



**HAL**  
open science

## Combined investigations on long-term hydrochemical monitoring and high frequency measurements in the Critical Zone from the Auradé catchment (SW, France)

Vivien Ponnou-Delaffon, Anne Probst, Virginie Payre, Sylvain Ferrant,  
Jean-Luc Probst

### ► To cite this version:

Vivien Ponnou-Delaffon, Anne Probst, Virginie Payre, Sylvain Ferrant, Jean-Luc Probst. Combined investigations on long-term hydrochemical monitoring and high frequency measurements in the Critical Zone from the Auradé catchment (SW, France). EGU General Assembly 2017, Apr 2017, Vienna, Austria. pp.0. hal-01542899

**HAL Id: hal-01542899**

**<https://hal.science/hal-01542899v1>**

Submitted on 20 Jun 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



## Open Archive TOULOUSE Archive Ouverte (OATAO)

OATAO is an open access repository that collects the work of Toulouse researchers and makes it freely available over the web where possible.

This is an author-deposited version published in : <http://oatao.univ-toulouse.fr/>  
Eprints ID : 17854

### To link to this poster:

URL: <http://meetingorganizer.copernicus.org/EGU2017/sessionprogramme/HS>

**To cite this version:** Ponnou-Delaffon, Vivien and Probst, Anne and Payre-Suc, Virginie and Ferrant, Sylvain and Probst, Jean-Luc *Combined investigations on long-term hydrochemical monitoring and high frequency measurements in the Critical Zone from the Auradé catchment (SW, France)*. (2017) In: EGU General Assembly 2017, 23 April 2017 - 28 April 2017 (Vienna, Austria).

Any correspondence concerning this service should be sent to the repository administrator: [staff-oatao@listes-diff.inp-toulouse.fr](mailto:staff-oatao@listes-diff.inp-toulouse.fr)

## **Combined investigations on long-term hydrochemical monitoring and high frequency measurements in the Critical Zone from the Auradé catchment (SW, France)**

Vivien Ponnou-Delaffon, Anne Probst, Virginie Payre-Suc, Sylvain Ferrant, and Jean-Luc Probst  
ECOLAB, Université de Toulouse, CNRS, INPT, UPS, France (vivien.ponnoudelaffon@ensat.fr)

The Critical Zone (CZ) is now well identified as the land-atmosphere interface under the influence of many human pressures rendering up vulnerable for future generations. Although many investigations have been undergone over the last 30 years in the different compartments of the CZ, it remains important to understand the overall functioning of this area in a context of global change.

A long-term hydrological and chemical monitoring was performed since 30 years for nitrates and discharge, and for 10 years for major elements at the stream outlet of a small agricultural carbonated catchment (Auradé site). This catchment is part of the observatories network OZCAR infrastructure and since 1992 it was a pilot for improving agricultural practices. Two time scales were investigated based on a discrete sampling during low water flow and hydrological events, and since 2006 on high frequency datas (every 10mn) for pH, conductivity, nitrate, temperature... using a multiparameter probe.

The long-term trends indicated mostly a decreasing in nitrate, Ca and Mg concentrations namely and an increase in DOC, which can be related to the influence of the environmental practices (fertilizers inputs, vegetative filter strip etc.), but more recently to the changes in temperature and hydrological patterns (decreasing discharge and occurrence of rare but intensive events). The high frequency measurements on short-term events allowed: (i) to highlight the mechanisms involved in flux exportations (nycthemeral cycle for nitrates as ex.), (ii) to reconstruct the chemical patterns by correlating the parameters to major elements, and finally (iii) to have a better and more precise approach of the contribution of weathering and land use on the hydrochemical functioning of the CZ, particularly on the disturbance of carbon cycle by anthropogenic fingerprints.