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DYNAMICS OF SEDIMENT-ASSOCIATED  
NUTRIENTS IN MOUNTAINOUS RIVERS:  
A CASE STUDY IN NORTHERN PORTUGAL

DINÂMICA DE NUTRIENTES ASSOCIADOS  
A SEDIMENTOS EM RIOS DE MONTANHA:  
UM CASO DE ESTUDO NO NORTE DE PORTUGAL

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**Abstract** – Samples of fine-grained river bed sediment were collected in the mountainous rural catchment of the River Corgo, which drains crystalline rocks, in order to investigate seasonal, spatial and downstream changes in the total N (TN) and total P (TP) contents associated to the size-fraction <63 µm. The sediments are composed mainly by detrital minerals (76-95%) and illite, kaolinite and various mixed-layer and poorly crystallized clay species are the main constituents of the clay fraction. The silt size-class is dominant (84-87%). The TN and TP contents vary, respectively, in the range 0.3 to 14 g/kg and 0.2 to 5.1 g/kg. The spatial and seasonal trends suggest that the major controls of the input and dispersion of sedimentary TN and TP in the fluvial environment are: seasonal and interannual variability in stream discharge; morphology of the river and the steepness of the riverbed; movement into the river channel of soil particles with associated nutrients; land use, point and non-point source contamination.

**Keywords** – Mountainous river; Bottom sediments; Nutrients; Nitrogen; Phosphorus

*Resumo* – Nesta contribuição são apresentados resultados sobre um estudo realizado em sedimentos finos do leito fluvial recolhidos na rede de drenagem do rio Corgo, que drena uma bacia rural de montanha, em substrato de rochas cristalinas. O objetivo é investigar o padrão de distribuição sazonal e espacial dos teores totais de N (TN) e P (TP) associados à fração sedimentar

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