



## Temporal variations of water and sediment fluxes in the Cointzio river basin, central Mexico

C. Duvert (1,2), N. Gratiot (1,2), O. Navratil (2), M. Esteves (2), C. Prat (2), and G. Nord (3)

(1) Centro de Investigaciones en Ecosistemas, Universidad Nacional Autónoma de México, Morelia, Mexico  
(nicolas.gratiot@ird.fr) , (2) Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France, (3)  
Institute of Environmental Assessment and Water Research (IDAE), CSIC, Spain

The STREAMS program (Sediment TRansport and Erosion Across MountainS) was launched in 2006 to study suspended sediment dynamics in mountainous areas. Two watersheds were selected as part of the program: the Bléone river basin in the French Alps, and the Cointzio river basin (636 km<sup>2</sup>), located in the mountainous region of Michoacán, in central Mexico. The volcanic soils of the Cointzio catchment undergo important erosion processes, especially during flashflood events. Thus, a high-frequency monitoring of sediment transport is highly required.

The poster presents the high-frequency database obtained from the 2008 hydrological season at the Santiago Undameo gauged station, located at the basin's outlet. Suspended Sediment Concentration (SSC) was estimated every 10 minutes by calibrating turbidity measurements with bottle sampling acquired on a double-daily basis. Water discharge time-series was approximated with continuous water-level measurements (5 minutes time-step), and a stage-discharge rating curve. Our investigation highlights the influence of sampling frequency on annual water and sediment fluxes estimate. A daily or even a weekly water-level measurement provides an unexpectedly reliable assessment of the seasonal water fluxes, with an under-estimation of about 5 % of the total flux. Concerning sediment fluxes, a high-frequency SSC survey appears to be necessary. Acquiring SSC data even twice a day leads to a significant (over 30 %) under-estimation of the seasonal sediment load.

These distinct behaviors can be attributed to the fact that sediment transport almost exclusively occurs during brief night flood events, whereas exfiltration on the watershed always provides a base flow during the daily water-level measurements.