

Paper title	Quantitative assessment of the state of the cross border Rhine aquifer based on groundwater level signals
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Form of presentation	Oral
Topics	<ul style="list-style-type: none"> • 4. Sustainable Groundwater Resources Management <ul style="list-style-type: none"> ◦ 4.07. Approaches to sustainable groundwater management in a changing world
Abstract text	<p>The Upper Rhine aquifer, located on both sides of the Franco-German border in the Rhine graben, is one of the largest transboundary alluvial groundwater resources in Western Europe. The shallow position of the groundwater level in the alluvial deposits implies a high connectivity with the hydrographic network, resulting in a multitude of links with surface and sub-surface ecosystems as well as with the functioning of watercourses. Human activities, such as river management and infrastructure developments along the Rhine, have strongly influenced its hydrodynamic behaviour. More recently, artificial low-flow supports for rivers, ecological functionalities restoration works of rivers have again modified hydrodynamics.</p> <p>Since 2015, climate change has put additional pressure on the groundwater resources. The most notable example is the drying up of watercourses fed by baseflows from the Rhine aquifer in the central Alsace plain. However, the impact extends to all wetlands and rivers, without a clear quantification.</p> <p>In order to enable sustainable management of the groundwater resources, a transboundary diagnosis of the quantitative situation is being carried out. This requires elements of understanding of the Upper Rhine aquifer system. Using classical and advanced statistical methods, the aquifer is divided into homogeneous zones, enabling improved understanding of the hydrodynamics and interactions with the surface. At the same time, variables influencing or having influenced piezometry are sought at different temporal and spatial scales (e.g., climate, water withdrawals, Rhine infrastructure,</p>

	<p>ivers). The search for trends in groundwater level and explanatory factors is carried out in a highly anthropised context, requiring the classic analysis tools to be adapted.</p>
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	<p>This work will make it possible to evaluate and implement predictive models. It will also serve as a basis to assist in future river and wetland restoration or preservation efforts.</p>
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