

GEOGRAPHIC LOCATION



Moselle watershed

LABEL AWARD DATE

2001

STUDY AREA AND GOALS

With a great geological, landscape, historical and anthropic activity diversity, which juxtaposes very different and well-characterized entities, the Moselle watershed provides an exceptional territory for multidisciplinary approaches with complementary problems. From its sources under the Bussang pass in the Vosges at its confluence with the Rhine in Koblenz (Germany), the Moselle travels 520 km across three European states, with a catchment area of 28 300 km² of which more than a half (15,400 km²) is located in France. The French part presents a very contrasted occupation of the territory combined with specific anthropic pressures. The upper part of the basin is dominated by the Vosges Mountains, sitting on acidic soils (crystalline or sandy substrates). After severe disturbances caused by acid atmospheric deposition during the 1970s and 1980s, these mid-mountain forest ecosystems are now exposed to increasing logging. The middle and lower part of the French basin correspond to a succession of cuestas characterized by limestone plateaus with permeable soils and plains with a dominant clay soil. Agriculture, especially mixed farming and livestock farming, is present on the middle part of the basin, which receives regular agricultural inputs (fertilizers, pesticides, etc.). The downstream part of the basin is characterized by increasing urbanization (Nancy, Toul, Metz, Thionville) and by the heritage of Lorraine's industrial past (iron mining and steel industry). Still, throughout its journey, the Moselle River contributes to maintain wetlands areas with a rich biodiversity (regional nature reserve of the Moselle Sauvage for example).

CONTEXT OF THE STUDY

For the Lorraine region, the Moselle River is a major resource for drinking water production and for the agricultural, fish and industrial activities (paper, nuclear, etc.). However, the multiple pressures applied to the watershed and the watercourse itself, which are sometimes specific to the territories traversed, are the cause of a potential degradation or even an already degraded quality of water resources and the functionalities of the ecosystem. The studies carried out within this LTSER consist in assessing the impact of these different pressures on aquatic and terrestrial ecosystems and on the quality of the water by multidisciplinary approaches. Particular attention is paid to the development of remediation solutions, favoring partnership with the actors of the territory (farmers, fish farmers, communes, the Water Agency, State departments, etc.).

Because of its cross-border nature, the Moselle catchment raises issues that extend beyond the national territory, and extends the interest of the LTSER's scientific programs to its two neighboring countries.



KEYS RESEARCH TOPICS

- ↘ Biogeochemical cycles - population dynamics: evolution of forest ecosystems in response to anthropogenic pressures (logging, acidification, erosion ...) and global climate change.
- ↘ Pollutant flow and storage - ecotoxicology: impact of historical anthropogenic (iron and steel) and current (agricultural and urban) pressures and restoration actions (eradication of dam, renaturation of watercourses ...) on the functioning of aquatic ecosystems (Sediment, water, fish, plant ...).
- ↘ Remediation: development of actions and improvements (artificial wetlands, sewage treatment plant, etc.) in partnership with territorial actors and evaluation of the effectiveness of existing solutions to eliminate chemical micro-pollutants and microbial contamination (antibiotic resistance, etc.).



CONTACTS

Sylvie Dousset
 sylvie.dousset@univ-lorraine.fr

Arnaud Legout
 arnaud.legout@inra.fr

Jean-François Munoz
 jean-francois.munoz@anses.fr

Marie-Noëlle Pons
 marie-noelle.pons@univ-lorraine.fr

ADDRESS

OTELLO
 15 Avenue du Charmois
 BP 40
 54500 Vandœuvre Les Nancy

www.zam.univ-lorraine.fr