



## **Dynamic of suspended sediments and nitrates during flood events in an agricultural catchment dominated by an alluvial aquifer.**

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The temporal variability of nitrate transport and suspended sediments was monitored continuously during the 2009-2010 hydrological year, in the Alegria agricultural catchment in North Spain (90 km<sup>2</sup>). The alluvial aquifer is part of the catchment that represents 50% of the total area and is located in a vulnerable zone to nitrate pollution. The overall aim was to assess the variability of nitrates and suspended sediment during flood events. Analyses were also undertaken to determine the different water pathways (quaternary aquifer drainage or surface runoff) using suspended sediments and nitrates vs. water level hysteresis patterns.

During the study period, 3 flood events were described with high resolution datasets obtained by manual and automatic sampling, as well as continuous measurements derived from a multiparametric probe.

The results show two types of flood events, related with water origins. One type of flood event was characterised by snow melt and dilution. The relationship between nitrates and water level reflected a negative linear hysteresis loop with the minimum nitrate value at the higher level position. Regarding the turbidity variability during this event, clockwise hysteresis loop was obtained, showing the maximum turbidity value. The second type of flood events was characterised by anticlockwise hysteresis loop derived from nitrates and water level relationship. This behaviour, namely “piston effect”, showed a quaternary aquifer water origin for the pollution. The hysteretic patterns for suspended sediments and water-level relationship obtained were also clockwise type, which were showing the maximum values until the flood peak.