



Spatial patterns of sediment yield in Europe

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Although numerous studies report area-specific sediment yields (SSY, t km⁻² a⁻¹) from catchments in Europe, no detailed overview of the spatial patterns of SSY exists. Based on an extended literature review, a database was developed which aims at bridging this gap. Sediment yield data was collected from several sources (scientific publications, internal reports from hydrological institutes, ...). Only data on sediment yield measured at gauging stations or derived from reservoir siltation rates were considered. In total, sediment export data from ca. 1 800 different locations throughout Europe were collected (ca. 500 reservoirs and ca. 1 300 gauging stations), representing a minimum of ca. 24 000 catchment-year data. The database comprises several types of catchments, ranging from small catchments (< 1 ha) to major European river basins (> 100 000 km²). The coordinates of most measurement stations and reservoirs were determined.

Here, we present an overview of the data collected and a discussion on the spatial patterns of SSY in Europe. A clear difference could be noted between the temperate regions of Western Europe (low SSY values, i.e. <50 t km⁻² a⁻¹) and Mediterranean regions of Europe (generally much higher SSY-values, often more than 300 t km⁻² a⁻¹). Mountainous regions could also be clearly distinguished. We further investigated the relationship between catchment area (A, km²) and SSY for several regions in Europe. A negative relationship is normally expected due to a decrease in topsoil erosion rates on more gentle slopes and an increase in alluvial sediment deposition with an increase in catchment size. However, for several regions, mainly in Mediterranean Europe, no relation or a positive relation was found. This indicates the significance of other processes (e.g. landslides, riverbank erosion, gullies) in these regions.

An improved insight into the regional patterns of sediment yields and their scale dependency helps to better understand the controlling factors of sediment export from river catchments (which is necessary to model sediment export) and to identify major sediment hotspots in Europe.