Rio Cordon Basin
Dolomites, Italy

Basin characteristics

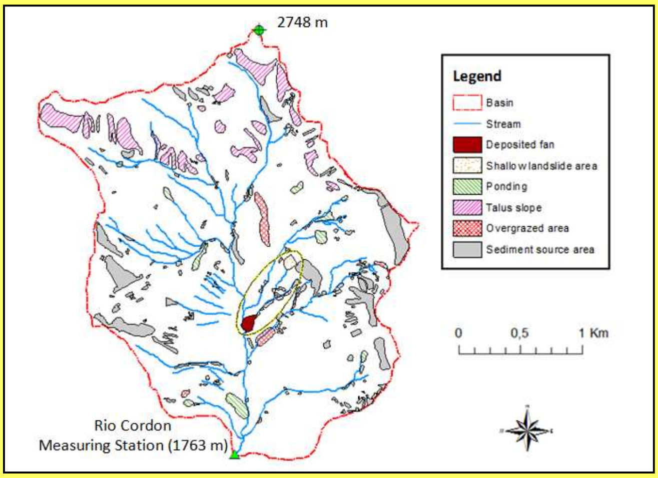
River Basin / River Basin (according EU-WFD):	Rio Cordon Basin
Operation (from.. to…):	From 1986 to present
Gauge coordinates / Gauce datum:	12° 05’ 44,83’’ 46° 27’ 03,18’’
Catchment area:	5.0 km^2
Elevation range:	1763 - 2748 m a.s.l.
Basin type:	Alpine
Climatic parameters: **(mean precipitation, temperature and others)**	Mean annual precipitation: 1100 mm (35% as snow); Average annual temperature: 2 °C
Land use:	Alpine grassland, scattered shrubs, un-vegetated areas, conifers (Larix decidua, Picea abies)
Geology:	Dolomites, volcanoclastic conglomerates, tuff sandstones, quaternary moraine deposits
Characteristics water discharge:	
Maximum water discharge measured	10.4 m^3s^{-1}
Mean water discharge	0.26 m^3s^{-1}
Minimum water discharge measured	0.05 m^3s^{-1}

Measuring facilities

(from Lenzi et al., 2004)

Special basin characteristics and sediment sources areas

Mean hillslopes gradient	(%)	52
Length of the main channel	(km)	2.84
Mean width of the main channel	(m)	5.7
Mean gradient of the main channel	(%)	17
Mean gradient of the channel upstream the station	(%)	13.6
Drainage density	(km^2)	2.91



Sediment sources areas: cliffs, shallow landslides, eroding stream banks and small debris flow channels

Instrumentation and data

I- RIO CORDON WATER DISCHARGE AND SEDIMENT TRANSPORT STATION (1763 m a.s.l.)

I-1 WATER DISCHARGE

water level are continuously measured from March to November by different types of weirs and gauges located at the inlet and outlet channels, with 1 hour intervals if Q < 1 m3 s-1 and with 5’ intervals during floods (Q > 1 m3 s-1)

a) Inlet and outlet channel flow water level gauges
- Pressure transducer, floating and electric capacity water level gauges
- Maximum water level gauges (floating and electric capacity)

b) Full width rectangular sharp-crested weir; outlet channel
c) Rectangular broad-crested weir; outlet channel

I-2 SUSPENDED SEDIMENT TRANSPORT AND WATER QUALITY
- Light absorption turbidity Partech SDM-10; continuously; 0-100 %
- Light scatter turbidity HACH SS6; continuously; NTU
- Sigma automatic pumping sampler; 24 bottles; 1 liter each 10.000 m3 of water flows
- Sigma automatic pumping sampler; weekly; integrated for water quality parameters analysis
- USDH 48 bottle sampler; manually during floods
- pH, water temperature and electric conductivity sensors; continuously

I-3 BEDLOAD TRANSPORT

24 ultrasonic sensors located over the bed load sedimentation trap; 5’

II-RIO CORDON METEOROLOGICAL STATION (1763 m a.s.l.)
- Precipitation: rain gauge and total snow accumulation
- Air temperature
- Atmospheric pressure
- Relative humidity
- Solar radiation

III-MONDEVAL DI SORA STATION (2130 m a.s.l.)
- Air temperature sensor; continuously
- Precipitation (rain gauge; snow accumulation and total snow station)

Applied models

1. Bedload model predictions; bedload incipient motion and bedload transport equations and models for high gradient streams
2. Flow resistance models for step channels
3. Morphodinamic models of stream channel evolution; 1D and 2D hydrodynamic models
4. Shallow landslides; hydro-morphometric indexes

Main scientific results

1. The role of suspended sediment load in total sediment transport in small alpine streams
2. The inter-annual variation of suspended sediment load and sediment yield, particularly the partitioning of total sediment load into suspended load and bedload, in mountain basins
3. The variation of critical shear stress, water discharge, bed slope, transport regime, from “limited sediment supply-low instantaneous bedload rates” to “unlimited sediment supply-high bedload intensity”
4. Mechanis of formation, transformation and evolution of step-pool structures
5. Assessment of armouring processes and partial sediment transport conditions in high gradient streams
6. Assessment of dynamics of standing waves, stationary waves and antidunes at steps in mountain rivers.
7. Estimates of velocity and flow resistance in stepped channels
8. Morphological effects of local scouring in high gradient streams: the hypothesis that natural step–pool geometry can be explained primarily in terms of the local scouring processes associated with hydraulic jumps caused by the falling jets was tested
9. The role of large wood debris on both flood effects and natural dam break formation and downstream propagation
10. Assessment the magnitude-frequency of bedload processes in an alpine boulder bed stream

Key references for the basin

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