

Long term high frequency sediment observatory in an alpine catchment (Arc-Isère Rivers, French Alps)

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Abstract

The present dataset is related to the Arc-Isère long-term environmental research part of the Rhône Basin Long Term Environmental Research Observatory. This alpine watershed located in the French Alps is characterized by high Suspended Particulate Matter (SPM) in very anthropogenized valleys. Suspended Sediment Concentrations (SSC) naturally observed in the river are very high, ranging from a few tens of milligrams per litre at low flow to tens of grams per litre during major natural hydrological events (floods, debris flows) or river dam hydraulic flushes. One research objective related to this site aims at better understanding the SSC dynamics along the river using a system of nested watersheds (Arvan, Arc, and Isère) in order to access to both temporal and spatial dynamics. Studies using this dataset are on the quantification of fine sediment fluxes but also on the related morphological changes due to fine sediment deposition or resuspension. Additionally, the observatory database can support studies on contaminants (either dissolved or particulate contaminant). Six hydro sedimentary stations monitor SSC with high frequency via turbidity sensors associated to automatic samplers. Discharge is measured via classical water level measurements and a rating curve. The oldest station (Grenoble-campus) started recording data from 2006 while others hydro-sedimentary stations were built from 2009 to 2011. Data are available in an online data website called “Base de Données des Observatoires en Hydrologie” (Hydrological observatory database, <https://bdoh.irstea.fr/ARC-ISERE/>) with DOI references for each site. The hydrological and sediment transport time series are stored, managed and made available to a wide community in order to be used at their full extent. This database is used as a data exchange tool for both scientists and operational end-users and as an online tool to compute integrated fluxes.

Hosted file

Data-paper_thollet2020.pdf available at <https://authorea.com/users/362487/articles/483627-long-term-high-frequency-sediment-observatory-in-an-alpine-catchment-arc-is%C3%A8re-rivers-french-alps>