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## The impact of extreme heat on lake warming in China

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Global lake ecosystems are subjected to an increased occurrence of heat extremes, yet their impact on lake warming remains poorly understood. In this study, we employed a hybrid physically-based/statistical model to assess the contribution of heat extremes to variations in surface water temperature of 2260 lakes in China from 1985 to 2022. Our study indicates that heat extremes are increasing at a rate of about 2.08 days/decade and an intensity of about 0.03 °C/day-decade in China. The warming rate of lake surface water temperature decreases from 0.16 °C/decade to 0.13 °C/decade after removing heat extremes. Heat extremes exert a considerable influence on long-term lake surface temperature changes, contributing 36.5% of the warming trends within the studied lakes. Given the important influence of heat extremes on the mean warming of lake surface waters, it is imperative that they are adequately accounted for in climate impact studies.