Geophysical Research Abstracts, Vol. 9, 08504, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08504

Pollutant transfer along an intermittent and disconnected river channel during flash flood events.

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Small Mediterranean rivers have a peculiar regime characterized by the alternation of long dry periods cut by flash flood events; so their behaviour is close to dryland rivers.

The channel network structure of these rivers is highly variable in space and time. During the dry period, the river channel may dry up completely except in some reaches where anthropogenic inputs (mainly waste water treatment plant effluents) contribute to maintain some pools. Accumulation of pollutants is observed in these reaches, while, during floods, pollutants are flushed away from the same reaches.

The study of dryland rivers has been dominated by flash flood investigations, including runoff processes, flow hydraulics and transmission losses in the channel. Because of these transmission losses, flow is rarely continuous throughout the channel network. At the start of a storm, the advance of flood waves is limited by channel infiltration but also by localized storage in small pools. Along the river course, hydrograph and pollutograph shapes show significant differences. Total flood volumes therefore do not increase very much and even decreases downstream. This, in turn, influences the spatial and temporal dynamics of pollutant fluxes. Some floods observed in the upstream part of the river are not transferred to the outlet and a significant quantity of pollutants remains trapped in the riverbed.

All these phenomena will be illustrated on the case of the Vène River (South of France) during complex first flood events occurring just at the end of the dry season. The analysis will be based on experimental data collected at two gauging station S (35 km^2) and V (67 km^2) located along the main river. Pollutant fluxes will be evaluated in terms of nutrients (NO2+NO3, NH4, TN, SRP, TP) and suspended solids.