Historical changes of water quality and circulation type in Lake Tazawa, Japan

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In Akita Prefecture, Japan, River water including hot spring water of pH=1-2 started to be taken into Lake Tazawa on 20 Jan. 1940, and thereby the landlocked salmon, *Oncorhynchus nerka kawamurae* (Kuni-masu) completely died. Here, historical changes of water quality and circulation type are discussed by reviewing limnological studies after early 19th century. The withdrawal of highly acid water into the lake changed pH from 6.7 to 4.2. In order to improve water quality and recover the salmon, neutralization of lake water started in April 1991. At present, pH ranges from 5.2 to 5.6. The lake was dimictic in the 20th century because of lowest surface water temperature at about 2 ℃. At present, the lake is getting monomictic because the lowest surface water temperature is equal to almost 4 ℃. The increase of surface water temperature is probably due to an increase in air temperature at Lake Tazawa with a rate of 0.028 ℃/year. Global warming could make the lake monomictic to meromictic in the future. Such a change of circulation type could produce poor oxygen water in the bottom layer, which is serious to ecosystem.

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