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## Improving the design and implementation of sediment fingerprinting studies: Summary and outcomes of the TRACING 2021 Scientific School

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Sediment fingerprinting or tracing is a technique that allows to quantify source contributions of sediment. A Thematic School was organised in October 2021 to discuss potential options to improve the design and implementation of sediment fingerprinting procedures. The suggestions put forward by the School participants were organised around six complementary topics. First, we suggest a better use of geomorphological information to improve study design. Researchers are invited to scrutinize all the knowledge available on the catchment of interest, and to obtain multiple lines of evidence regarding sediment source contributions. Second, we think that scientific knowledge could be improved with local knowledge and we propose a scale of participation describing different levels of involvement of locals in research. Third, we recommend the use of state-of-the-art sediment tracing protocols to conduct sampling, deal with particle size, examine data before modelling and accounting for the hydro-meteorological context under investigation. Fourth, we promote best practices in modelling, including the importance of running multiple models, selecting appropriate tracers, and reporting on model errors and uncertainty. Fifth, we suggest best practices to share tracing data and samples, which will increase the visibility

of the fingerprinting technique in geoscience. Sixth, we suggest that a better organisation of datasets would allow to formulate hypotheses and improve our knowledge about erosion processes in a more unified way. In conclusion, sediment fingerprinting, which is interdisciplinary in nature, should play a major role to meet the current and future challenges associated with global change.