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Analysing suspended sediment load measurement errors in a small mountain Mediterranean catchment in relationship with the length of the records.

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Suspended sediment loads were measured during over twelve years at Vallcebre, a set of small research catchments in the south-eastern Pyrenees with intensely eroded areas (badlands). The measurements were made using gauging stations equipped with infrared backscattering turbidimeters, ultra-sonic beam attenuation solids sensors and automatic samplers. The analysis of the errors of the suspended load measurements during events showed that the range of error was small (about 6%) during most the events but rose (to about 30%) when sampling was insufficient and the instruments malfunctioned. Nevertheless, the main source of error for long-term assessment of sediment yield was the uncertainty in the estimation of the frequency of the large events. Therefore, the sediment yield estimated for a given measurement period largely depends on the size of the events that may occur during this period, the errors being of about 170% for a 2-year record, 100% for a 5-year record and 70% for a 10-years record. These results suggest that indirect measurements of long-term erosion rates may provide acceptable results when compared with rather short records obtained with sophisticated instrumentation.