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RESEARCH ARTICLE

SPATIOTEMPORAL VARIATION OF WATER QUALITY AND ALGAL BIOMASS IN ERHAI LAKE AND ITS ENVIRONMENTAL MANAGEMENT IMPLICATIONS

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SUPPLEMENTARY MATERIALS

Table S1 Financial investment and data sources for the governance of Lake Erhai[1–5]

Year	Total investment ($\times 10^8$ yuan)	Central financial investment ($\times 10^8$ yuan)	Local financial investment ($\times 10^8$ yuan)
1991–1995	5.5	4.0	1.5
1996–2000	10.2	6.3	3.9
2001–2005	33.3	22.0	11.3
2006–2010	53.6	33.1	20.5
2011–2015	73.5	47.0	26.5
2016–2020	160.0	100.0	60.0

Table S2 Water quality parameter and normalization method considered in calculating WQI

Parameters	Weight	Normalized value										
		100	90	80	70	60	50	40	30	20	10	0
WT (℃)	1	16–21	15–16, 21–22	14–15, 22–24	12–14, 24–26	10–12, 26–28	5–10, 28–30	0–5, 30–32	–2–0, 32–36	–4–2, 36–40	–6–4, 40–45	> 45, < –6
pH	1	7	7–8	8–8.5	8.5–9	8.5–9	6–6.5, 9–9.5	5–6, 9.5–10	4–5, 10–11	3–4, 11–12	2–3, 12–13	1–2, 13–14
DO ($mg \cdot L^{-1}$)	4	> 7.5	7–7.5	6.5–7	6–6.5	5–6.5	4–5	3.5–4	3–3.5	2–3	1–2	< 1
EC ($\mu s \cdot cm^{-1}$)	2	< 750	750–1000	1000–1250	1250–1500	1500–2000	2000–2500	2500–3000	3000–5000	5000–8000	8000–12000	> 12000
BOD_5 ($mg \cdot L^{-1}$)	3	< 0.5	0.5–2	2–3	3–4	4–5	5–6	6–8	8–10	10–12	12–15	> 15
COD_{Mn} ($mg \cdot L^{-1}$)	3	< 1	1–2	2–3	3–4	4–6	6–8	8–10	10–12	12–14	14–15	> 15
TP ($mg \cdot L^{-1}$)	1	< 0.01	0.01–0.02	0.02–0.05	0.05–0.1	0.1–0.15	0.15–0.2	0.2–0.25	0.25–0.3	0.3–0.35	0.35–0.4	> 0.4
TN ($mg \cdot L^{-1}$)	3	< 0.1	0.1–0.2	0.2–0.35	0.35–0.5	0.5–0.75	0.75–1	1–1.25	1.25–1.5	1.5–1.75	1.75–2	> 2
NH_4^+-N ($mg \cdot L^{-1}$)	3	< 0.01	0.01–0.05	0.05–0.1	0.1–0.2	0.2–0.3	0.3–0.4	0.4–0.5	0.5–0.75	0.75–1	1–1.25	> 1.25
Chla ($\mu g \cdot L^{-1}$)	3	< 1	1–4	4–7	7–10	10–15	15–20	20–30	30–40	40–50	50–65	> 65

Note: WT, water temperature (°C); DO, dissolved oxygen ($mg \cdot L^{-1}$); EC, electrical conductivity ($\mu s \cdot cm^{-1}$); BOD_5, five-day biochemical oxygen demand ($mg \cdot L^{-1}$); COD_{Mn}, permanganate-based chemical oxygen demand ($mg \cdot L^{-1}$); TP, total phosphorus ($mg \cdot L^{-1}$); TN, total nitrogen ($mg \cdot L^{-1}$); NH_4^+-N, ammonia nitrogen ($mg \cdot L^{-1}$); Chla, chlorophyll a ($\mu g \cdot L^{-1}$).

Table S3 National criteria for the classification of surface waters of lakes ($mg \cdot L^{-1}$)

Parameters	Class I	Class II	Class III	Class IV	Class V
TN ⩽	0.2	0.5	1	1.5	2
TP ⩽	0.01	0.025	0.05	0.1	0.2
NH_4^+-N ⩽	0.15	0.5	1	1.5	2
BOD_5 ⩽	3	3	4	6	10
COD_{Mn} ⩽	2	4	6	10	15

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