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In-channel fine sediment storage in an extremely dynamic mountainous catchment: the river Isabena

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In-channel fine-sediment storage may constitute an important part of the sediment budget of a drainage basin. This phenomenon occurs when sediment production in the basin is greater than the river's transport capacity, resulting in large accumulations of fines along the river channel. In-channel sediment storage has been studied in a $\sim$3-km channel length reach of the River Isábena during an average hydrological year (2007-2008). The River Isábena it's a 445-km^2 mountainous catchment located at the Southern Pyrenees that flows through an area of extremely erodible materials producing an enormous amount of suspended sediment. Total in-channel sediment storage for the study period has been estimated at approximately 679 t, which equates to 0.32% of the annual suspended sediment load calculated at the basin's outlet. Sediment storage values obtained in the study reach have been extrapolated to the whole main channel length (45 km), resulting in a total storage of 9,810 t, representing the 4.7% of the annual total load. In-channel storage shows both temporal and spatial trends. In relation to the former, sediment is continuously accumulated during low-flows while the latter shows that sediment accumulation increases in the downstream direction. Results suggest that the fine-grained sediment stored in the channel may represent an important component of the suspended sediment budget of rivers draining highly erodible materials such as the River Isábena.