


Country	MIKAS springs	Coordinates / Nearby City	Spring discharge (Q in l/s,min/av/max) / tapped or not	Criteria* in order / Main justification */ H-historic, A-aesthetic, S-scientific, E-Economic, Ec-ecologic	Data collected by
Switzerland 	1. Source de l'Areuse	N 46° 54' 41" E 6° 32' 57" Z = 793 m asl  Saint-Sulpice (Neuchâtel)	300/4,900/55,500  A dam was built to derivate up to 5 m <sup>3</sup> /s to produce electricity. Spring also enables drinking water supply of two villages.	<b>S, H, E, A</b> <i>The Areuse spring is the most important spring in the canton of Neuchâtel: since the 15th century, it has provided uninterrupted hydraulic power for all the factories in its vicinity. The vauclosian type spring has formed a cirque and flow out of the Jurassic limestones in a concentrated and spectacular way. The lake at the spring flows over the dam forming an impressive waterfall during high-water conditions. The Areuse spring is of outstanding international scientific interest for its contribution to our understanding of the Jura karst. The use of natural and artificial tracers in the Areuse spring basin has provided crucial data for a better understanding of the complex hydrological processes. Also the Areuse catchment was a milestone in the development of numerical modelling of groundwater flow. Since 2013 the discovery of an extensive cave system in the Grotte des Rutelins gives access to the groundwater feeding the spring. The presence of crustaceans and algae, which form a significant biological reserve, is particularly noteworthy.</i>	Romane Herrisé, Pierre-Yves Jeannin
	2. Source de l'Orbe	N 46° 29' 31" E 6° 03' 33" (upper spring) Z = 1058 m asl  N 46° 41' 53", E 6° 20' 44" (main resurgence) Z = 776 m asl  Orbe (Vaud)	1,200/6,000/62,000  Part of water is used to produce electricity	<b>H, A, E, Ec, S</b> <i>The spring (resurgence) of the Orbe, is the most important karstic spring in Swtzerland and Jura Mountain range. The spring's catchment area covers the entire Vallée de Joux (approx. 200 km<sup>2</sup>). It is large transboundary system, as the source of the upper Orbe is located in France, in the Lac des Rousses. Water of Upper Orbe sunk in several ponors and then flows as an underground river through Vallorbe cave system towards main resurgence. The system was firstly described by H.-B. de Saussure between 1779 and 1799. One of the first groundwater tracing experiment (1893) proving the connexion hypothesized by De Saussure 100 years before. The diving speleologists explored about 6 km of cave tunnels including gigantic siphons. Remarkable presence of troglobites, including the beetle Trichaphaenops sollaudi sermetti and the isopod Proasellus valdensis, The region represents greatest source of attraction since 1974. The Orbe spring and cave welcomes 60,000 visitors a year. The catchment area is part of the Vaud Jura Regional Nature Park and is on the list of national geosites.</i>	Amendine Perret, Romane Herrisé, Pierre-Yves Jeannin

**MIKAS - Source de l'Areuse**



*Areuse spring in high-water conditions*



*Fault over the Source de l'Areuse, the vaclusian type spring (courtesy of Z. Stevanović)*



*One of the sumps (left) and one cave passage (right) in the Rutelins cave*

### **MIKAS - Source de l'Orbe**



*Picture of the Orbe resurgence. © Rémy Wenger, ISSKA.*



*The Orbe resurgence; the end of the river's underground journey. © Rémy Wenger, ISSKA.*



*The subterranean Orbe river. © Rémy Wenger, ISSKA.*