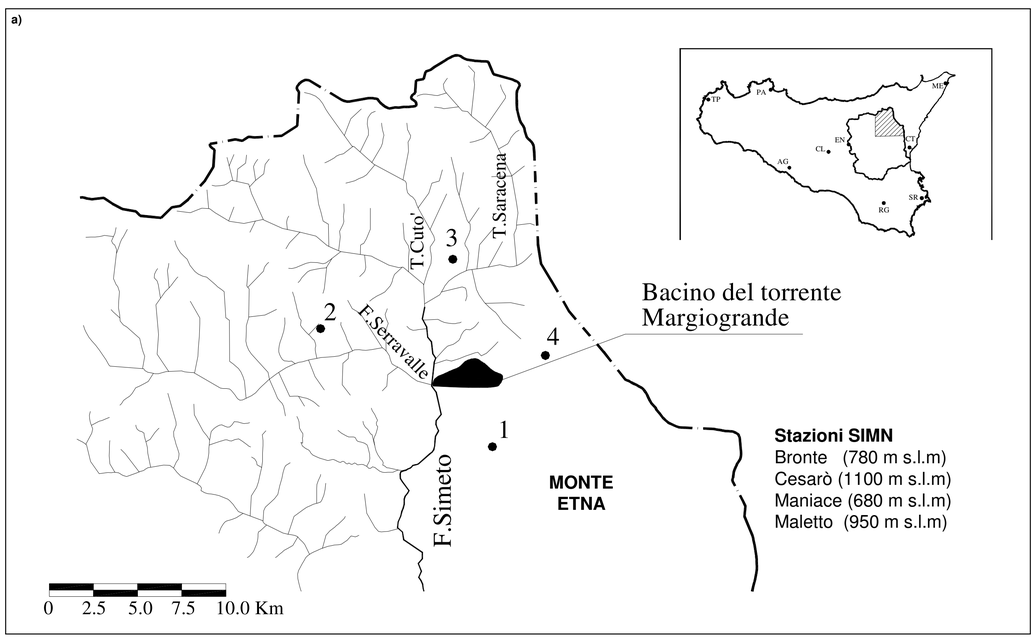
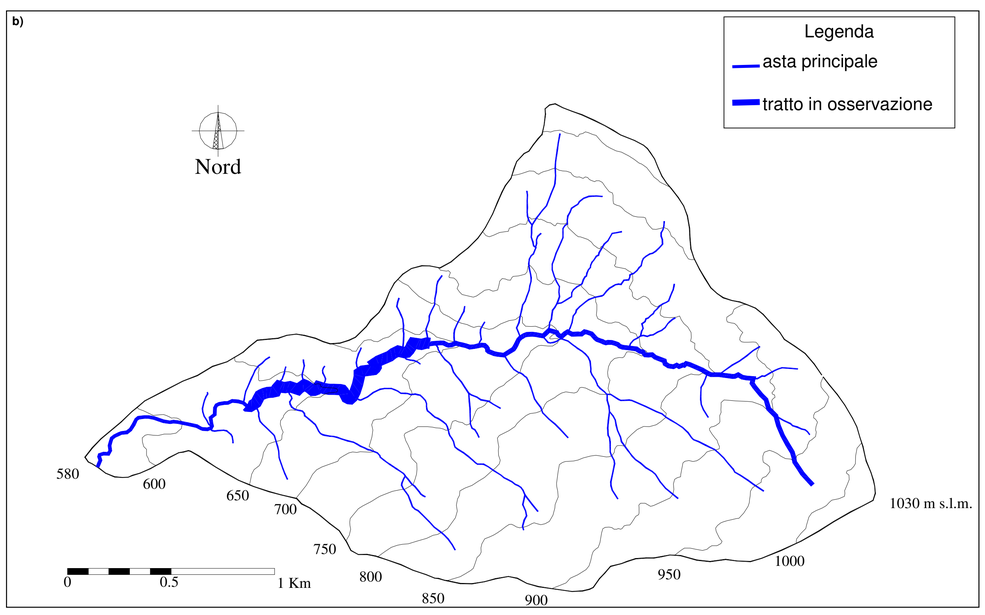
Margiogrande, Eastern Sicily, Italy

Basin characteristics

River Basin / River Basin (according EU-WFD)	Simeto
Operation (from… to…)	1993 -> today
Catchment area	4.5 km^2
Elevation range	580-1030 m a.s.l.
Basin type (alpine, mountainous, lowland)	mountainous
Climatic parameters (mean precipitation, temperature and others)	Mean precipitation: 602 mm
Land use	Pasture, cropland
Soils	Silt, sand
Geology	Alluvial

Map of the research basin





Special basin characteristics (hydrogeology, lakes, reservoirs etc.)

The basin is characterised by a longitudinal profile with step-pools, cascades and plan-beds.

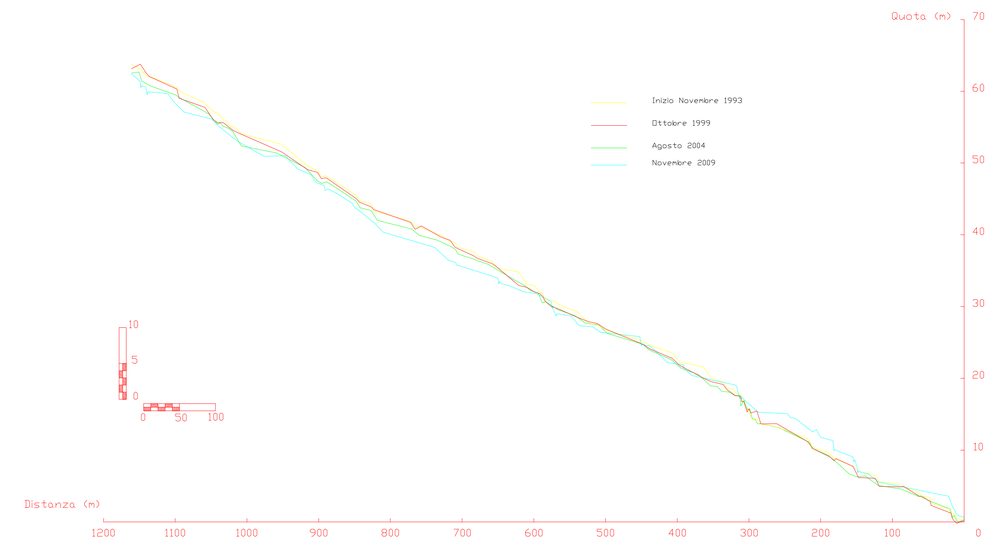
Series of step-pool morphological units in the Margiogrande torrent.

Instrumentation and data

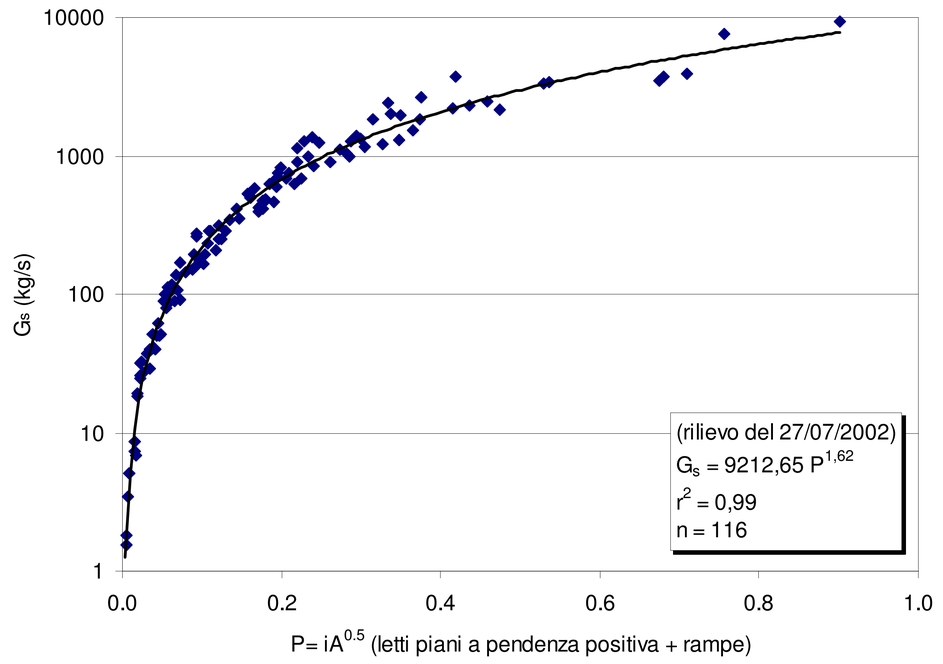
Measured hydrological parameters	Measuring period	Temporal resolution	Number of stations
Rainfall, Q_{max}	1993->today	Flood events	1

Main scientific results

The geomorphologic evolution and the bedload transport of a short reach of Margiogrande torrent has been evaluate during a 20-year period. This reach is characterised by the presence of different morphological units (step-pools, plan-beds and cascades).
The investigation has highlighted that step-pools represents the morphologic units with the higher variability; conversely, cascades slope and length are less variable in time. A tendency of longitudinal profile to get a greater morphological stability has been remarked, presumably determined by the greater incidence of the step-pool number.
Mean and maximum depth variability of the torrent cross-sections is lower than 35%; their area variability is close to 45%. As expected, the thalweg distance from the middle axis of the channel is much variable.
Monitoring of bedload operated on the occurrence of two ordinary flood events has shown the presence of a selective transport. A bedload transport is just relevant on the occurrence of discharges with recurrence interval significantly lower than 2 years.
A very high correlation (r^2 = 0.99) has been found between the modelling bedload transport capacity and the parameter P = i A0.5, with suggests to utilises the latter index (much more time consuming) as measure of bedload transport capacity.



Evolution (1993-2009) of the longitudinal profile of the Margiogrande torrent.



Modelling transport capacity (Gs) as a function of the parameter P = iA$^{0.5}$ (Pica e Preti, 1999) in the Margiogrande torrent

Contact

For more detailed information, please contact:
Dr. Eng. Demetrio Antonio Zema, dzema@unirc.it
Prof. Eng. Santo Marcello Zimbone, smzimbone@unirc.it