



NZ Freshwater Sciences Society 2024 Conference  
*Haere i mua whakakotahi - Moving forward as one*  
18 – 22 November, Rotorua Energy Events Centre

SPECIAL SESSION / WORKSHOP APPLICATION

**Title and abstract: Freshwater modelling horizons: emerging trends and directions**

Freshwater modelling plays a critical role in freshwater management, enabling the prediction of water quality, quantity, and ecosystem responses to various management scenarios. As global change exacerbates the complexity and uncertainty of freshwater systems, modelling becomes even more essential for anticipating and mitigating its impacts. By integrating climate projections, hydrological processes, and ecosystem dynamics, freshwater modelling can inform adaptive management strategies, such as estimating the amount of available water and optimising water storage; establishing water body health and estimating contaminant reductions that may be needed to achieve desired outcomes; predicting flood and drought events; and identifying vulnerable ecosystems.

Modelling can facilitate collaboration among stakeholders by providing a shared framework for decision-making and can help to identify knowledge gaps and research priorities. Modelling also has an important role as a heuristic tool to better understand complex systems and test counterfactuals. As we move forward in a rapidly changing world, the importance of freshwater modelling will only continue to grow, serving as a vital tool for ensuring the long-term sustainability and resilience of our freshwater resources.

In the spirit of *Haere i mua whakakotahi*, this special session brings together researchers, policymakers, *tangata whenua*, and restoration practitioners to share innovative approaches to freshwater modelling. The session will feature a range of presentations and we will also reserve time for networking and building relationships among participants.

**Rationale:**

On-the-ground monitoring and field observations will never be able to cover New Zealand in sufficient density to enable effective management of our environment. Modelling is an essential tool for filling in gaps, testing efficacy of regulatory interventions, and identifying knowledge gaps and research priorities.