

Supplementary materials for

**Isotopic compositions (δD , $\delta^{18}\text{O}$) and end-member mixing for the control interface
in a complex tidal region**

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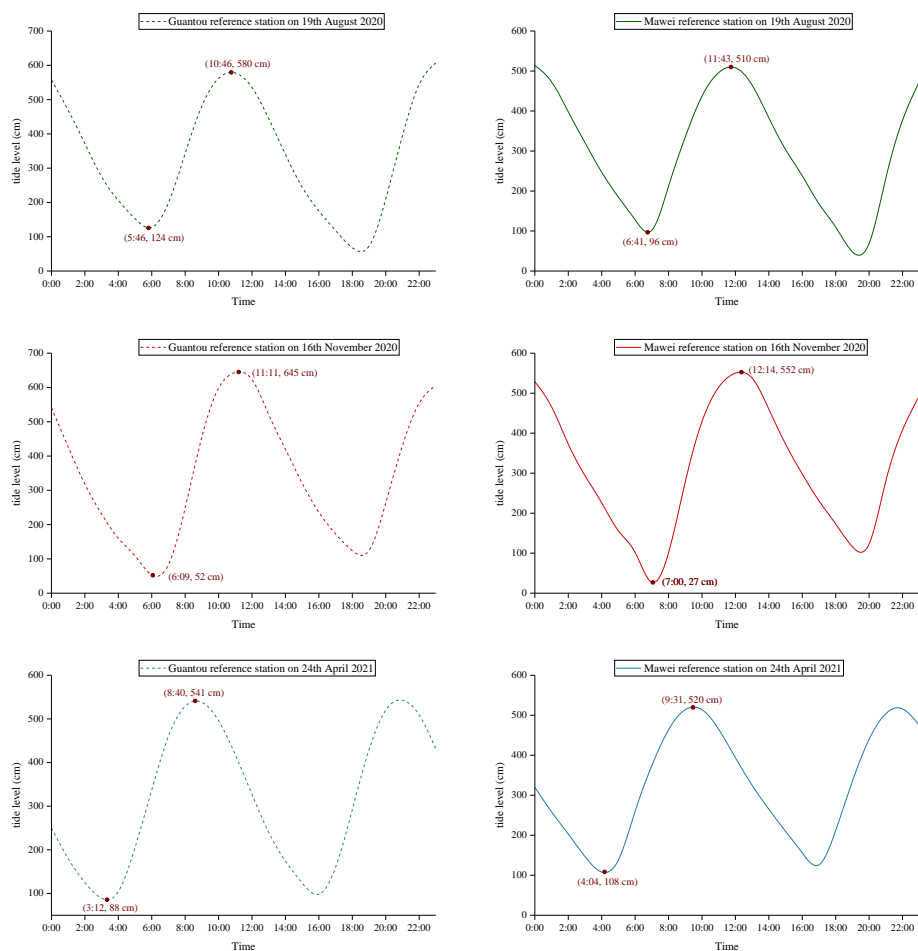
Table legends

Supplementary Table S1 Detailed sampling information for the study location.

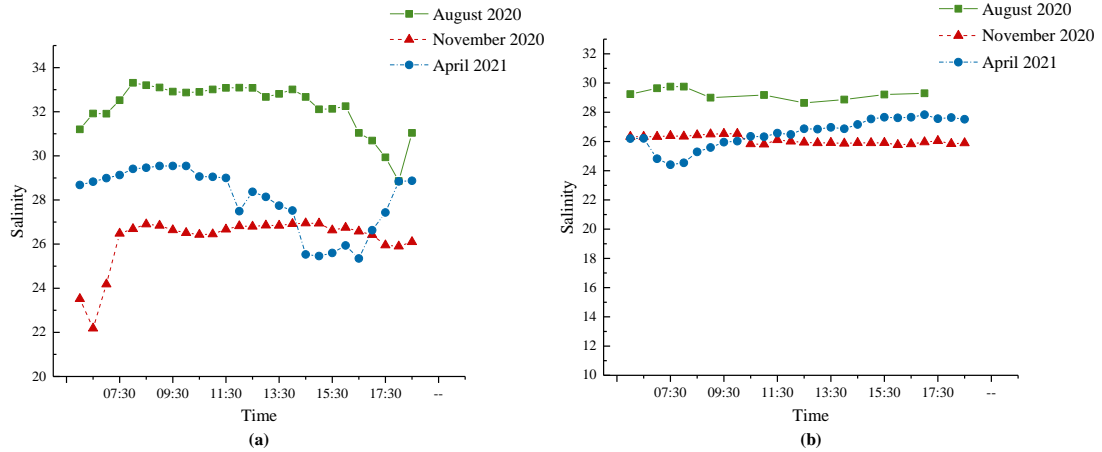
End-member	Sampling site	Distance from CI / km	Sampling time interval between ebb tide and flood tide /h		
			August 2020	November 2020	April 2021
Freshwater zone	S1	108	-	-	-
	S2	96	-	-	-
Transition zone	S3	88	-	-	-
	S4	50	5.1	5.7	5.0
	S5	32	5.2	5.5	5.4
	S6	22	5.2	5.4	5.6
	S7	17	5.2	5.3	5.0
	S8 (CI)	0	5.0	5.1	5.0
Saltwater	S9	8	5.0	5.0	5.1

Supplementary Table S2 Relevant parameters for the selected discharge and calculated salinity.

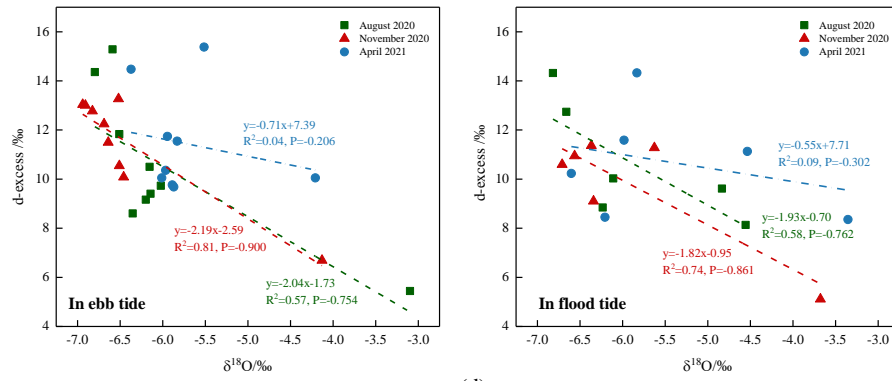
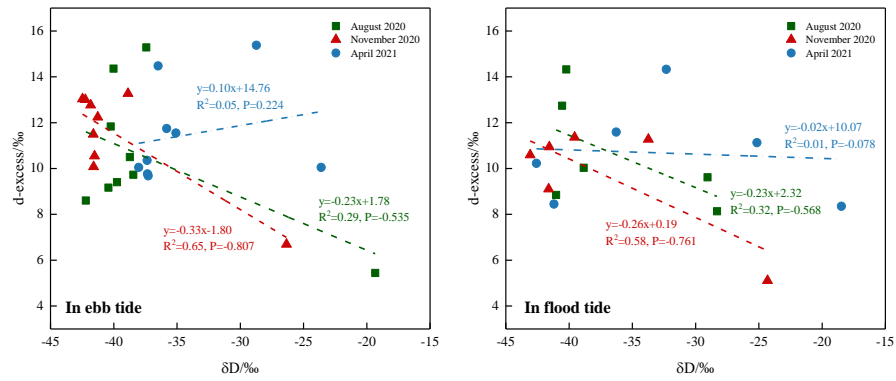
Parameter	Value	Note
High Water Mark in August 2020 (m)	5.08	High water mark represents the flood tide at the highest moment during the flood tide, and the data from chaoxibiao.net (https://www.chaoxibiao.net/)
High Water Mark in November 2020 (m)	5.50	
High Water Mark in April 2021 (m)	5.14	
Low Water Mark in August 2020 (m)	1.02	Low water mark represents the ebb tide at the lowest moment during the ebb tide, and the data from chaoxibiao.net (https://www.chaoxibiao.net/)
Low Water Mark in November 2020 (m)	0.27	
Low Water Mark in April 2021 (m)	1.08	
Tidal Time in August 2020 (h)	5.0	Tidal time refers to the time required for a tidal cycle, and data from chaoxibiao.net (https://www.chaoxibiao.net/)
Tidal Time in November 2020 (h)	5.0	
Tidal Time in April 2021 (h)	6.0	
Channel Area (km ²)	42.9	Channel area between S8 and S9
Salinity _F in August 2020	0.03	Salinity at S2
Salinity _F in November 2020	0.04	
Salinity _F in April 2021	0.01	
Salinity _{RonghaiIV} in August 2020	32.37	Salinity in Ronghai IV monitoring site, data from Fujian Marine Forecasts (http://www.fjhyyb.cn/Ocean863Web_MAIN/default.aspx#hygc)
Salinity _{RonghaiIV} in November 2020	26.38	
Salinity _{RonghaiIV} in April 2021	27.86	
Salinity _{Minjiangkou No.1} in August 2020	29.20	Salinity in Minjiangkou No. 1 monitoring site, data from Fujian Marine Forecasts (http://www.fjhyyb.cn/Ocean863Web_MAIN/default.aspx#hygc)
Salinity _{Minjiangkou No.1} in November 2020	26.10	
Salinity _{Minjiangkou No.1} in April 2021	26.65	
Salinity _S in August 2020	30.79	The average salinity value of Ronghai IV and Minjiangkou No. 1 monitoring sites.
Salinity _S in November 2020	26.24	
Salinity _S in April 2021	27.25	
$\overline{\text{Salinity}}_9$ in August 2020	15.40	The average salinity value of S9
$\overline{\text{Salinity}}_9$ in November 2020	12.80	
$\overline{\text{Salinity}}_9$ in April 2021	11.70	



Supplementary Fig. S1 Tidal variations of the Mawei and Guantou reference stations on each sampling day. The data were collected from <https://www.chaoxibiao.net/>.



Supplementary Fig. S2 Daytime (6:00 a.m-18:30 p.m) salinity at the oversea monitoring sites in August 2020 (green square), November 2020 (red triangle) and April 2021 (blue circle). (a) is Ronghai IV, and (d) is Minjiangkou No. 1. The salinity data from Fujian Marine Forecasts (http://www.fjhyyb.cn/Ocean863Web_MAIN/default.aspx#hygc).



Supplementary Fig. S3 The d-excess versus isotopes of the research area in August 2020 (green square), November 2020 (red triangle) and April 2021 (blue circle). (c) represents δD versus d-excess, and (d) represents $\delta^{18}O$ versus d-excess.