



The time compression in sediment transport: A review

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A large amount of geomorphic work is caused by a small number of events that are mainly responsible for the time compression of geomorphic processes. This study reviews and discusses about time compression in sediment transport through bibliographic analyses. Data from studies conducted worldwide were collected from different sources, and many of the studies suggest that a large amount of total sediment transport is often associated with a very few limited number of days. Furthermore, the results demonstrate the importance of few events, not necessary extremes in the total sediment yield.

The bibliographic analyses indicated that time compression occurs in plot and catchment databases. Moreover, time compression occurs in all climate conditions: (i) in arid and semiarid areas, time compression is due to the irregularities of precipitation and high rainfall intensities; (ii) in Mediterranean areas, it is due to the marked rainfall seasonality and strong interannual variation; (iii) in monsoon areas, time compression is conditioned by the rainfalls of the monsoon period; and (iv) in cold areas (mountain and cold areas) it is main due to the snowmelt processes period.

Our review demonstrate that the interpretation of annual average erosion rates or sediment yield should be viewed with caution, because each year the largest events (not necessary extreme events) could represent a high percentage of the total annual sediment yield or soil loss value.