Supplementary Materials

Tidal Dynamics Shaped the Dissolved Organic Carbon Fate and Exchange Flux Across Estuary-Coastal Water Continuum in Zhanjiang Bay, China

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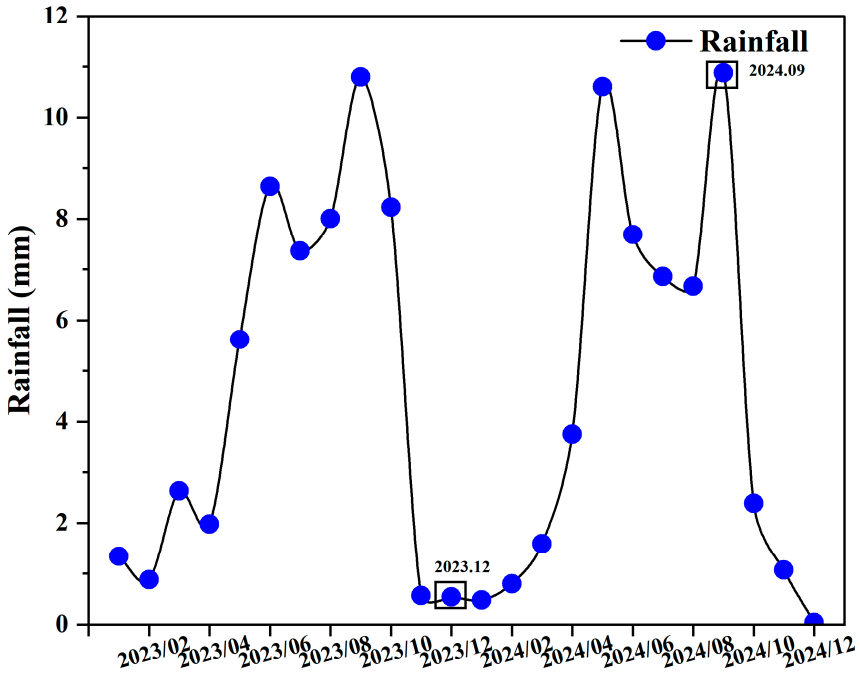


Figure S1. Monthly average rainfall characteristics of from 2023 to 2024 in Zhanjiang Bay (https://cds.climate.copernicus.eu).

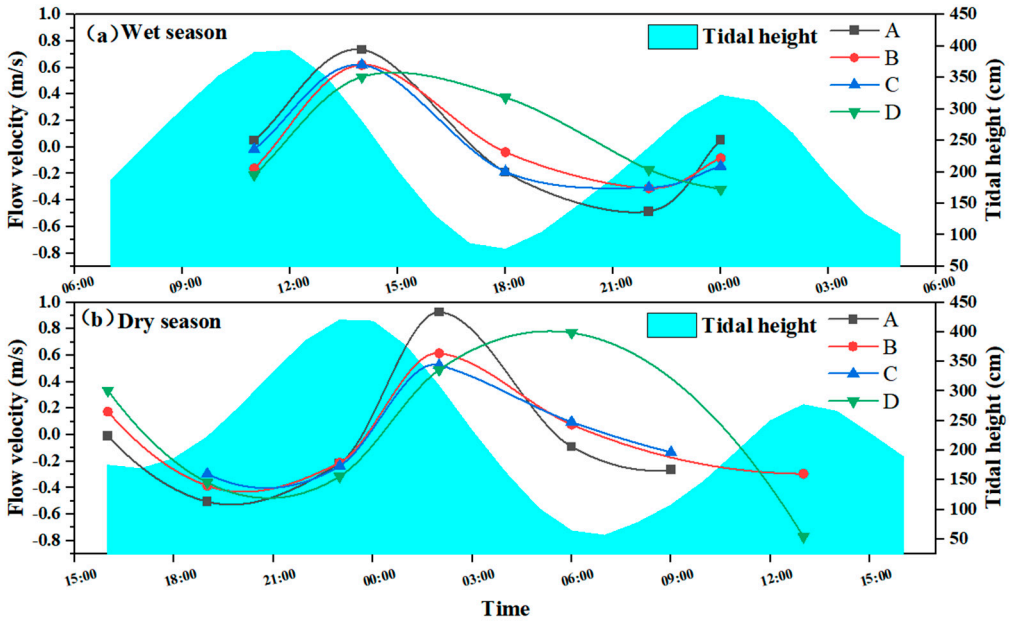


Figure S2. Dynamics of flow velocity during wet and dry seasons. (a) Wet season, (b) Dry season.

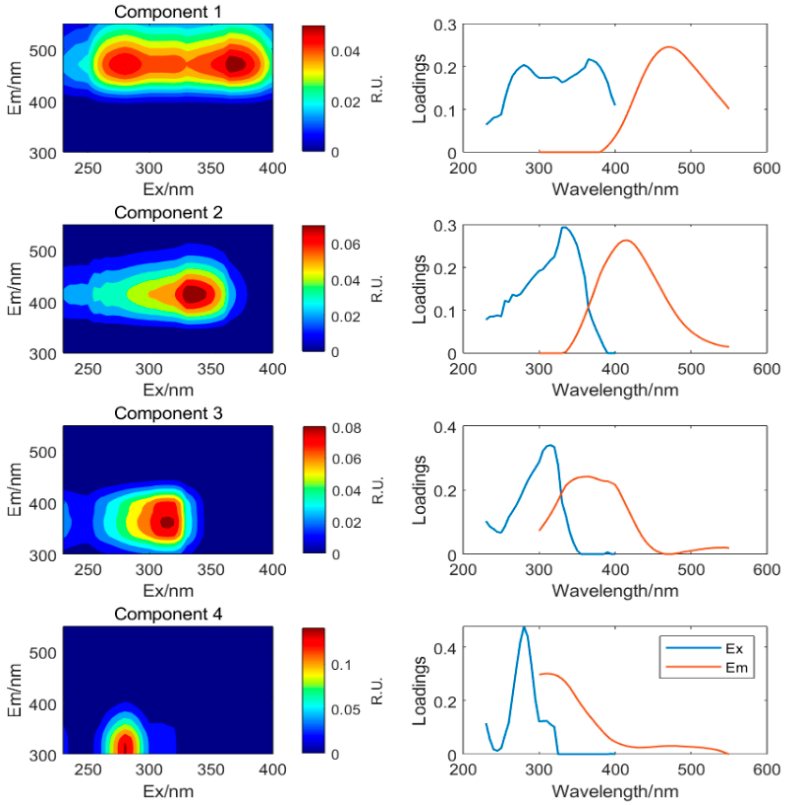


Figure S3. Fluorescence component maps and loadings during wet and dry seasons.

Table S1. Pearson correlation for the response characteristics of spectral parameters and driving factors during the wet season in the ZJB.

	Temperature	Salinity	pH	Depth	DOC	Chl-*a*	a_{254}	$S_{275-295}$	S_R	a_{355}	$SUVA_{254}$	FI	BIX	HIX	C1	C2	C3	C4	SPM
Temperature	1																		
Salinity	-0.48**	1																	
pH	-0.30**	0.30**	1																
Depth	-0.50**	0.55**	0.34**	1															
DOC	0.44**	-0.49**	-0.22**	-0.29**	1														
Chl-*a*	0.19*	-0.01	0.31**	-0.07	-0.10	1													
a254	0.42**	-0.49**	-0.28**	-0.48**	0.48**	0.01	1												
$S_{275-295}$	0.02	0.12	0.21*	0.02	-0.23**	0.06	-0.52**	1											
S_R	-0.45**	0.61**	0.26**	0.47**	-0.36**	-0.04	-0.30**	-0.12	1										
a_{355}	0.20*	-0.30**	-0.30**	-0.25**	0.42**	-0.09	0.83**	-0.80**	0.06	1									
$SUVA_{254}$	-0.13	-0.04	0.30**	0.15	-0.38**	0.15	-0.02	-0.11	0.34**	0.08	1								
FI	-0.33**	0.57**	0.53**	0.43**	-0.13	0.16	-0.21*	0.06	0.40**	-0.12	0.16*	1							
BIX	-0.32**	0.79**	0.43**	0.55**	-0.43**	0.03	-0.57**	0.22**	0.58**	-0.38**	0.11	0.54**	1						
HIX	0.44**	-0.68**	-0.43**	-0.53**	0.40**	-0.09	0.60**	-0.09	-0.63**	0.30**	-0.13	-0.40**	-0.78**	1					
C1	0.56**	-0.74**	-0.38**	-0.68**	0.52**	0.05	0.74**	-0.09	-0.67**	0.39**	-0.28**	-0.44**	-0.77**	0.84**	1				
C2	0.56**	-0.72**	-0.39**	-0.68**	0.53**	0.05	0.74**	-0.08	-0.67**	0.39**	-0.29**	-0.42**	-0.77**	0.84**	0.99**	1			
C3	0.60**	-0.67**	-0.36**	-0.66**	0.57**	0.02	0.71**	-0.06	-0.61**	0.39**	-0.33**	-0.36**	-0.58**	0.74**	0.95**	0.94**	1		
C4	0.13	-0.05	0.27**	-0.14	0.25**	0.22**	0.12	0.04	-0.09	0.02	-0.20*	0.10	0.02	-0.28**	0.14	0.14	0.19*	1	
SPM	-0.48**	0.49**	0.27**	0.52**	-0.50**	0.06	-0.54**	0.09	0.41**	-0.39**	0.25**	0.27**	0.47**	-0.56**	-0.61**	-0.61**	-0.64**	-0.09	1

Table S2. Pearson correlation for the response characteristics of spectral parameters and driving factors during the dry season in the ZJB.

	Temperature	Salinity	pH	Depth	DOC	Chl-a	a_{254}	$S_{275-295}$	S_R	a_{355}	$SUVA_{254}$	FI	BIX	HIX	C1	C2	C3	C4	SPM
Temperature	1																		
Salinity	-0.83**	1																	
pH	0.66**	-0.69**	1																
Depth	-0.36**	0.45**	-0.27**	1															
DOC	0.10	-0.33**	0.05	-0.09	1														
Chl-*a*	0.47**	-0.51**	0.48**	-0.33**	0.14	1													
a_{254}	0.59**	-0.66**	0.32**	-0.37**	0.14	0.20**	1												
$S_{275-295}$	-0.30**	0.32**	-0.08	0.24**	-0.001	0.061	-0.80**	1											
S_R	-0.45**	0.56**	-0.39**	0.25**	-0.16*	-0.27**	-0.26**	0.07	1										
a_{355}	0.47**	-0.50**	0.21**	-0.30**	0.06	0.12	0.94**	-0.87**	-0.15	1									
$SUVA_{254}$	0.54**	-0.57**	0.28**	-0.35**	-0.17*	0.12	0.93**	-0.77**	-0.22**	0.89**	1								
FI	0.33**	-0.16*	0.36**	-0.053	-0.30**	0.23**	0.25**	-0.24**	-0.04	0.23**	0.31**	1							
BIX	-0.12	0.25**	0.07	0.08	-0.34**	0.02	-0.08	-0.09	0.22**	-0.03	-0.01	0.39**	1						
HIX	0.36**	-0.39**	0.33**	-0.16*	0.02	0.16*	0.16*	-0.04	-0.33**	0.07	0.14	0.14	-0.11	1					
C1	0.74**	-0.93**	0.62**	-0.44**	0.306**	0.49**	0.70**	-0.32**	-0.49**	0.52**	0.60**	0.12	-0.24**	0.26**	1				
C2	0.73**	-0.92**	0.62**	-0.44**	0.28**	0.47**	0.72**	-0.34**	-0.52**	0.55**	0.63**	0.16*	-0.21**	0.22**	0.99**	1			
C3	0.71**	-0.93**	0.62**	-0.40**	0.32**	0.48**	0.64**	-0.28**	-0.51**	0.49**	0.54**	0.12	-.166*	0.35**	0.96**	0.94**	1		
C4	0.26**	-0.33**	0.09	-0.14	0.12	0.07	0.56**	-0.42**	-0.10	0.52**	0.53**	0.13	-0.08	-0.58**	0.45**	0.40**	0.33**	1	
SPM	-0.22**	0.17*	-0.34**	0.06	0.03	-0.28**	0.03	-0.11	0.01	0.06	0.04	-0.14	-0.05	-0.11	-0.16*	-0.14	-0.14	0.08	1

Note: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Table S3. Comparative analysis of parameter distribution characteristics during wet and dry seasons.

Argument	Wet season	Dry season
Chl-a ($ug \cdot L^{-1}$)	8.62 ± 5.01	2.33 ± 1.79
a_{254} (m^{-1})	10.04 ± 4.69	6.61 ± 3.22
$S_{275-295}$ (nm^{-1})	0.017 ± 0.003	0.018 ± 0.006
S_R	1.37 ± 0.48	1.85 ± 0.81
a_{355} (m^{-1})	2.70 ± 1.31	1.98 ± 1.32
$SUVA_{254}$ ($m^2 g^{-1}C$)	4.49 ± 1.95	3.81 ± 1.73
FI	1.77 ± 0.04	1.79 ± 0.03
BIX	0.91 ± 0.09	0.95 ± 0.04
HIX	4.24 ± 1.62	4.10 ± 1.40
C1 (R.U.)	0.08 ± 0.06	0.03 ± 0.02
C2 (R.U.)	0.10 ± 0.07	0.04 ± 0.02
C3 (R.U.)	0.06 ± 0.04	0.03 ± 0.01
C4 (R.U.)	0.04 ± 0.02	0.03 ± 0.02
SPM ($mg \cdot L^{-1}$)	37.55 ± 10.59	19.18 ± 19.73