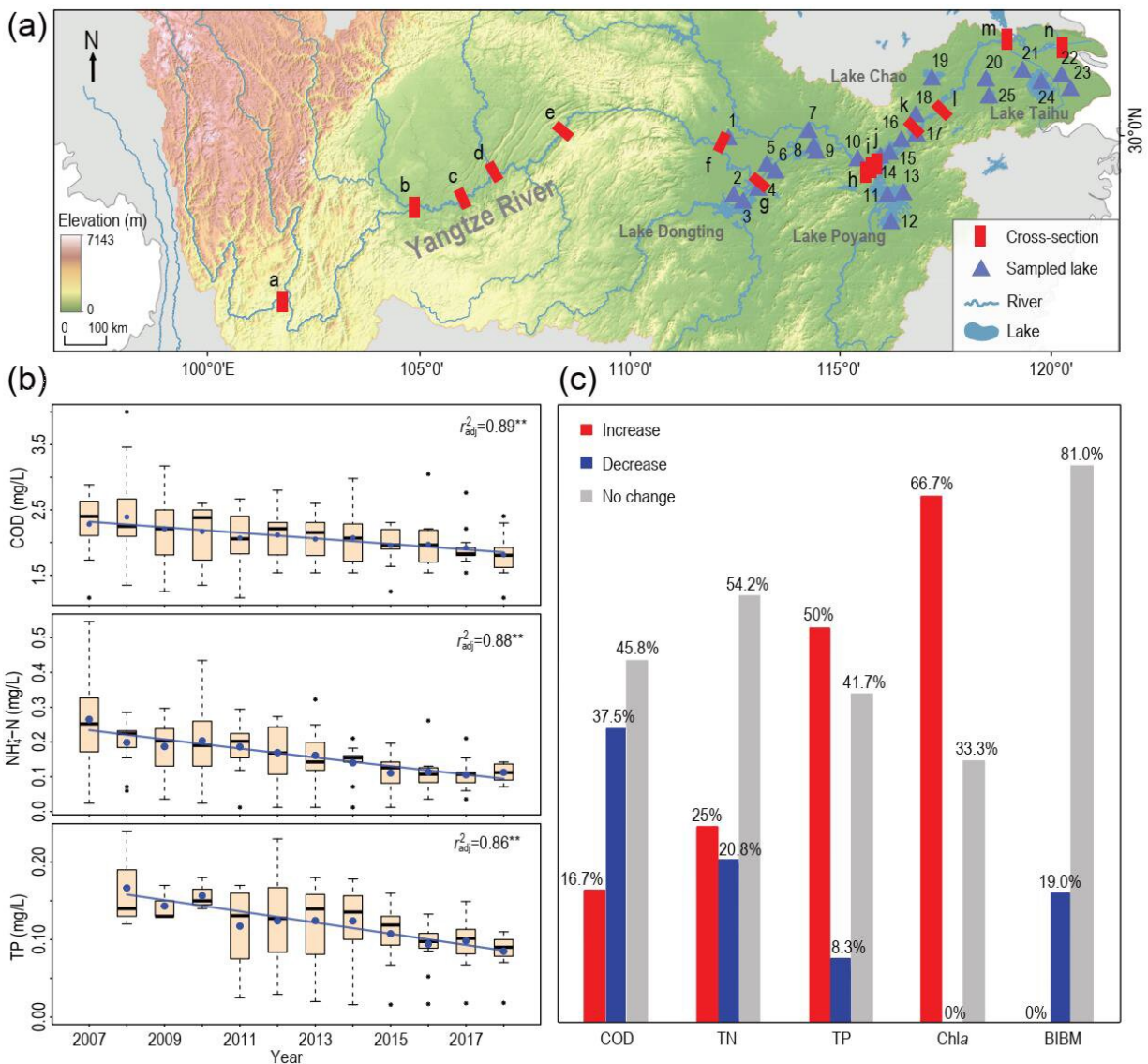


Chinese scientists called for comprehensive lake management to achieve regional sustainable development

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Water quality for both rivers and lakes in the mid to lower reaches of the Yangtze River (MLRYR). Credit: Science China Press

Over the past decade, the pollution of rivers in China has been effectively controlled. The percentage of grade I (highest water quality) to III cases increase greatly, and the pollutant concentrations have generally declined. However, the water quality and ecological status of lakes have not been improved as expected, despite massive efforts on pollution management during 2008-2018. "This contradiction between the continuous decline of water quality and a large amount of investment in water pollution control and ecological restoration confused academia and government departments," says Dr. Boqiang Qin (Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences).

Qin, together with famous scholars from both China and abroad, took restorations and lake responses from the mid to lower reaches of the Yangtze River (MLRYR) as examples.

On the one hand, the standard of discharge sewage treatment plants in China is low. The discharge concentration standard of pollutants such as nitrogen and phosphorus are even higher than the natural concentration of lakes. With the rapid development of regional social economy in recent years, more wastewater was discharged, so the point source pollution control was difficult. At the same time, only a low proportion of rural non-point source pollution in many lake basins was treated. Even in the developed Taihu basin, only about 10% of non-point source pollution can be treated by wetlands. On the other hand, shallow lakes were also plagued with high contribution of internal loading due to sediment re-suspension. The role of global warming has exacerbated eutrophication, forming anaerobic water and efficient nutrient circulation, and promoting the positive feedback of water bloom.

"To sustainably improve [water quality](#) of eutrophic lakes in developing areas, pollution reduction should be aligned with social and [economic development](#)," Qin says. They suggest developing tools that can address diverse sectors at larger and integrated scales. A water-food-energy-climate-economy nexus is proposed to achieve the sustainable development goal. "Water [pollution](#) governance within the watershed should be considered together with [water](#) quantity management, green farming and manufacturing, sediment management, economic transformation, and adaption to climate change."

More information: Boqiang Qin et al, Polluted lake restoration to promote sustainability in the Yangtze River Basin, China, *National Science Review* (2021). [DOI: 10.1093/nsr/nwab207](https://doi.org/10.1093/nsr/nwab207)

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