

Physicochemical stream response to diurnal, seasonal, and synoptic drivers on sub-Antarctic Marion Island

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Using high-frequency (5-min) data from the Soft Plume River, this study examined the influence of meteorological drivers on stream water physicochemistry on Marion Island. Distinct diurnal, seasonal, and synoptic-scale variations in stream temperature, pH, dissolved oxygen (DO), and specific conductivity (EC) were identified, with rainfall and air-surface temperature emerging as key controls. The findings highlight the sensitivity of sub-Antarctic freshwater systems to both short-term weather events and long-term climatic change.

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