

## **Mutual relationships of suspended sediment, turbidity and visual clarity in New Zealand rivers**

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**Abstract** Many river water quality monitoring programmes do not measure suspended particulate matter (SPM) mass concentrations despite significant interest in its multiple effects on aquatic ecosystems. Regular monthly sampling usually intercepts rivers in baseflow when suspended sediment mass concentrations and fluxes are relatively low and not of particular interest. New Zealand's National Rivers Water Quality Network (NRWQN) is probably typical in not measuring SPM mass, although visual clarity and nephelometric turbidity *are* routinely measured. In order to better characterize SPM in NZ rivers, total suspended sediment (TSS) was temporarily added to the NRWQN. Turbidity, visual clarity and TSS are mutually inter-related over all 77 sites, although with considerable data scatter. However, within *individual* rivers turbidity and visual clarity are typically fairly closely related to TSS and provide fair to excellent surrogates. Therefore, TSS need not be measured routinely because it can be estimated with sufficient precision for many purposes from visibility or turbidity.

**Key words** total suspended sediment; visual clarity; turbidity; river monitoring