

Alpine lakes reflect climate change

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Increases in temperature as a result of climate change are mirrored in lake waters where temperatures are also on the rise. A new study, by Dr. Martin Dokulil, retired researcher from the Institute for Limnology at the University of Innsbruck in Austria, forecasts surface water temperatures in large Austrian lakes for 2050 and discusses the impact on the lakes' structure, function and water quality. The research is published online in Springer's journal *Hydrobiologia*.

Austria has a multitude of lakes varying widely in type, size, flushing, altitude and geographic location. Most of these lakes are important ecosystems and are sensitive to environmental changes. Surface water temperature is directly affected by climate change and is an essential aspect for recreation on the lakes by tourists, particularly during the summer season.

Dokulil analyzed long-term data records for air temperature and surface water temperatures dating back to the mid-1960s from the Austrian Hydrological Yearbooks. The nine large lakes studied, in or bordering Austria, were situated in different climatic zones. From these data, Dokulil was able to project temperature trends for the lakes' surface waters and predict temperatures for 2050.

His work suggests that lake surface temperatures are likely to rise by up to 3°C in Austrian lakes by 2050 depending on the region, as a direct result of climate change.

Dr. Dokulil concludes: "The predicted changes in surface water

temperatures will affect the thermal characteristics of the lakes. Warmer water temperatures could lead to enhanced nutrient loads and affect water quality by promoting [algal blooms](#) and impairing the biological functions of [aquatic organisms](#). Significant increases in [summer temperatures](#) will also affect the carbon cycling in lakes, with potential consequences on [atmospheric carbon dioxide](#) levels and the Earth's climate."

More information: Dokulil M (2013). Predicting summer surface water temperatures for large Austrian lakes in 2050 under climate change scenarios. *Hydrobiologia*; [DOI 10.1007/s10705-013-1550-5](https://doi.org/10.1007/s10705-013-1550-5)

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