



Solid discharge and landslide activity at basin scale

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This work presents a preliminary analysis aimed at understanding the relationship between landslide sediment supply and sediment yield at basin scale in central and southern Italy. A database of solid discharge measurements regarding 116 gauging stations, located along the Apennines chain in Italy, has been compiled by investigating the catalogues, named *Annali Idrologici*, published by *Servizio Idrografico e Mareografico Italiano* in the period from 1917 to 1997. The database records several information about the 116 gauging stations, and especially reports the sediment yield monthly measurements (10^3 ton) and the catchments area (km^2). These data have been used to calculate the average solid yield and the normalized solid yield for each station in the observation period. The Italian Landslide Inventory (*Progetto IFFI*) has been used to obtain the size of the landslides, in order to estimate the landslide mobilization rates. The IFFI Project funded by the Italian Government is realized by ISPRA (Italian National Institute for Environmental Protection and Research - Geological Survey of Italy) in partnership with the 21 Regions and Self Governing Provinces. 21 of the 116 gauging stations and the related catchments have been selected on the basis of the length of the solid discharge observation period and excluding the catchments with dams located upstream the stations. The landslides inside the selected catchments have been extracted from the IFFI inventory, calculating the planimetric area of each landslide. Considering both the shallow and deep landslides, the landslide volume has been estimated using an empirical power law relation (landslide area vs. volume). The total landslide volume in the study areas and the average sediment yield measured at the gauging stations have been compared, analysing the behaviour of the basins which drainage towards the Tyrrhenian sea and the basins which drainage towards the Adriatic sea.