



Implications of bedload sampling point on sediment budget assessment

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Past and present management of the Ebro catchment have altered water and sediment fluxes of the lower Ebro River and its delta. The construction of the Mequinensa and Riba-Roja dams during the 1960s disrupted the sediment transport continuity. As a result, the lower Ebro River and its delta are facing a dramatic reduction in sediment delivery. As part of the design of a sediment management plan, we constructed the sediment budget of the lowermost Ebro river (85.530 km²) in order to evaluate the present sediment deficit and the required restoration needs from the reservoirs. The sediment budget is based on bed load and suspended sediment field measurements. Bed load and suspended sediment samples were obtained at two different verticals; covering up to 50% of the total channel width. Special attention has been paid on the importance of the sampling point, and its implications on the sediment budget. Preliminary results indicate that approximately 130.000 tones of sediment passed at the outlet basin in 2008; which represents a reduction in sediment delivery up to 99% of its original yield (about 3 x 10⁷ t/yr). Sediment was transported in a proportion of 89% as suspended and 11% as bed load. In contrast, 40 km upstream of the outlet basin, previous studies indicate that 40% of total load is transported as bed load. That fact could be associated to the effect of dams, the closer to the dams the higher the sediment deficit. In addition, results show that when using data from two different verticals, the estimate of the total sediment transported as bed load is one order of magnitude different (8.000 t versus 20.000 t). Furthermore, bed material passing through the first vertical is composed by sand (53%) and gravels (47%), while bed load at the second vertical is almost totally composed by gravels. Both factors (crosssectional location and bed load texture) have severe implications on the assessment of the sediment budget; especially when results are to be used for river management, restoration and sediment yield assessment.