

1 Supporting Information for
2 **Climatology and annual cycle of global ocean dissolved oxygen represented by**
3 **multiple observational gridded products**

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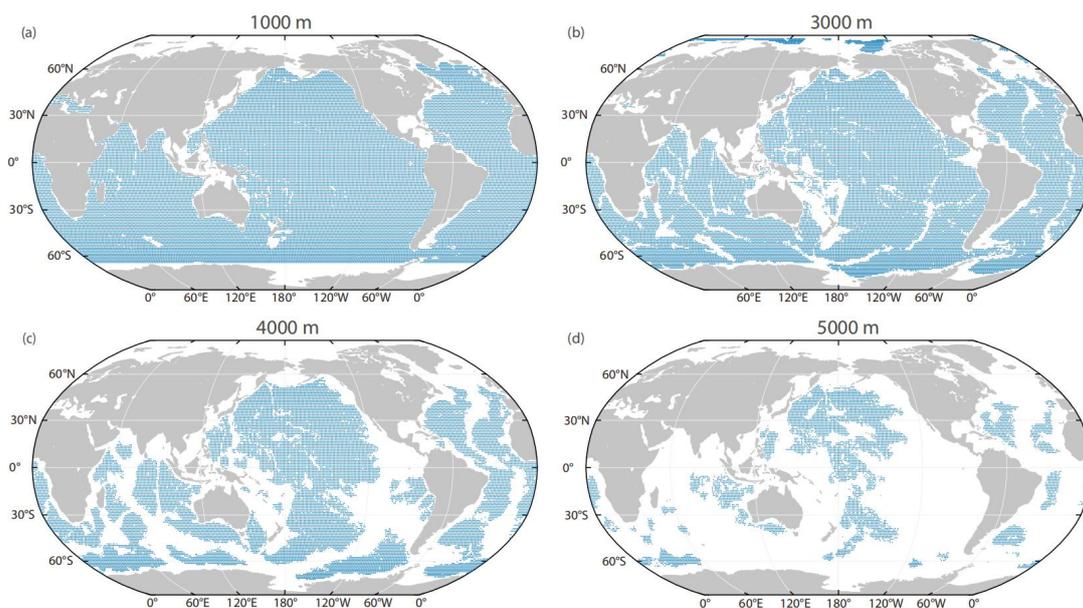
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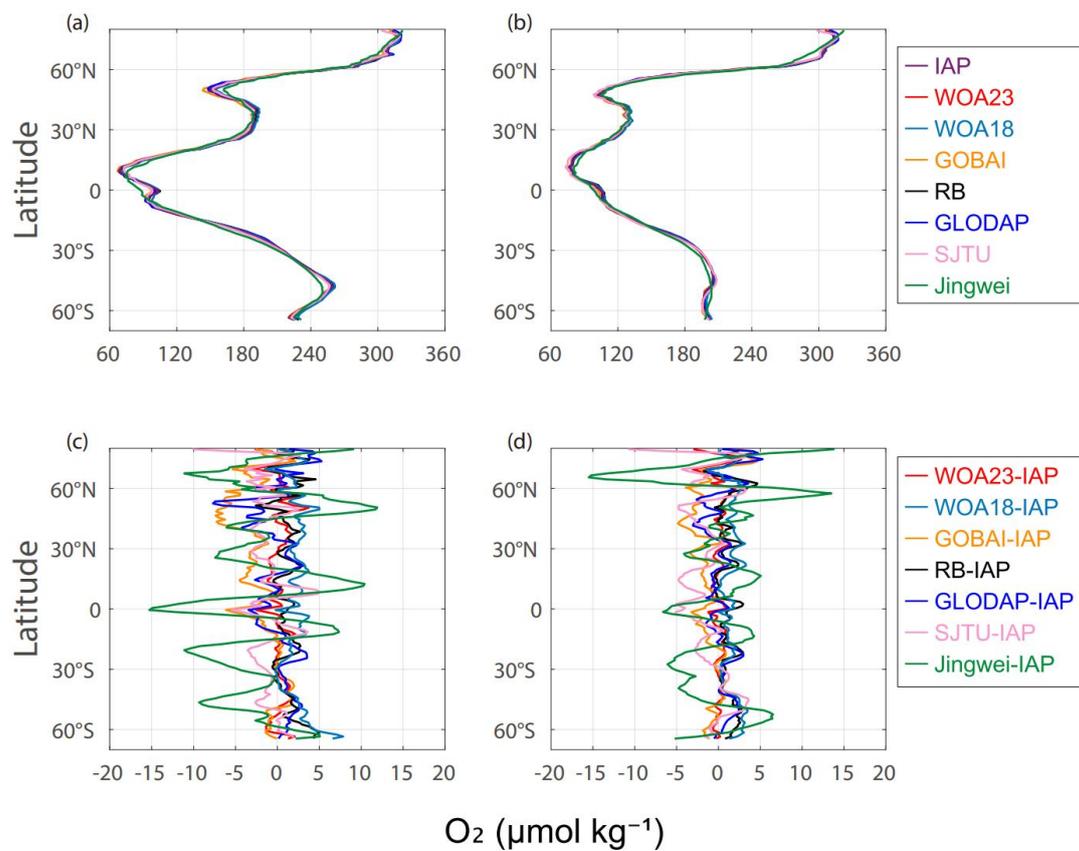
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43 (Pacific, Atlantic, Indian, North and South Pacific/Atlantic) for 0-100 m and 100-600
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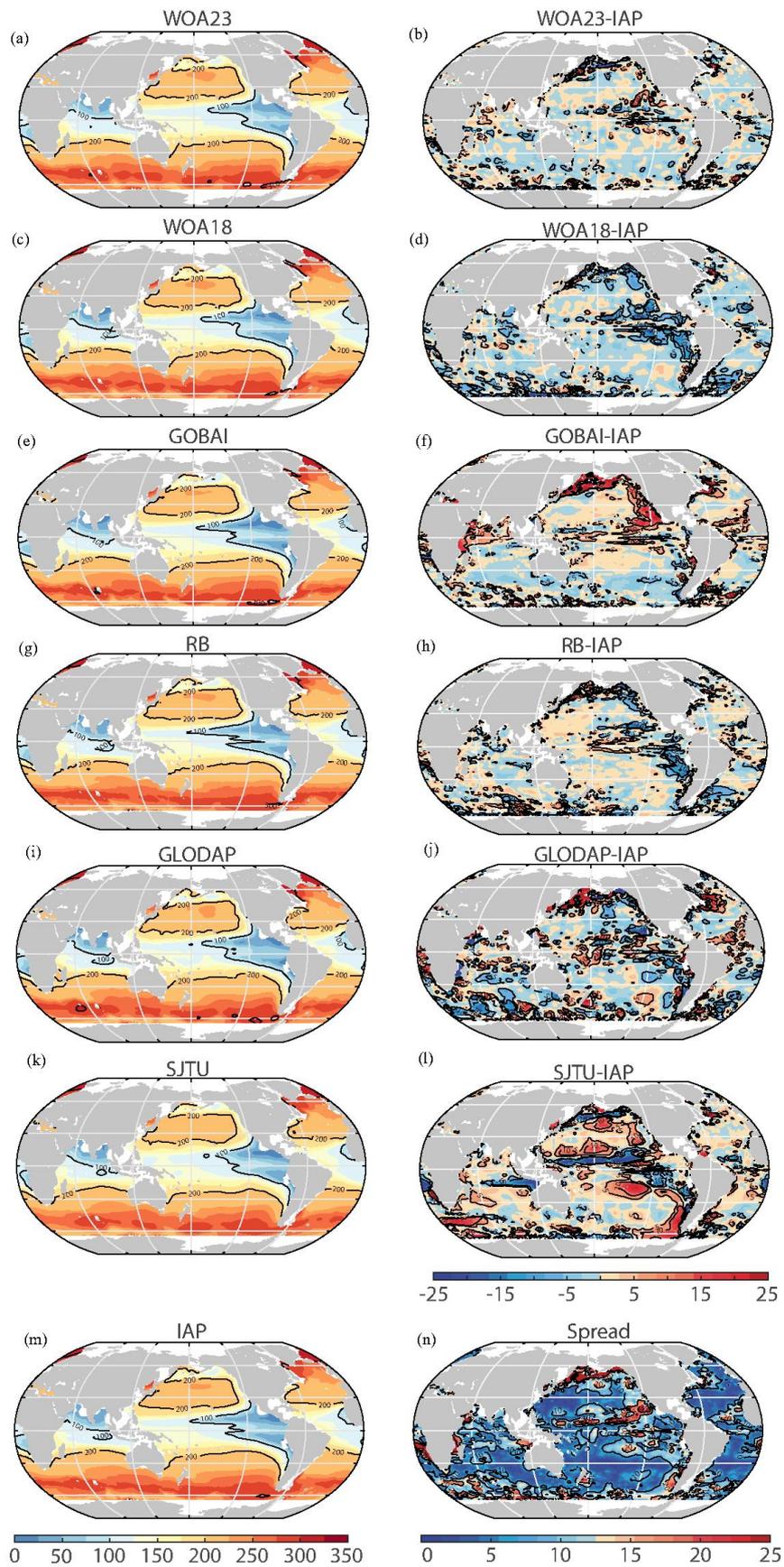
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Figure S1 Common land-ocean mask for the depth layers of 1000 m, 3000 m, 4000 m and 5000 m.



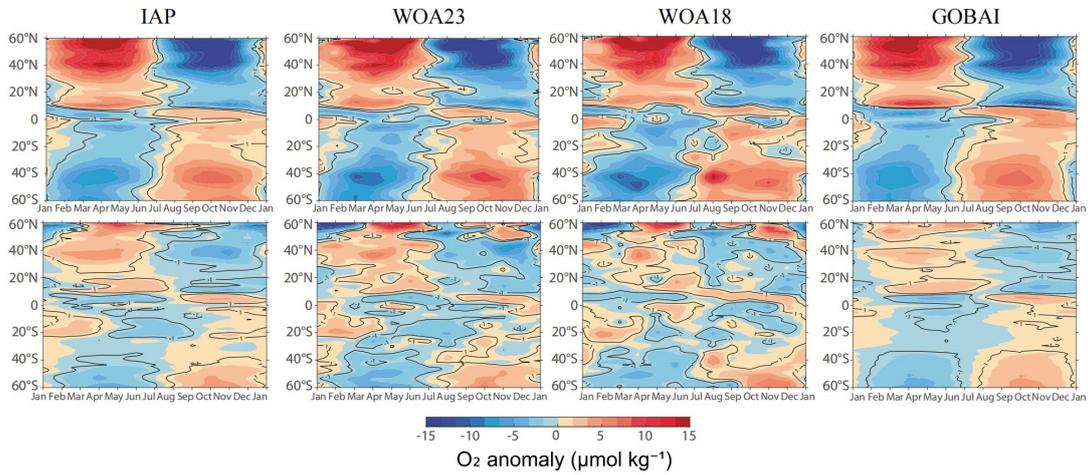
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Figure S2 Global zonal mean O₂ concentration and differences for 0-600 m (a, c) and 0-2000 m (b, d) (unit: $\mu\text{mol kg}^{-1}$).

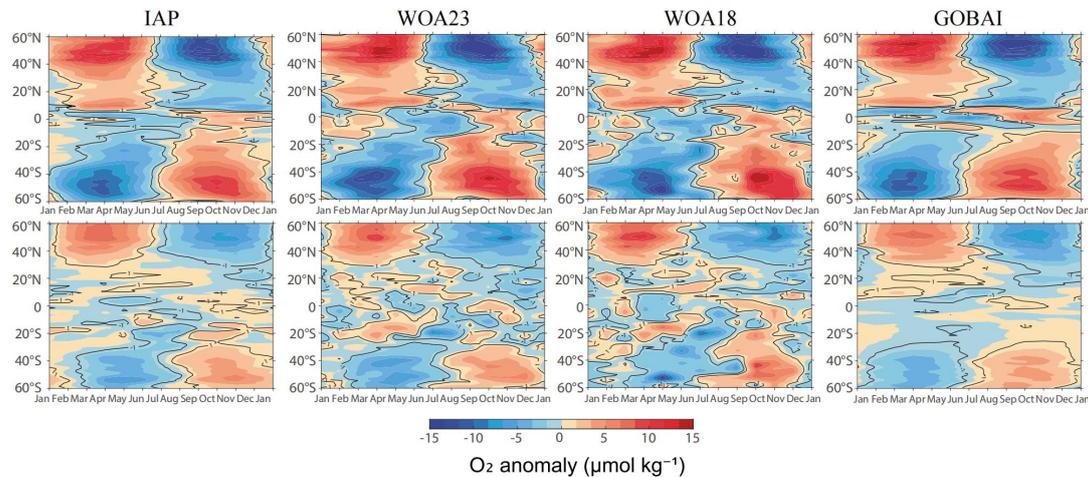


O_2 ($\mu\text{mol kg}^{-1}$)

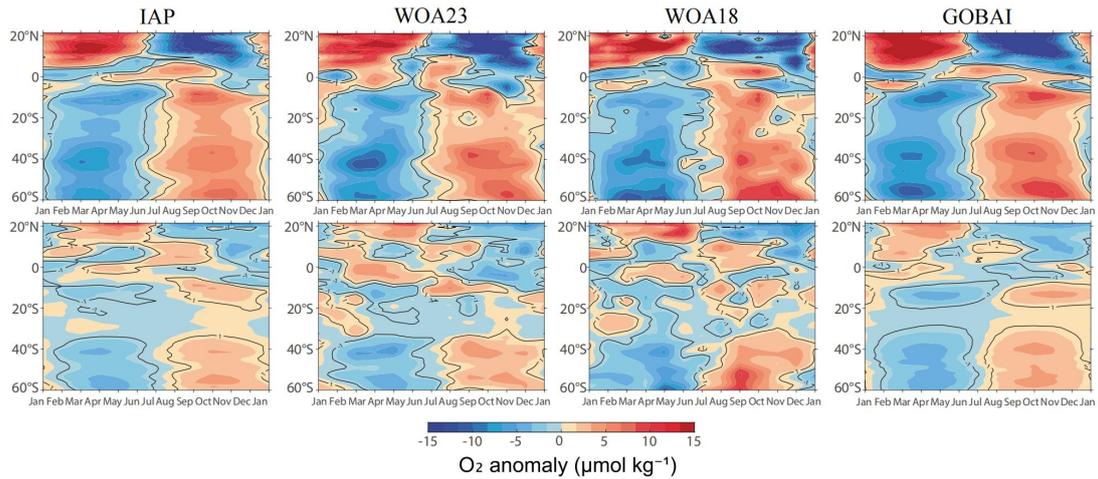
55 **Figure S3** The spatial patterns of the upper 300m climatological mean O₂
 56 concentration (unit: $\mu\text{mol kg}^{-1}$). (a) WOA23, (b) WOA23-IAP, (c) WOA18, (d)
 57 WOA18-IAP, (e) GOBAI, (f) GOBAI-IAP, (g) RB, (h) RB-IAP, (i) GLODAP, (j)
 58 GLODAP-IAP, (k) SJTU, (l) SJTU-IAP, (m) IAP, (n) Spread is calculated as the
 59 difference of the upper 300m climatological mean O₂ among the datasets.
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 62 **Figure S4** Zonal mean annual cycles of Pacific Ocean for 0-100 m (upper) and
 63 100-600 m (lower) for different data products (unit: $\mu\text{mol kg}^{-1}$).
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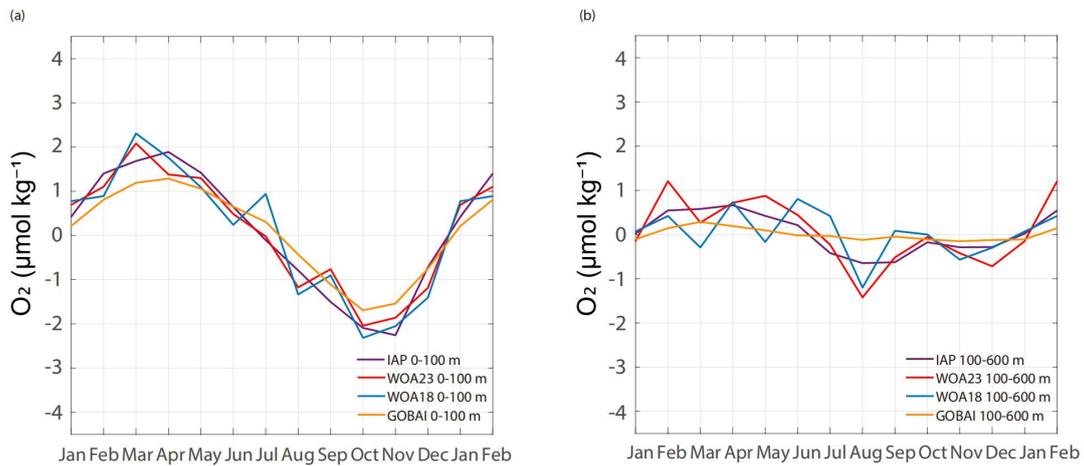


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 66 **Figure S5** Zonal mean annual cycles of Atlantic Ocean for 0-100 m (upper) and
 67 100-600 m (lower) for different data products (unit: $\mu\text{mol kg}^{-1}$).
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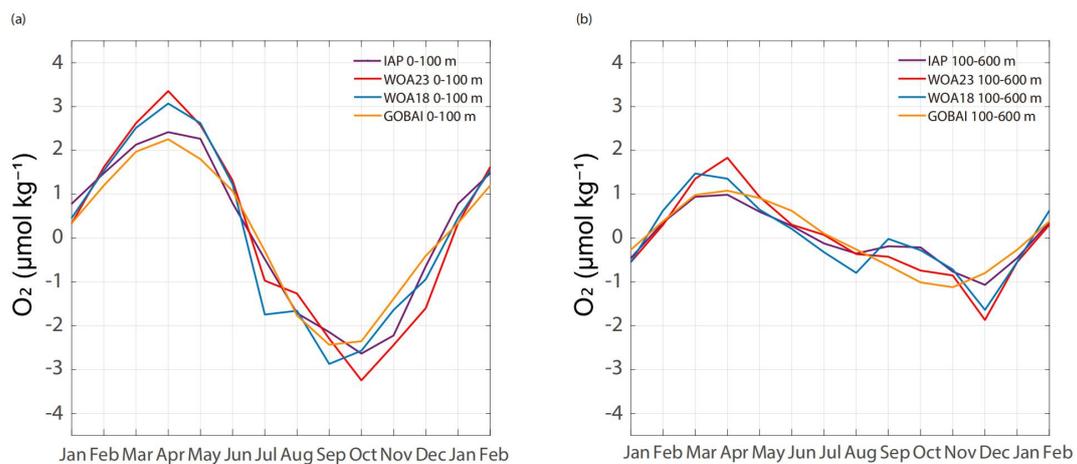
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Figure S6 Zonal mean annual cycles of Indian Ocean for 0-100 m (upper) and 100-600 m (lower) for different data products (unit: $\mu\text{mol kg}^{-1}$).



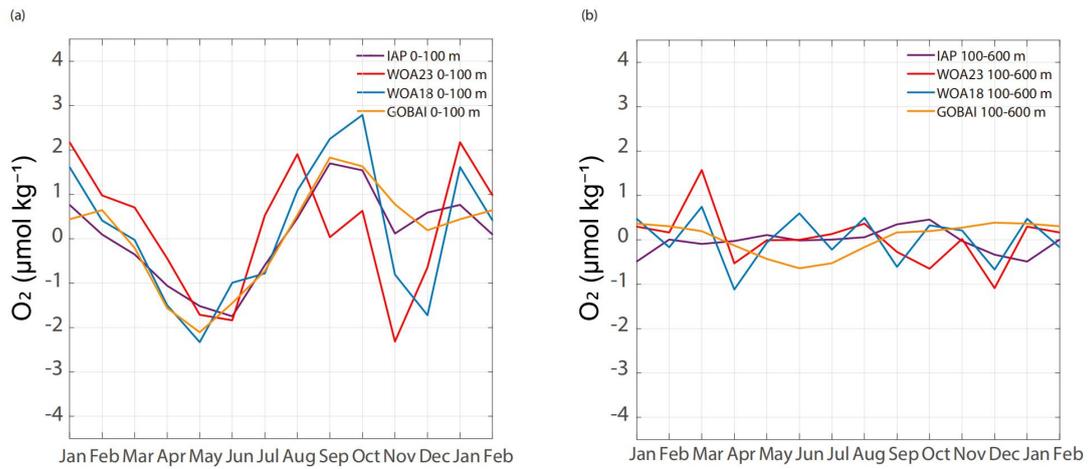
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Figure S7 Annual variation for the Pacific Ocean of the (a) 0-100 m and (b) 100-600 m mean O_2 for IAP, WOA23, WOA18 and GOBAI datasets (unit: $\mu\text{mol kg}^{-1}$).



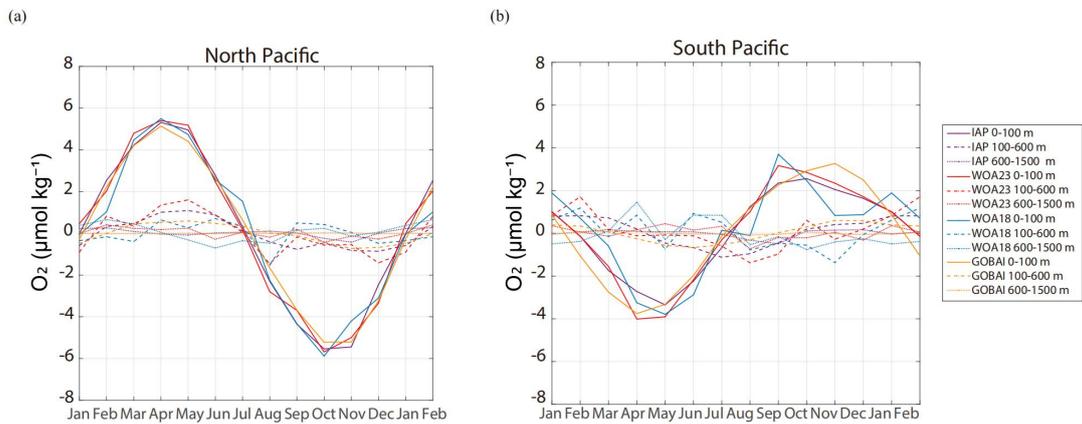
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Figure S8 Annual variation for the Atlantic Ocean of the (a) 0-100 m and (b) 100-600 m mean O_2 for IAP, WOA23, WOA18 and GOBAI datasets (unit: $\mu\text{mol kg}^{-1}$).



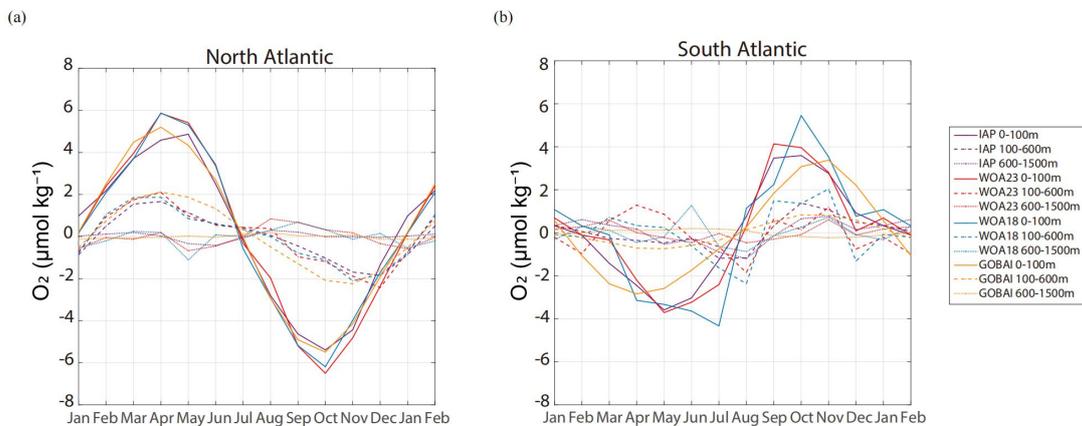
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82 **Figure S9** Annual variation for the Indian Ocean of the (a) 0-100 m and (b) 100-600
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90 **Figure S11.** Annual variation of the (a) North Atlantic and (b) South Atlantic mean O₂
 91 for IAP, WOA23, WOA18 and GOBAI datasets (unit: $\mu\text{mol kg}^{-1}$).