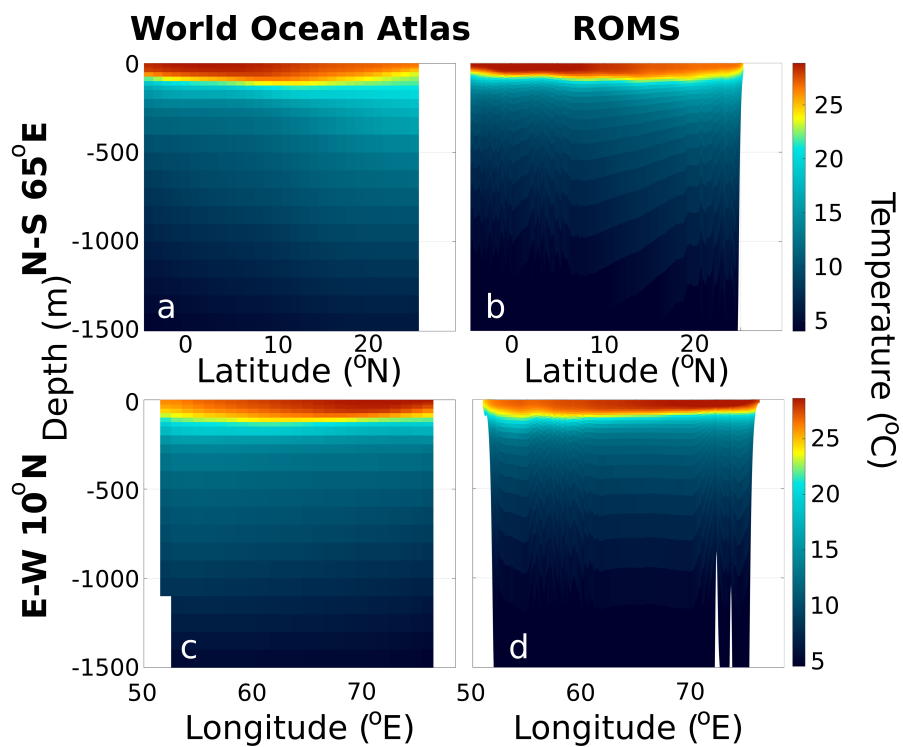
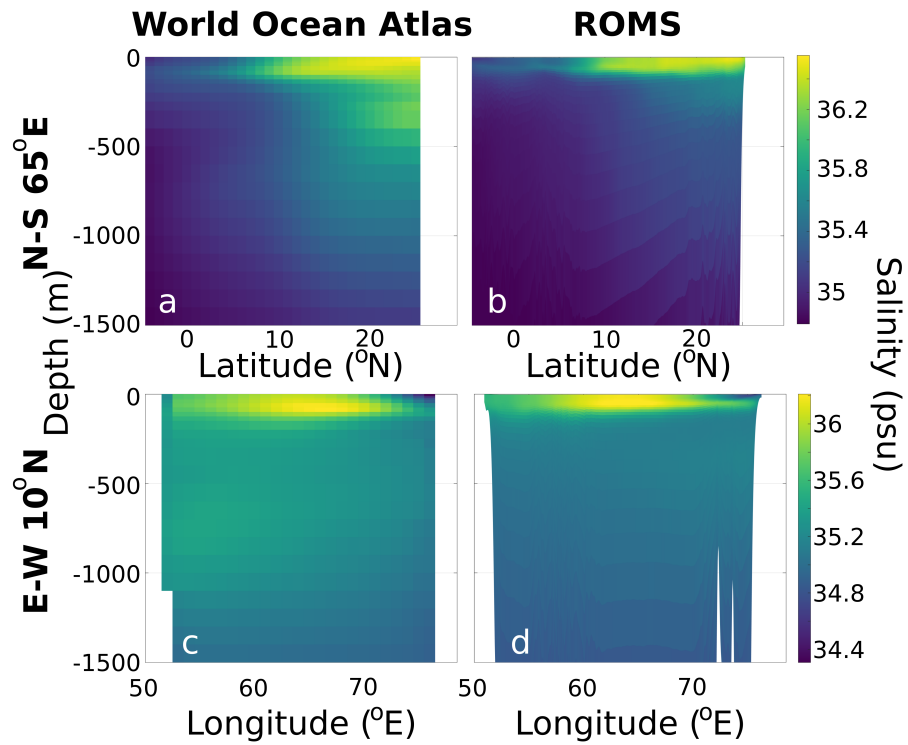


# **Supplementary Material of "Evaluating the Arabian Sea as a regional source of atmospheric CO<sub>2</sub>: seasonal variability and drivers"**

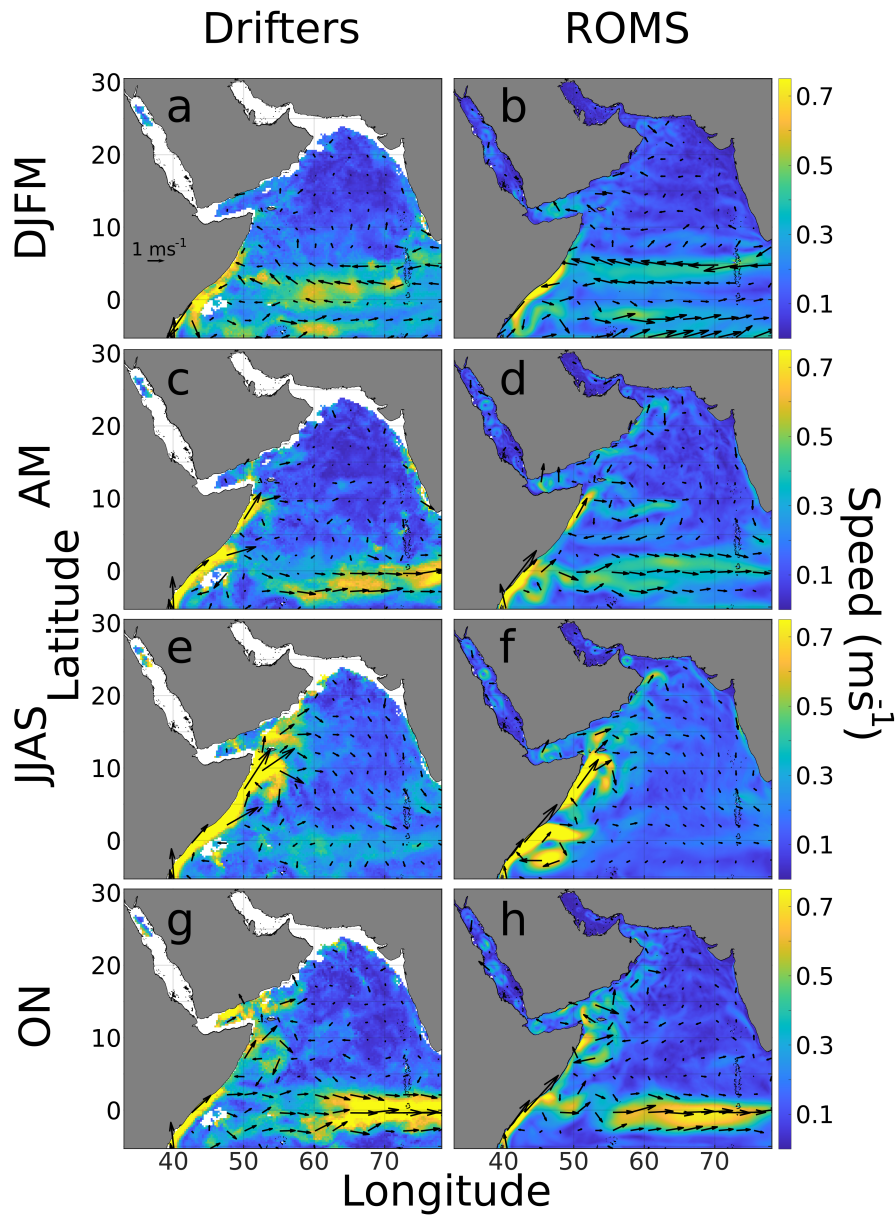
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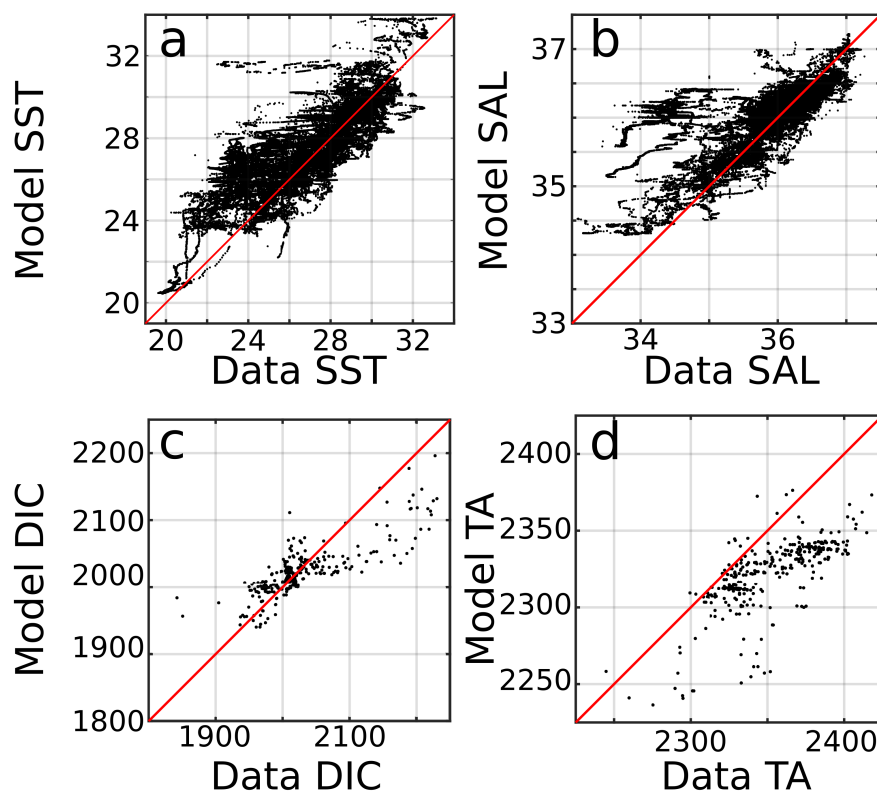
**Fig. S 1.** Transects of annual mean temperature in (left) WOA 2009, and (right) ROMS. First transect (top) is north to south, centered at 65°E, with second transect (bottom) going east-west centered at 10°N.



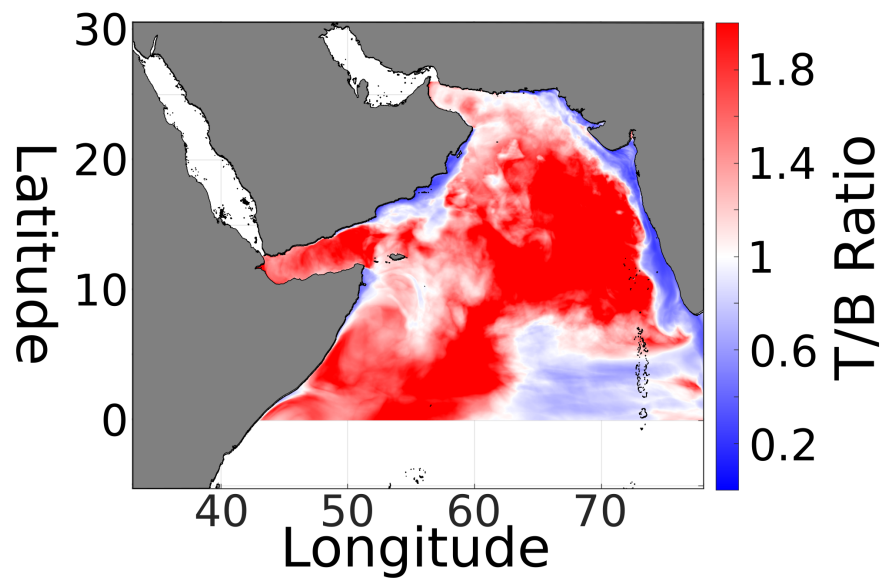
**Fig. S 2.** Transects, similar to Fig. S1, but with salinity instead of temperature.



**Fig. S 3.** Current speed  $\text{ms}^{-1}$ , of (left) 15-m drogued SVP drifter climatology from Laurindo et al. (2017), and (right) ROMS model, separated into seasons starting with (top row) winter monsoon DJFM, (second row) spring inter-monsoon AM, (third row) summer monsoon JJAS, and (fourth row) fall inter-monsoon ON.



**Fig. S 4.** (a) Scatter plot of model sea surface temperature vs. temperature reported in merged SOCAT-LDEO database. (b) Scatterplot similar to (a) but with surface salinity. (c) Model DIC plotted vs. GLODAP ungridded DIC (N=334). (d) Similar to (c) but with TA. Red lines indicate 1:1 relationship.



**Fig. S 5.** Ratio T/B of temperature over biological effects on pCO<sub>2</sub>, using methodology of Takahashi et al. (2002). Ratio greater than 1 (red) indicates temperature control, less than one biological (blue) control.