

Effects of Water-Level Fluctuations on the Growth Characteristics and Community Succession of Submerged Macrophytes: A Case Study of Yilong Lake, China

1. Water level elevation during high and low water levels

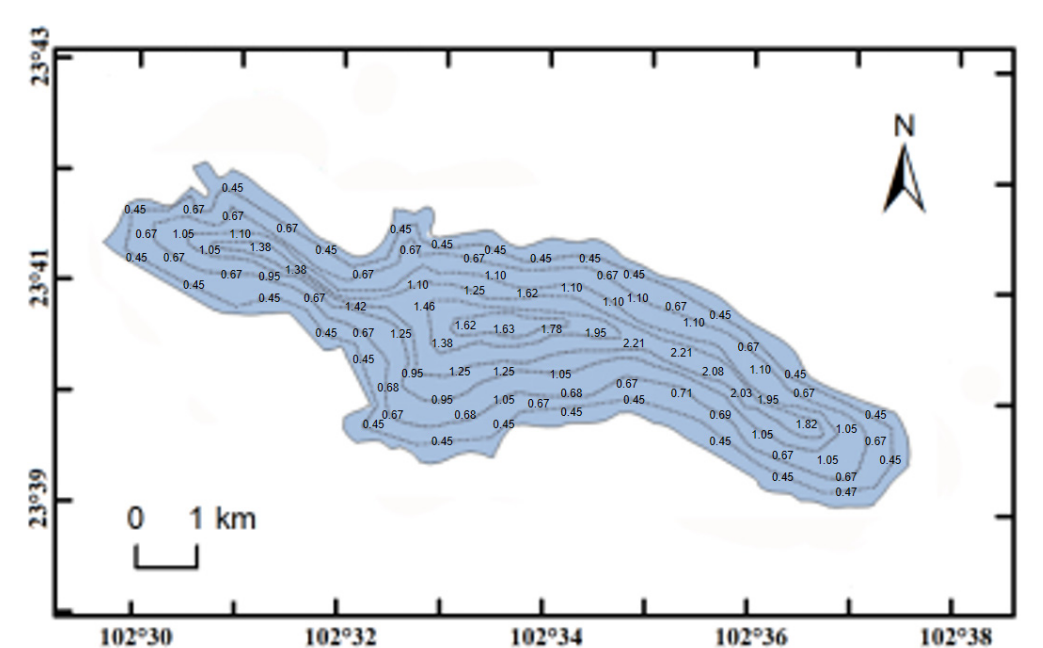


Figure S1. water depth of Yilong lake during low water level period.

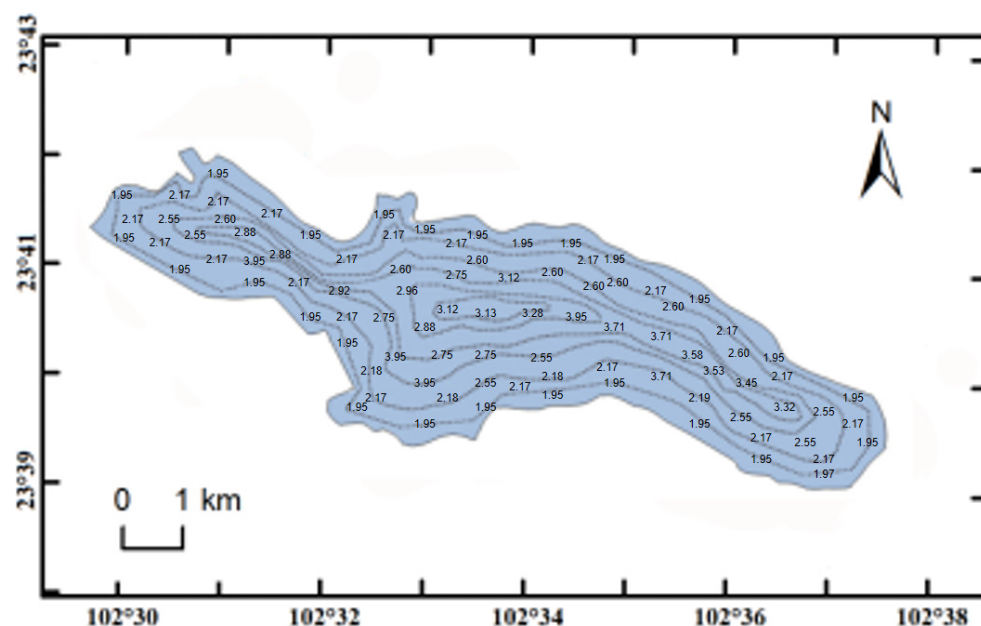


Figure S2. water depth of Yilong lake during high water level period.

2. Definition of East Lake and West Lake of Yilong Lake

Due to man-made transformation, Yilong lake has a towering riverbed (raised lake bottom) in Niugu village and Renshou village. This lake bed divides Yilong lake into two water areas with large environmental differences. The lake area in the East is called East Lake and the lake area in the west is called West Lake.

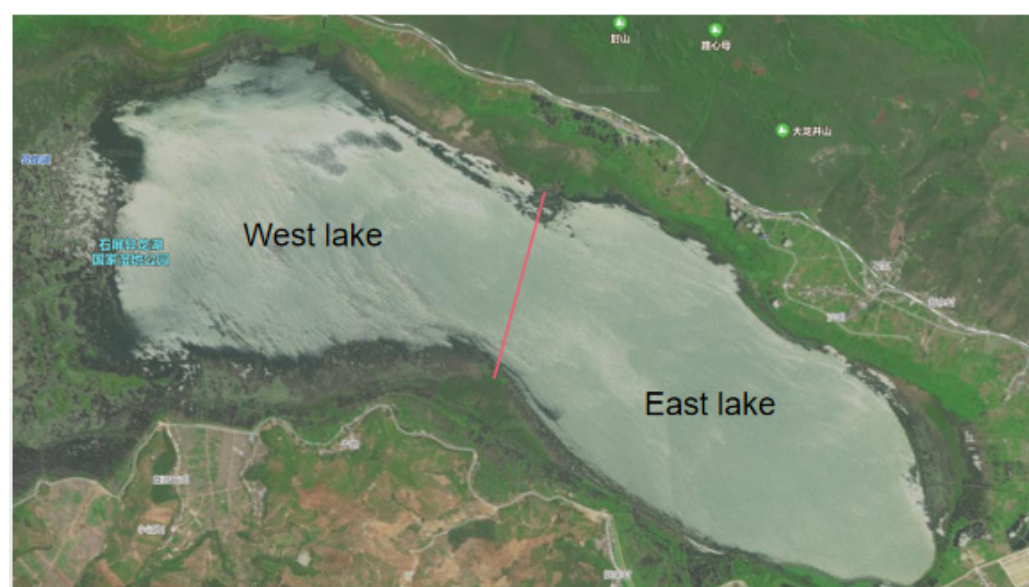


Figure S3. The dividing line between the East and west of Yilong Lake.

3. Water transparency during the study period

SD is measured directly with Secchi Disk Depths (SDD). In order to avoid measurement error caused by wind and waves, each sampling point is measured for 3 times and the average is taken. The design of the sampling station is the same as that of the aquatic plant sampling station, and the sampling time is monitored once a month. The data statistical method is the average value of the month in the period of high and low water level.

During the study period, the transparency data during high and low water levels were counted. The results show that the water level fluctuation has no significant effect on the transparency of the East Lake area, and the transparency of each sampling point is basically maintained between 0.40 ~ 0.50m. However, the transparency of the West Lake area has increased significantly, which is mainly due to the increase of water depth. In fact, the West Lake area has always a transparent water environment in both high and low water levels.

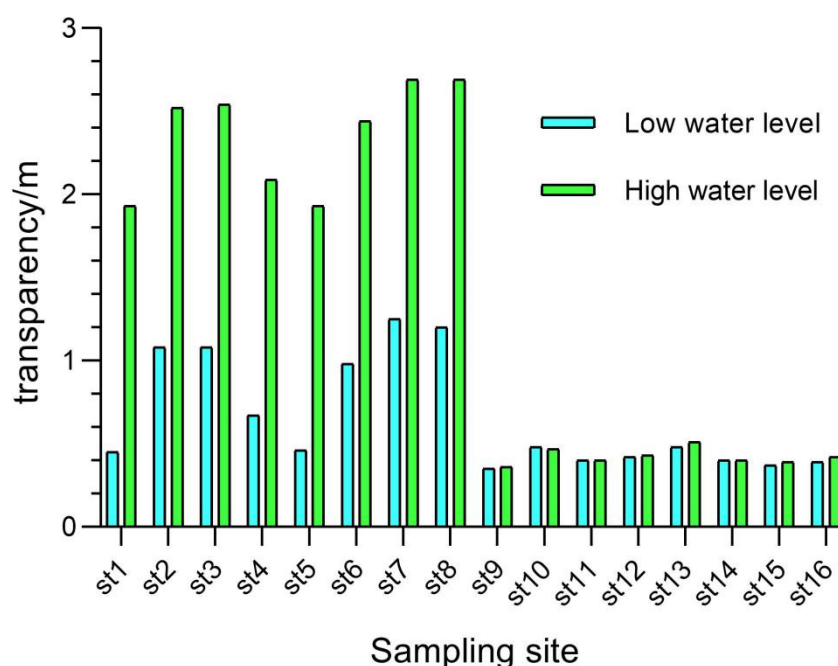


Figure S4. Water transparency during the study period.

4. Dissolved oxygen during the study period

The sampling station of dissolved oxygen(DO) is the same as that of submerged plants. In order to avoid errors, it is measured three times at each monitoring station and the average value is taken. The data statistical method is the monthly average value of the station in the period of high and low water level. YSI 6600 V2 (yellow stone, USA) multi parameter water quality analyzer is used to measure the surface do (20cm), middle do (half of the depth) and bottom do (10cm from the bottom) at each point.

The change of dissolved oxygen content in the bottom of the lake during the monitoring period is closely related to the water depth and the distribution of submerged plants. After the water level rises, the transparency of the West Lake area was high, the transparency changes little and the submerged plants grew well, there was no significant decrease in the bottom dissolved oxygen except ST7 and ST8. But in the East Lake, the dissolved oxygen in the bottom layer decreases significantly, and four sampling points are between 1.95 ~ 2.374mg/l.

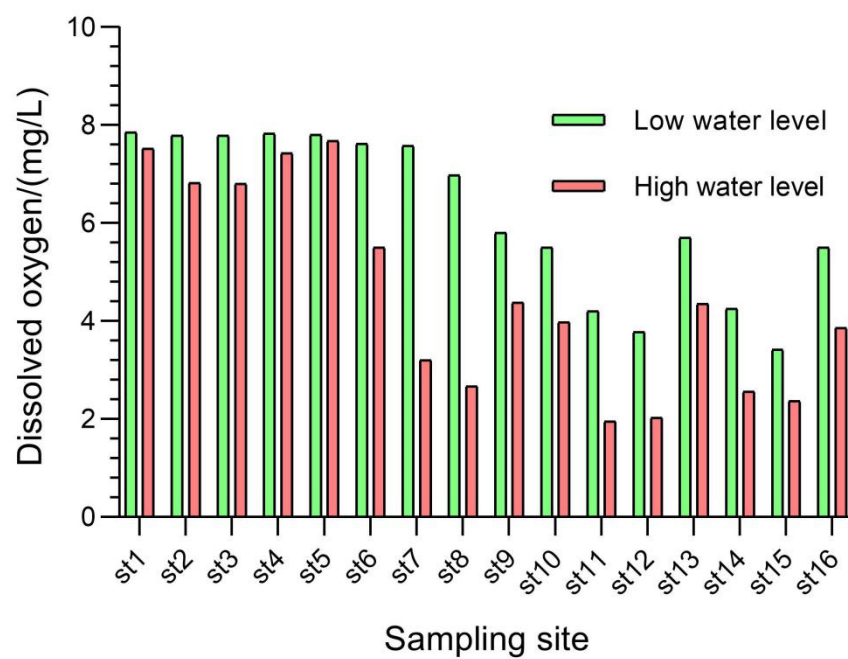


Figure S5. Dissolved oxygen during the study period.