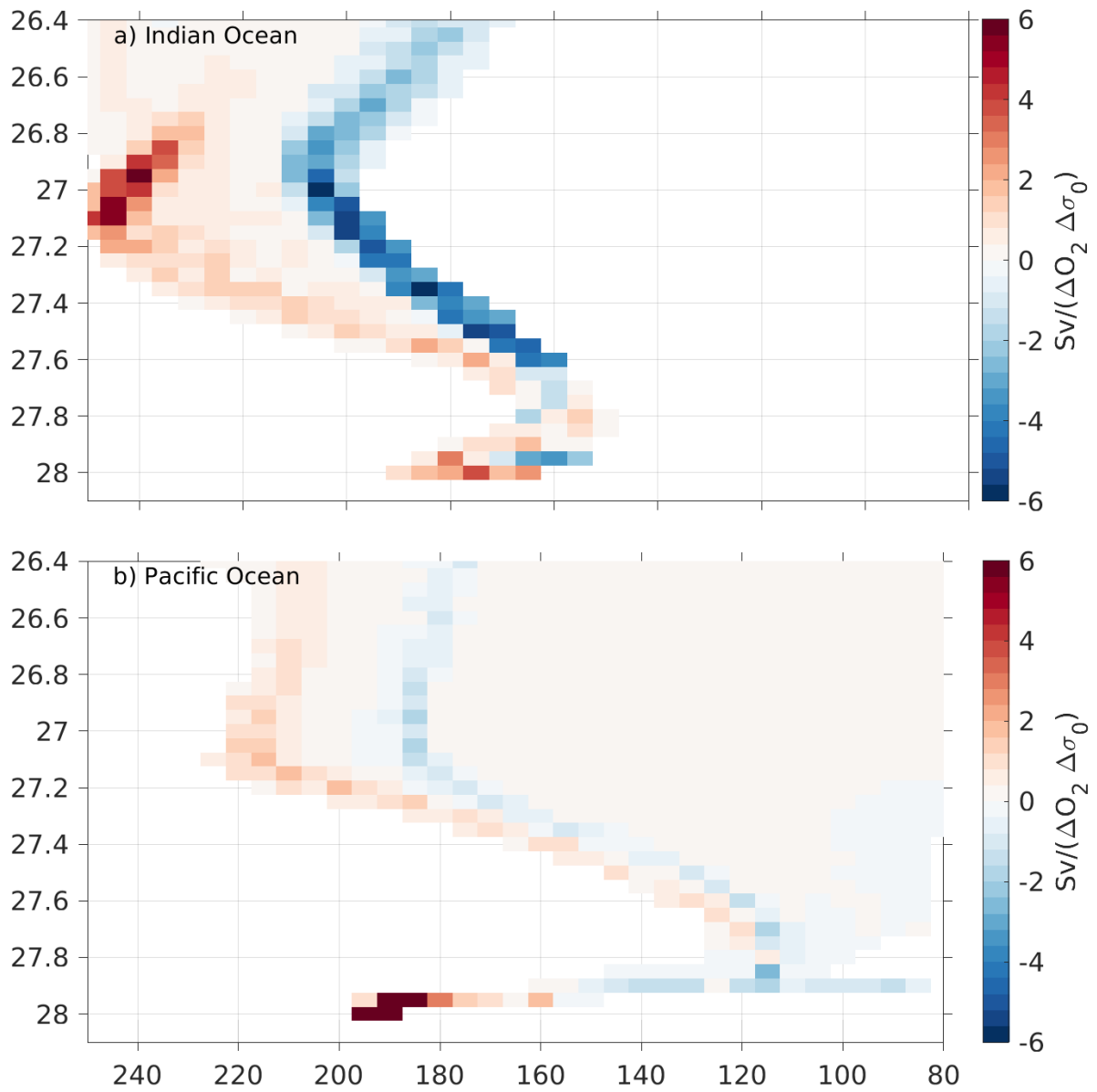
---



**Figure S1.** Mean, zonally averaged, (a,d,g) oxygen concentration at saturation ( $O^{sat}$ ), (b,e,h) AOU and (c,f,i)  $N^2$ ) from (upper row) observations from the World Ocean Atlas, 2018 (WOA18), (middle row) the NEMO-PISCES model and (bottom row) their difference (model minus WOA18) for (a,d) the global ocean, (b,e) the Indo-Pacific Ocean and (c,f) the Atlantic Ocean. Black contours show the isopycnals.



**Figure S2.** Mean value over the period 1950-2009 of  $\Psi_z$  in (a) the global ocean, (b) the Indo-Pacific basin and (c) the Atlantic basin. The Southern Ocean northern limit is marked with a straight dashed line at latitude  $32^\circ S$ .



**Figure S3.** Meridional transport joint distribution in oxygen-density coordinates. Across 32°S in a) the Indian sector of the Southern Ocean and b) the Pacific sector. Blue (red) colors represent poleward (equatorward) transport