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Remote Sensing of River Temperature in a Changing Climate: from Knowledge to Applied River Management

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Abstract

Climate change is increasing river temperature globally, with potentially serious consequences for iconic cold water fish species. As a result, the past 20 years have seen a considerable growth in the use of thermal and optical remote sensing (thermal infrared and otherwise) to characterise stream temperature patterns across multiple spatio-temporal scales. In this keynote, I review how remote sensing has generated new insights into our understanding of the processes driving stream temperature and explain how knowledge stemming from this research is advancing the management of rivers and streams threatened by climate change. I then examine recent advances and knowledge gaps in the field. Finally, I outline how and where progress is still needed in order to improve management of the thermal regimes of rivers, with a view to ensuring the continued survival of threatened river ecosystems.

Keywords: climate change, water temperature, thermal imaging, river management, fluvial ecosystems.

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