

## **Supplementary material**

# Estimation of total phosphorus concentration in lakes in the Yangtze-Huaihe region based on Sentinel-3/OLCI images

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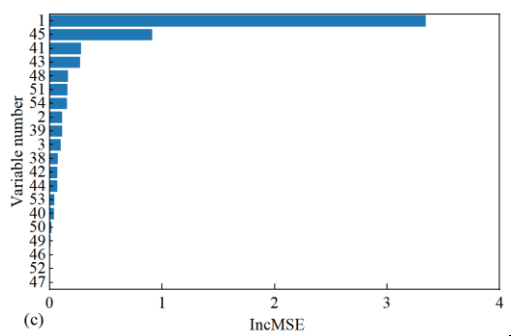
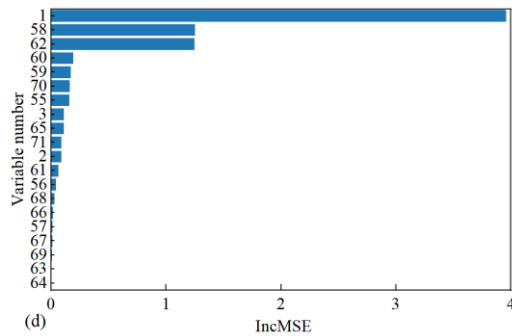
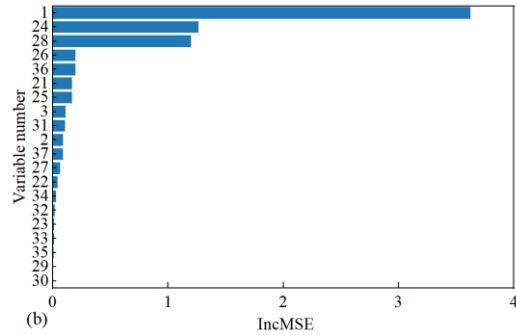
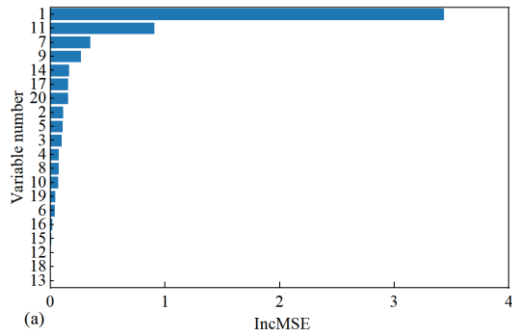
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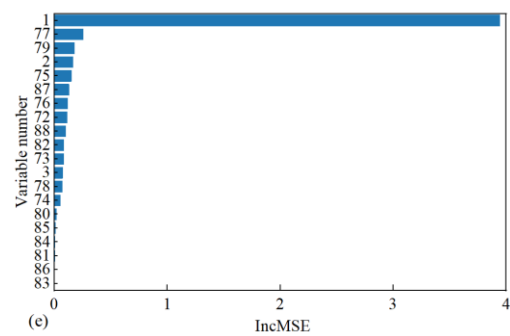
Table S1. Lakes larger than 20 km<sup>2</sup> in the Yangtze-Huaihe region.

Lake	Area(km <sup>2</sup> )	Lake	Area(km <sup>2</sup> )	Lake	Area(km <sup>2</sup> )
Baidang	38.68	Gehu	139.03	Qili	68.48
Baima	124.71	Gucheng	31.22	Shahu	21.14
Caizi	168.50	Hongze	1663.31	Shaobo	123.19
Chaohu	787.97	Huangpi	33.19	Shengjin	95.89
Chengdong	110.32	Huayuan	52.48	Shijiu	214.31
Chenghu	43.59	Jiaogang	40.80	Taihu	2444.75
Chengxi	30.54	Longgan	280.29	Taohu	89.09
Daguan	146.13	Nanyi	197.84	Tianjing	22.96
Dazong	30.02	Nvshan	107.32	Tuohu	44.33
Dianshan	59.18	Pogang	84.83	Wabu	162.13
Gaotang	57.07	Pohu	176.67	Wuchang	112.02
Gaoyou	639.17	Poyang	3192	Yangcheng	118.05

Table S2. Variables.

ID	Variable	ID	Variable	ID	Variable	ID	Variable
1	AFAI	23	1/b3	45	$e^{b8}$	67	$(b13)^2$
2	CMI	24	1/b4	46	$e^{b9}$	68	$(b14)^2$
3	TWI	25	1/b5	47	$e^{b10}$	69	$(b15)^2$
4	b1	26	1/b6	48	$e^{b11}$	70	$(b16)^2$
5	b2	27	1/b7	49	$e^{b12}$	71	$(b17)^2$
6	b3	28	1/b8	50	$e^{b13}$	72	$\sqrt{b1}$
7	b4	29	1/b9	51	$e^{b14}$	73	$\sqrt{b2}$
8	b5	30	1/b10	52	$e^{b15}$	74	$\sqrt{b3}$
9	b6	31	1/b11	53	$e^{b16}$	75	$\sqrt{b4}$
10	b7	32	1/b12	54	$e^{b17}$	76	$\sqrt{b5}$
11	b8	33	1/b13	55	$(b1)^2$	77	$\sqrt{b6}$
12	b9	34	1/b14	56	$(b2)^2$	78	$\sqrt{b7}$
13	b10	35	1/b15	57	$(b3)^2$	79	$\sqrt{b8}$
14	b11	36	1/b16	58	$(b4)^2$	80	$\sqrt{b9}$
15	b12	37	1/b17	59	$(b5)^2$	81	$\sqrt{b10}$
16	b13	38	$e^{b1}$	60	$(b6)^2$	82	$\sqrt{b11}$
17	b14	39	$e^{b2}$	61	$(b7)^2$	83	$\sqrt{b12}$
18	b15	40	$e^{b3}$	62	$(b8)^2$	84	$\sqrt{b13}$
19	b16	41	$e^{b4}$	63	$(b9)^2$	85	$\sqrt{b14}$
20	b17	42	$e^{b5}$	64	$(b10)^2$	86	$\sqrt{b15}$
21	1/b1	43	$e^{b6}$	65	$(b11)^2$	87	$\sqrt{b16}$
22	1/b2	44	$e^{b7}$	66	$(b12)^2$	88	$\sqrt{b17}$





**Figure S1. Importance rank: (a) Original; (b) Inverse; (c) Exponential; (d) Square; (e) Square root.**

(Please refer to Supplementary Material Table S2 for detailed numbering)