

## Supplementary Material

### **<sup>1</sup>Influences of anthropogenic pollution on dynamics of sedimentary fulvic acid fractions as revealed via spectroscopic techniques combined with two-dimensional correlation spectroscopy**

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Table S1. Physicochemical properties of sediments, overlying bottom water, and sedimentary FA fractions from BR, China

Number	Physicochemical parameter	Data set	Minimum	Maximum	Mean	Standard deviation (SD)	Coefficient of variation/% (CV)
1	The pH of sediments	70	5.05	8.95	7.29	0.74	10.15
2	The electrical conductivity (EC) of sediments	70	60.95	1232.61	435.76	242.19	55.58
3	The Dissolved oxygen (DO) concentration of overlying bottom water	70	0.15	1.67	0.79	0.43	54.43
4	The total nitrogen (TN) content of sediments[17]	70	896.47	4381.85	2654.91	968.56	36.48
5	The total phosphorus (TP) content of sediments[18]	70	307.78	3762.42	1550.01	938.25	60.53
	TN/TP	70	0.50	12.82	2.63	2.40	91.25
6	The total organic carbon(TOC) content of sedimentary FA fractions	70	10.54	105.98	37.78	26.21	69.38

Table S2. Description of the six PARAFAC model components from the sedimentary FA fractions.

Components	$E_x/E_m/nm$	Probable source	Peak	References
C1	225/380	Tryptophan-like	TRL	225–237/340–381 [29]
C2	285/390	Microbial humic-like	MHL	290–310/370–410 [34]
C3	260/470	Soil-derived fulvic acid-like	FAL <sub>1</sub>	260 (345) /476 [35]
C4	240/435	UV fulvic acid-like	FAL <sub>2</sub>	<260/435–460 [34]
C5	335/420	Visible fulvic acid-like	FAL <sub>3</sub>	320–360/420–460 [34]
C6	360/480	Terrestrial humic acid-like	HAL	260–380/480 [13]

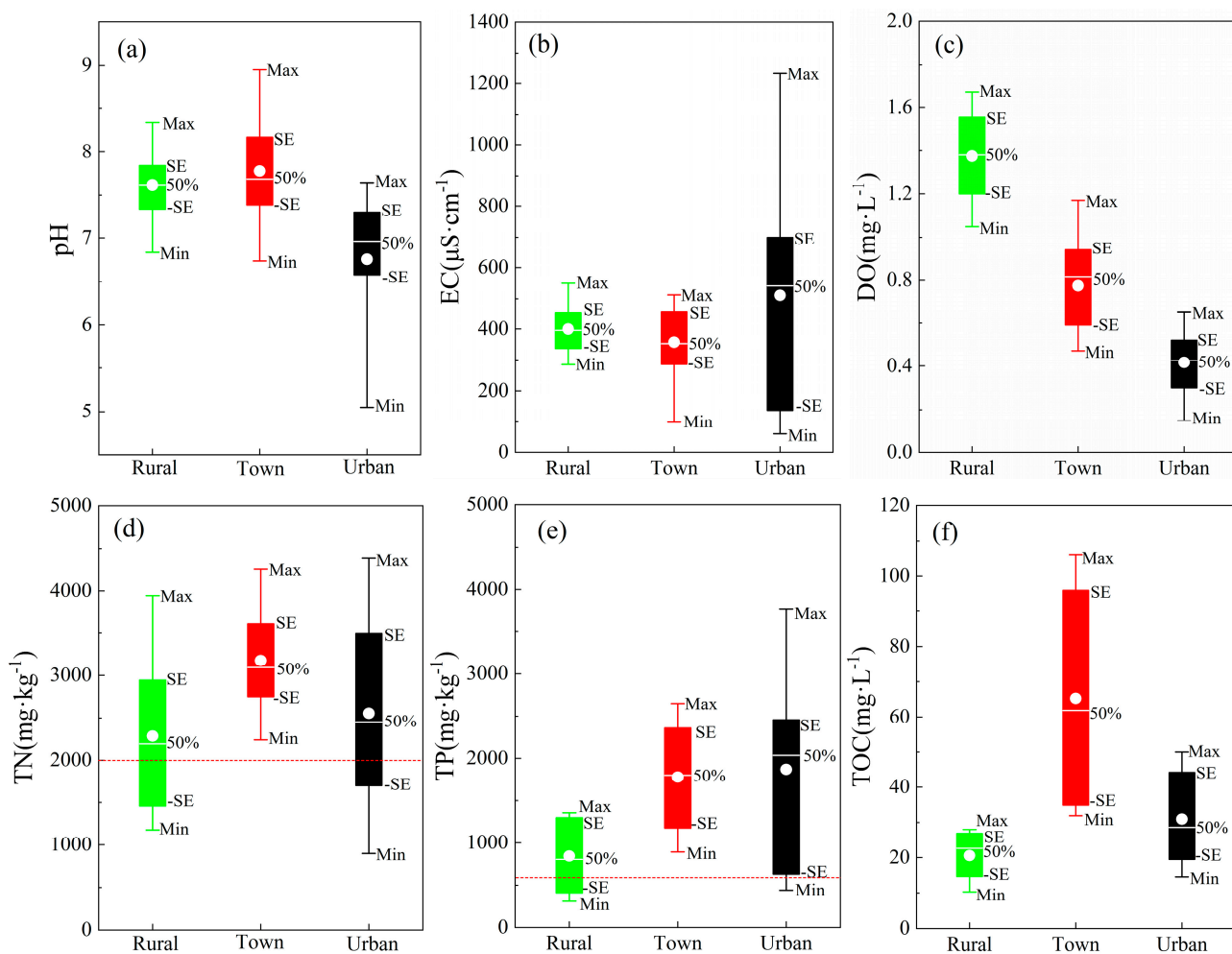


Figure S1. Boxplots display the spatial variation of physicochemical parameters. White circles indicate the mean values, boxes show standard error, and whiskers delimit maximum and minimum.

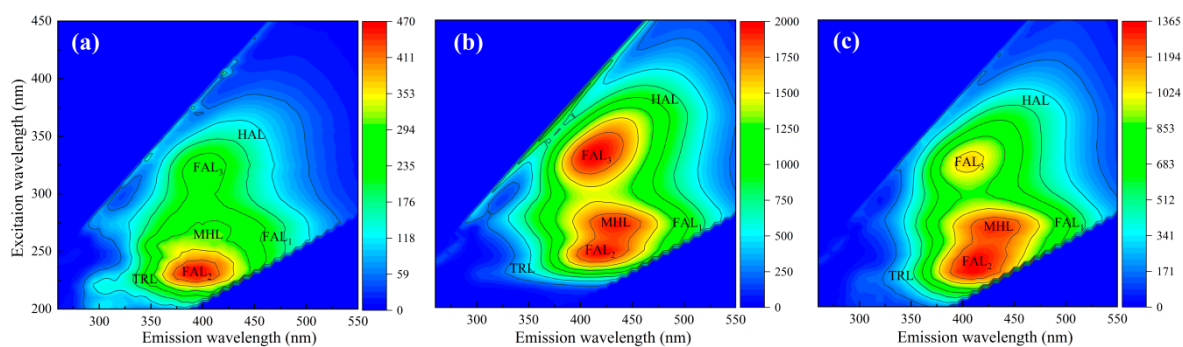


Figure S2. Representative EEM of sedimentary FA fractions with various pollution types and sources: (a) agricultural effluent (S1); (b) industrial effluent (S8); and (c) untreated sewage effluent (S13).

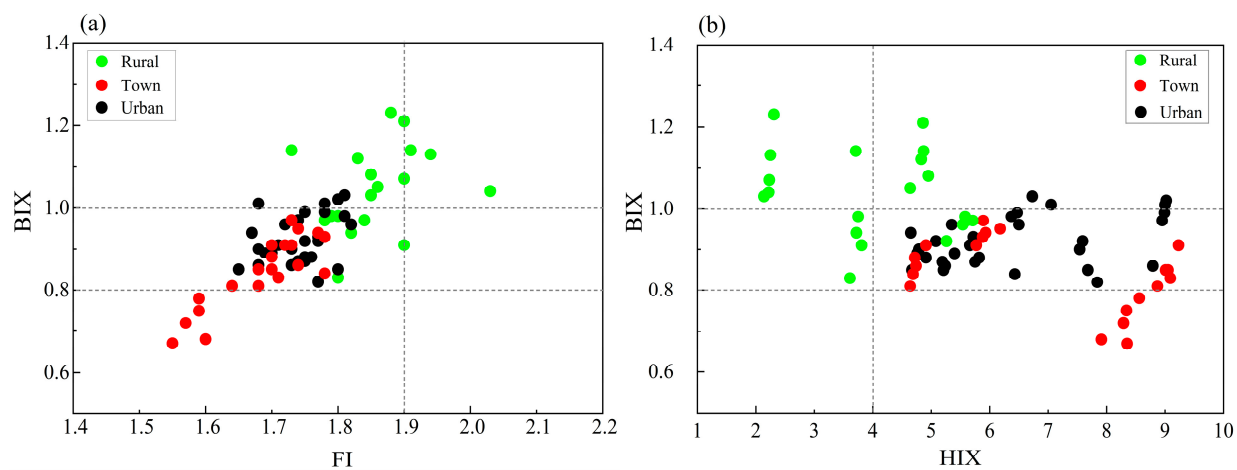


Figure S3. Spatial variations of the values of FI, BIX and HIX.