

**Table S1.** Results of Correlation Analysis between Variables in Juksan Weir: CHL: chlorophyll-*a*; CHL<sub>1</sub>: 1-day-ahead chlorophyll-*a*; CHL<sub>3</sub>: 3-days-ahead chlorophyll-*a*; CHL<sub>5</sub>: 5-days-ahead chlorophyll-*a*; CHL<sub>7</sub>: 7-days-ahead chlorophyll-*a*

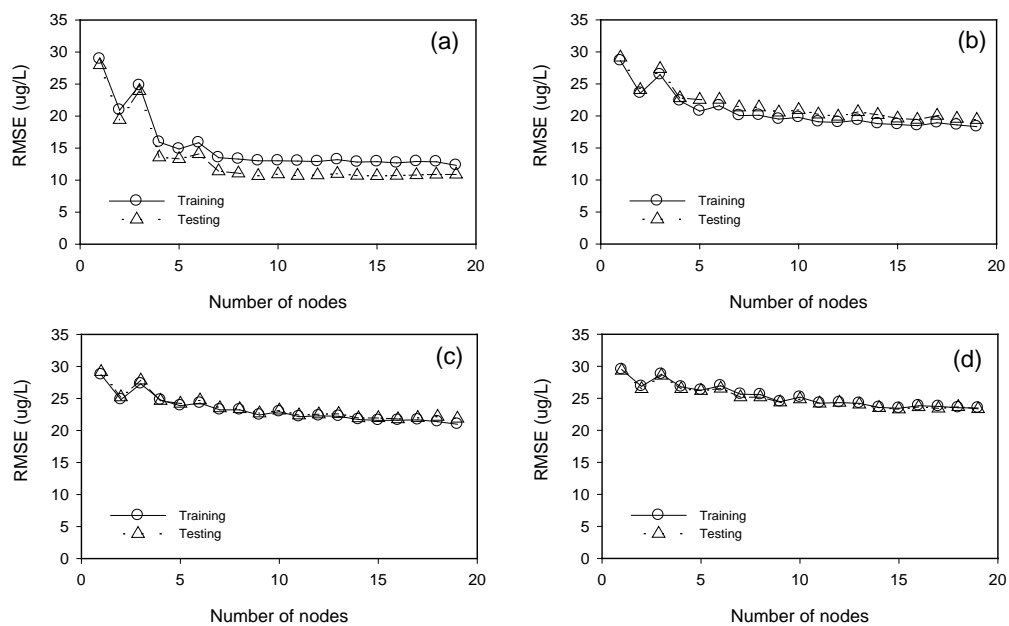
	CHL	CHL <sub>1</sub>	CHL <sub>3</sub>	CHL <sub>5</sub>	CHL <sub>7</sub>	TN	TP	N/P	WT	RF	SR
CHL	1	-	-	-	-	-	-	-	-	-	-
CHL <sub>1</sub>	0.90	1	-	-	-	-	-	-	-	-	-
CHL <sub>3</sub>	0.70	0.78	1	-	-	-	-	-	-	-	-
CHL <sub>5</sub>	0.61	0.65	0.79	1	-	-	-	-	-	-	-
CHL <sub>7</sub>	0.52	0.54	0.65	0.79	1	-	-	-	-	-	-
TN	0.17	0.15	0.14	0.14	0.14	1	-	-	-	-	-
TP	-0.22	-0.23	-0.20	-0.18	-0.20	-0.24	1	-	-	-	-
N/P	0.24	0.24	0.25	0.25	0.27	0.68	-0.67	1	-	-	-
WT	-0.13	-0.13	-0.15	-0.15	-0.16	-0.73	0.26	-0.56	1	-	-
RF	-0.19	-0.22	-0.21	-0.16	-0.15	-0.10	0.33	-0.22	0.17	1	-
SR	-0.04	0.03	0.07	0.02	-0.01	-0.26	0.11	-0.24	0.44	-0.07	1

**Table S2.** Variables for a Short-term Chlorophyll-*a* Prediction Model Development

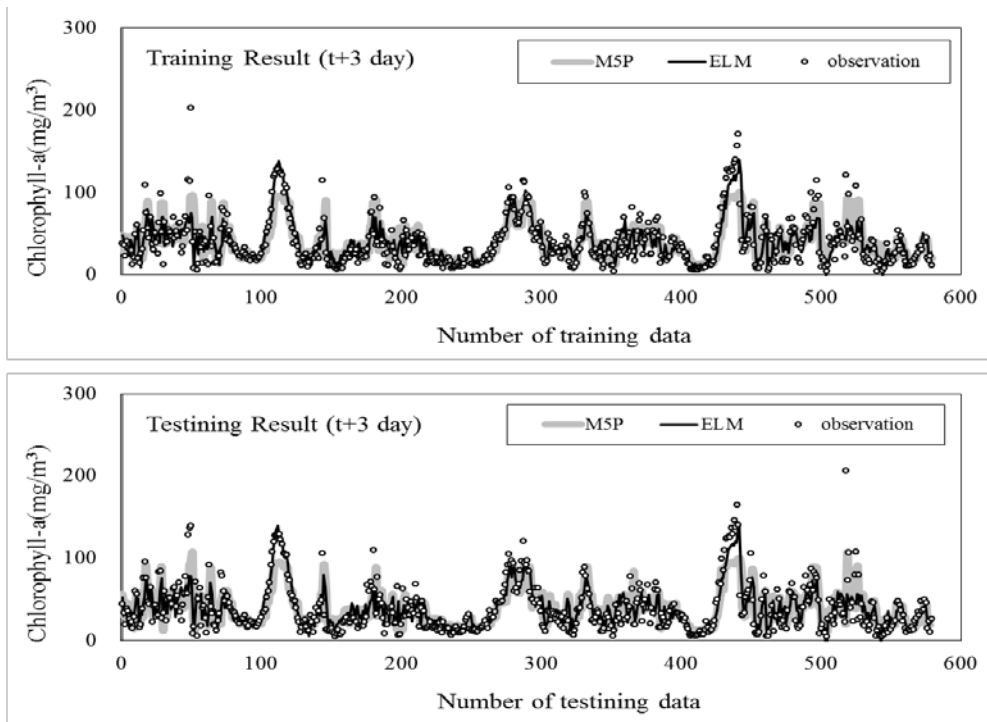
<b>Prediction</b>	<b>Dependent variables</b>	<b>Independent variables</b>
After 1 d	chlorophyll- <i>a</i> (t + 1 d)	Rainfall (t), solar radiation (t), water
After 3 d	chlorophyll- <i>a</i> (t + 3 d)	temperature (t), total nitrogen (t), total
After 5 d	chlorophyll- <i>a</i> (t + 5 d)	phosphorus (t), N/P ratio (t),
After 7 d	chlorophyll- <i>a</i> (t + 7 d)	chlorophyll- <i>a</i> (t)

**Table S3.** Results of MSP Model Variables for Chlorophyll-a Prediction

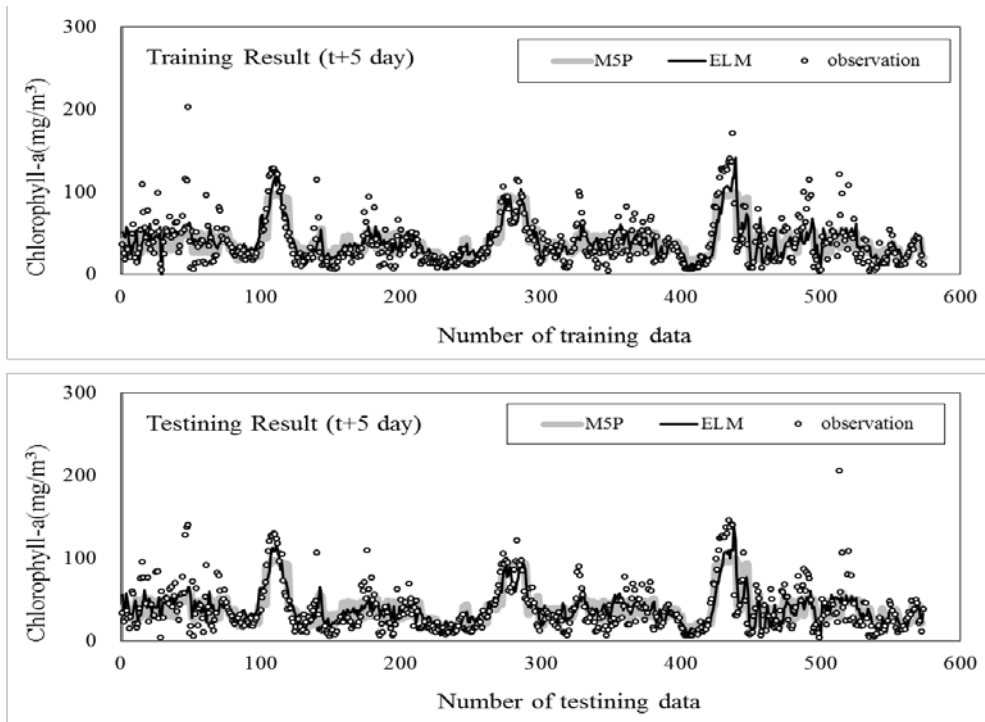
<b>Prediction</b>	<b>Variables of prediction model</b>
After 1 d	chlorophyll- <i>a</i>
After 3 d	water temperature, solar radiation, chlorophyll- <i>a</i> , rainfall
After 5 d	water temperature, solar radiation, chlorophyll- <i>a</i>
After 7 d	water temperature, solar radiation, chlorophyll- <i>a</i> , T-N, N/P ratio



**Fig. S1.** Performance of ELM in different hidden nodes: (a) prediction model after 1 d; (b) prediction model after 3 d; (c) prediction model after 5 d; (d) prediction model after 7 d.



**Fig. S2.** Comparison of the observed and simulated chlorophyll-*a* of prediction model after 3 d.



**Fig. S3.** Comparison of the observed and simulated chlorophyll-*a* of prediction model after 5 d.