Changes occurred in denudation/sedimentation processes (understood here as the transfer of solid materials from one place of the earth’s surface to another, by different agents) in the latter part of the Holocene, mainly the last couple of centuries, are examined, trying to estimate rates and assess the role of human and natural agents. Three issues are addressed here, on the basis of some case studies: slope movements and their contribution to denudation and relief evolution; “technological denudation” due to human activities; general evolution of sediment accumulation (consequence of denudation).

Analyses of materials transfer by, and frequency of, slope movements in N Spain have shown the importance of human influence already in Neolithic times, and more so after the Industrial Revolution. Significant increases have been observed since the middle of last century and slope movements seem to be in some cases the main factor of relief evolution.

Human activities related to urban-industrial development, infrastructure and mining activities represent an important “human geomorphic footprint” (expressed as volume of materials displaced or area occupied by new “anthropogeofoms”; yearly total or per capita). If the materials thus moved were evenly distributed over all emerged lands they could be presently equivalent to a \(>1 \text{ mm } a^{-1}\) (“technological”) denudation. As this is the consequence of growing population, technological and economic development, it will probably intensify with time.

Sedimentation rates directly determined (Pb-210, Cs-137) in a number of estuaries, lakes and reservoirs show in general a clear increase since early 20th century, particularly after its middle. Compilation and analysis of sedimentation rates in a variety of sedimentation environments in different regions of the world, since late 19th century, also show, with almost no exception, a similar trend. Comparison with rainfall evolution does not explain the changes observed. However, indicators of the intensity of human activity, especially GDP (Gross Domestic Product; total, not per capita; strongly related to our capacity to transform land), show a good similarity with sedimentation rates trends. This indicator also shows a close correlation with geomorphic disasters frequency (another manifestation of the general intensification of geomorphic processes).

On the basis of the information gathered and results presented, some tentative conclusions are proposed. It appears that presently humans are, by far, the main denudation agent. Direct and
indirect transfer of rock, soil and sediment by human activities could be one order of magnitude greater than by natural agents. The rates of some geomorphic processes seem to have experienced a significant acceleration (about tenfold?) in less than a century, due to land surface transformation rather than to climate change. This “great geomorphic acceleration” represents a part of the “Great Acceleration” occurred after mid-twentieth century. Global geomorphic change (independent of climate change) should thus be considered as one of the characteristics of the Anthropocene, for which the end of World War II would indeed be an appropriate starting date.