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*Supplement of*

## **Physical modulation to the biological productivity in the summer Vietnam upwelling system**

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## Supplementary

**Table S1 Initial values for some of the ecosystem variables**

<b>Name</b>	<b>Description</b>	<b>Initial value</b>	<b>Unit</b>	<b>Note</b>
<b>S1_N</b>	Nitrogen for pico-phytoplankton	0.04	mmol N m <sup>-3</sup>	
<b>S1_C</b>	Carbon for pico-phytoplankton	0.265	mmol C m <sup>-3</sup>	S1_N/16*106
<b>S1CH</b>	Chlorophyll for pico-phytoplankton	0.06	mg m <sup>-3</sup>	
<b>S2_N</b>	Nitrogen for diatom	0.08	mmol N m <sup>-3</sup>	
<b>S2_C</b>	Carbon for diatom	0.53	mmol C m <sup>-3</sup>	S2_N/16*106
<b>S2CH</b>	Chlorophyll for diatom	0.12	mg m <sup>-3</sup>	
<b>S3_N</b>	Nitrogen for coccolithophorids	0.04	mmol N m <sup>-3</sup>	
<b>S3_C</b>	Carbon for coccolithophorids	0.265	mmol C m <sup>-3</sup>	S3_N/16*106
<b>S3CH</b>	Chlorophyll for coccolithophorids	0.06	mg m <sup>-3</sup>	
<b>Z1_N</b>	Nitrogen for small zooplankton	0.02	mmol N m <sup>-3</sup>	
<b>Z1_C</b>	Carbon for small zooplankton	0.1325	mmol C m <sup>-3</sup>	Z1_N/16*106
<b>Z2_N</b>	Nitrogen for meso-zooplankton	0.02	mmol N m <sup>-3</sup>	
<b>Z2_C</b>	Carbon for meso-zooplankton	0.1325	mmol C m <sup>-3</sup>	Z2_N/16*106
<b>DD_N</b>	Detritus nitrogen	0.02	mmol m <sup>-3</sup>	
<b>DD_C</b>	Detritus carbon	0.1325	mmol m <sup>-3</sup>	DD_N/16*106
<b>BAC_</b>	Bacteria carbon	0.01	mmol C m <sup>-3</sup>	
<b>DDCA</b>	Detritus inorganic carbon	0.01	mmol m <sup>-3</sup>	
<b>DDSi</b>	Detritus silicate	0.03	mmol m <sup>-3</sup>	

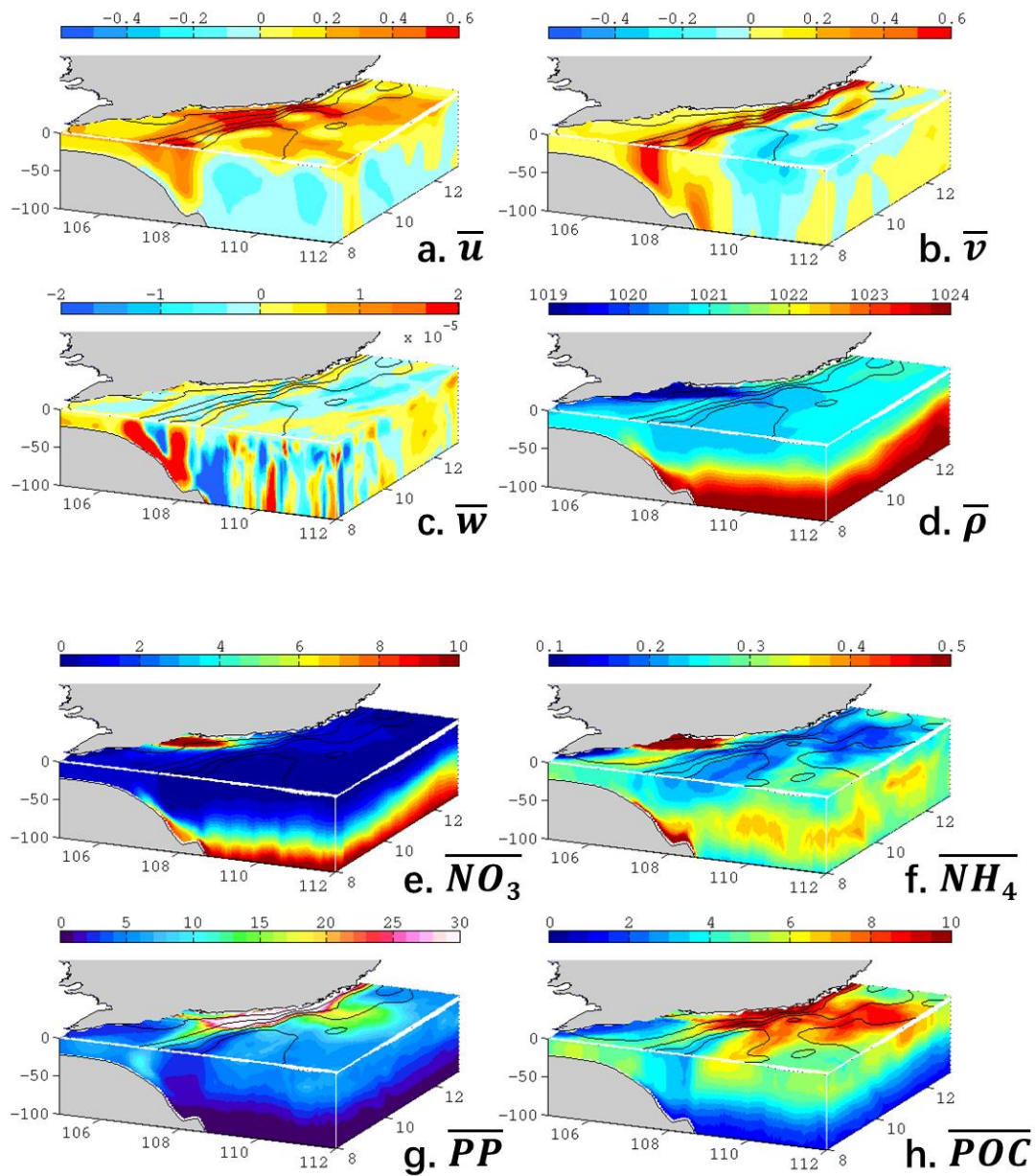


Figure S1 Same with Fig. 9, but for NO\_ADV model run. (a) Zonal velocity in  $\text{m s}^{-1}$ , (b) meridional velocity in  $\text{m s}^{-1}$ , (c) vertical velocity in  $\text{m s}^{-1}$ , (d) potential density in  $\text{kg m}^{-3}$ , (e) nitrate in  $\text{mmol m}^{-3}$ , (f) ammonium in  $\text{mmol m}^{-3}$ , (g) primary production in  $\text{mg C m}^{-3} \text{d}^{-1}$ , and (h) particulate organic carbon in  $\text{mmol C m}^{-3}$ . Overlapped contours are the mean sea level (every 0.1 m).

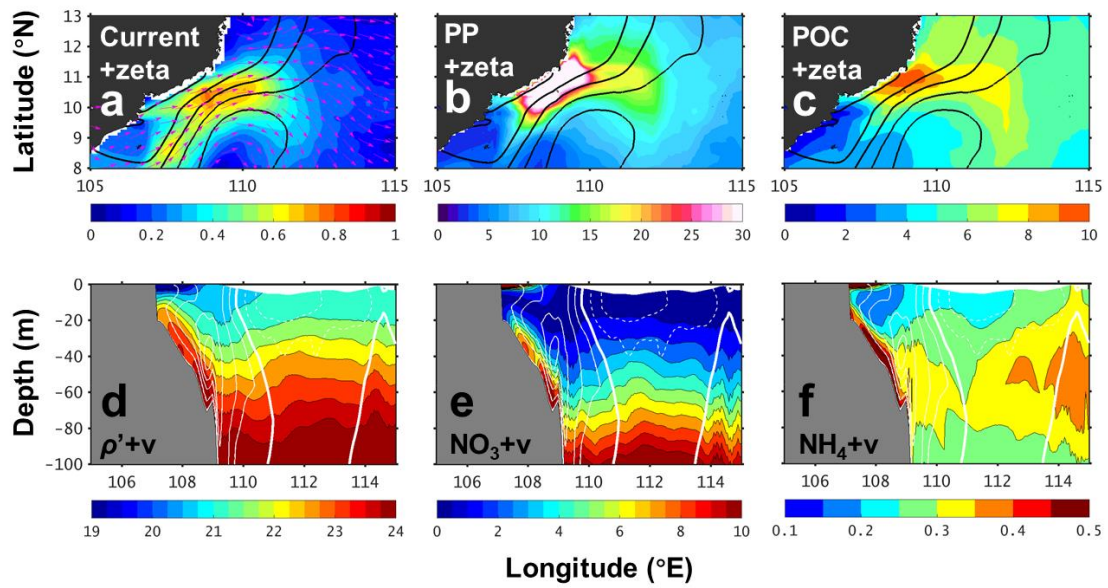


Figure S2 (a-c) Modeled sea level (black contour, CI=0.1 m) overlaid with (a) surface current (color: magnitude in  $\text{m s}^{-1}$ ; vector: flow direction), (b) surface primary production ( $\text{mg C m}^{-3} \text{d}^{-1}$ ), and (c) particulate organic carbon ( $\text{mmol C m}^{-3}$ ). (d-f) Sections along  $10^\circ \text{N}$ : meridional velocity (positive in solid contours and negative in dashed, CI=0.1  $\text{m s}^{-1}$ . Thick contours indicate zero value) overlaid with (d) potential density anomaly, (e) nitrate concentration ( $\text{mmol m}^{-3}$ ), and (f) ammonia concentration ( $\text{mmol m}^{-3}$ ).