Characterization of Mixing Processes in the Confluence Zone between the Three Gorges Reservoir and the Daning River Using Stable Isotope Analysis

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Table S1. Information on the sample sections.

Location	Distance from the estuary	Names of the sample sections	Longitude	Latitude
Yangtze River	3.2 km	Hongshiliang (HSL)	109.8589	31.0593
Yangtze River	1.6 km	Changjiangxia (CJX)	109.9001	31.0660
Daning River	54 km	Huatai (HT)	109.6500	31.3050
Daning River	57 km	Longxi (LX)	109.6320	31.3070
Daning River	2 km	Caiziba (CZB)	109.8925	31.0848
Daning River	5 km	Longmen (LM)	109.8905	31.1090
Daning River	8 km	Baishuihe (BSH)	109.8916	31.1303
Daning River	11 km	Dongpingba (DPB)	109.9037	31.1442
Daning River	17 km	Shuanglong (SL)	109.8734	31.1763
Daning River	21 km	Maduhekou (MDHK)	109.8660	31.1979
Daning River	29 km	Shoupayan (SPY)	109.8244	31.2513
Daning River	35 km	Dachang (DC)	109.8001	31.2634

Figures

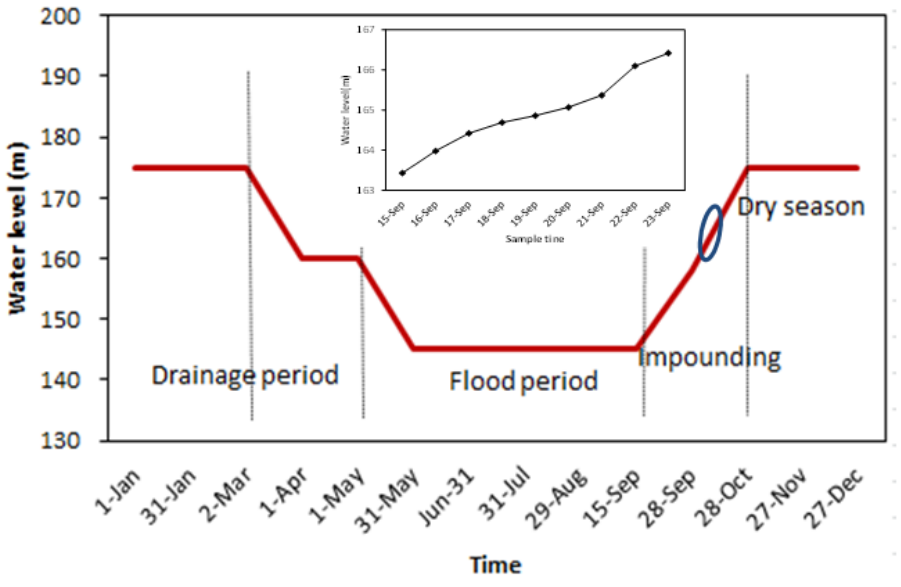

Figure S1. The four stages of the TGR operation process. Water levels range from 145 m to 175 m. The water level of the Three Gorges mainstream during the sampling time (8:00 am) is indicated.

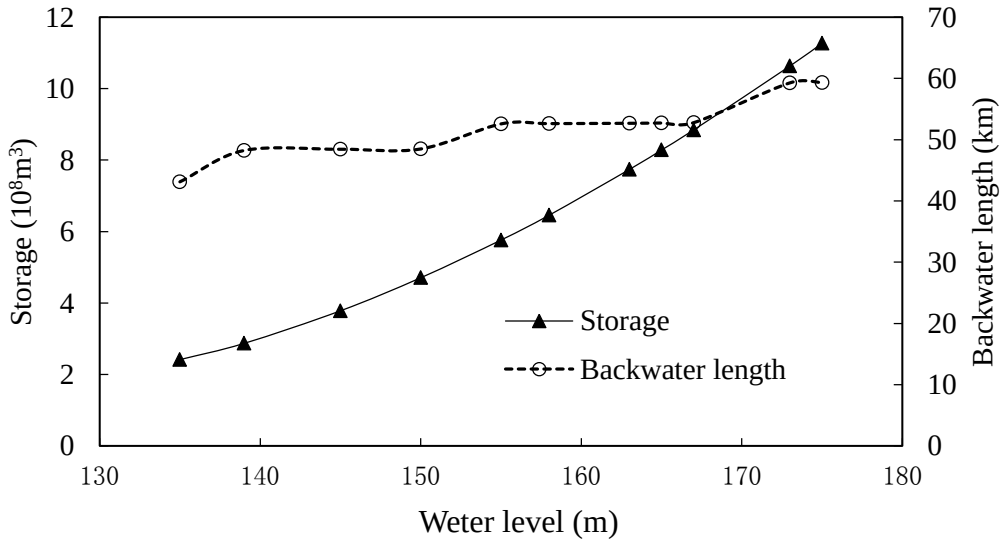

Figure S2. The relationship among Daning River storage, backwater length and water level.

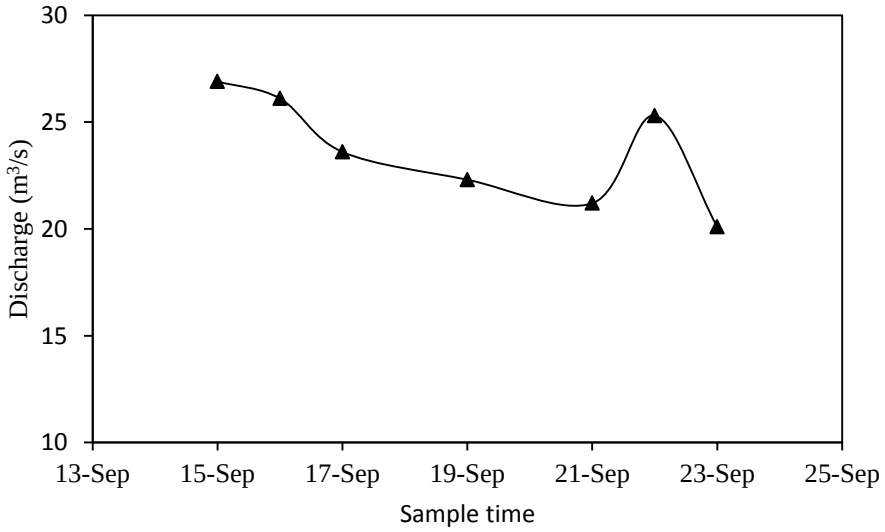

Figure S3. The discharge at the upstream of the confluence zone (Wuxierzhan) during our fieldtrip.

The water balance formula was used to estimate the mixing ratio.

$$V = \int_0^L \int_{l(y)}^{r(y)} (Z_{h+H}(x,y) - Z_H(x,y))dxdy \quad S(1)$$

$$V_M + V_U = \Delta V_C \quad \text{S(2)}$$

$$V_U = Q_{ave-U} t \quad \text{S(3)}$$

$$R_M = \frac{V_M}{\Delta V_C} \quad \text{S(4)}$$

Where, V is the storage of the Daning River when the TGR water level was h+H; *(x,y)* denotes coordinates of the point in the space between the river bottom and the water surface, x is along the river length, y is along the river width ; *H* is the river bottom elevation; *h* is the water depth; *L* is the backwater length when the water level elevation arrived at *h+H*; $Z_{h+H}(x,y)$ and $Z_H(x,y)$ are the altitude of the water level at h+H and H, respectively; and *r (y)* and *l (y)* are the two solutions of the equation : $Z_{h+H} = h + H$, and *r (y)>l(y)*, *r(y)* and *l(y)* are the two points at the two sides of the river when the water level elevation equals the river bottom elevation. Backwater length corresponds to the TGR water level, which was obtained from the 1:10000 topographic map. The backwater length is the distance from the Yangtze River mainstream to the section on the Daning River whose ground elevation equal to the TGR water level elevation. ΔV_C is the storage capacity increase of the Daning River when the TGR water level increases from 163.43 m to 166.42 m, and it is calculated by linear interpolation in Figure S2 (in supporting information); V_M and *Vu* are the water quantities from the mainstream of the Yangtze River and upstream of the backwater area, respectively, *Vc* is the water quantity outflow of the confluence zone between September 16 and September 23; $Q_{ave\text{-}U}$ is the average discharge of the Daning River during our fieldtrip; *t* is the time elapsed as the water level increased from 163.43 m to 166.42 m (from September 16 to 23); and R_M is the mixing ratio.