



The Strengbach catchment (Vosges massif, Eastern France): a field laboratory and a multidisciplinary researches site

D. Viville

EOST- Centre de Géochimie de la Surface (UMR 7517-CNRS/ULP); 1, rue Blessig, F-67084
Strasbourg Cedex, France (dviville@mailserver.u-strasbg.fr / Phone: +33 390240446)

In the mid 80's, in order to understand the influence of acid rain water on a forested ecosystem which presented symptoms of decline, the Strengbach catchment has been instrumented for hydrochemical studies at both plot and catchment scales. This small catchment (0.8 km², 883 -1146 m.a.s.l.) located on the eastern side of the Vosges massif in north-eastern France mainly lies on a base-poor granitic bedrock and can be considered as a field laboratory to study the effects of atmospheric pollution and of climate on the Forest-Soil-Water system.

As most of the short term previous objectives concerning forest decline understanding have been reached, later on, researches have been focused on long term objectives and new researches themes have been developed on this well-documented site. As example, the following themes can be mentioned:

- the weathering processes have been studied and modelled through the coupling of chemical weathering in soil horizons and underlying bedrock model to water and carbon model;
- the ecophysiological functioning of spruces stands has been assessed throughout the water balance calculation and modelling with the determination of transpiration (sap flow device) -in relation to climatic factors (energy balance components)- of rainfall interception and soil water balance;
- complementary approaches associating chemical (trace and major elements), isotopic tracers and hydrological measurements have been performed to identify the origin of water pathways in various hydrological conditions and to calculate mean water

transit time in the catchment.

At the present time, to detect any long term trend in surface water chemistry and elements budgets, the water quality analysis is carried on in the framework of the Hydro Geochemical Observatory (OHGE) of the Environment of School and Observatory from the Earth (EOST).