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Determining Sub-Catchment Contributions to the Suspended Sediment load of the Tsitsa River, Eastern Cape, South Africa

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In South Africa, as in many developing countries, the suspended sediment (SS) data required to support catchment scale hillslope restoration and rehabilitation programmes are typically scarce or absent, leading to a reliance on modelled SS loads and yields that are generally not validated by measured SS data. An exception is the Tsitsa River catchment in the Eastern Cape Province, where modelled SS yields were high (21 – 50 t/ha/yr), leading to the establishment of a Citizen Technician-based monitoring programme (2015 – 2019) that has provided flood-focused, sub-catchment scale SS data at sub-daily timestep for 11 sites throughout the 4000 km^2 catchment.

A confluence-based SS fingerprinting and tracing exercise was undertaken in the catchment (2018). Analysis of the distinctive physicochemical properties of resuspended fine sediment sampled above and below major confluences allowed the percentage of SS contributed by each tributary to be apportioned, and compared with findings from both the SS monitoring campaign and from existing models.