

**INFLUENCE OF KARST SPRINGS ON THE WATER QUALITY AND
EUTROPHIC TRENDS OF THE ALTMÜHL RIVER IN SOUTH FRANCONIA
(GERMANY)**

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The paper describes the hydrological study the scope of which is to evaluate the influence of the karstic input to water quality of the Altmühl river. During the study the sampling of water referring to chemical load and selected ecological survey of the Altmühl river itself and all karst springs and minor tributaries were accomplished.

Key words: influence, karst springs, Altmühl river, water quality.

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**ВПЛИВ КАРСТОВИХ ДЖЕРЕЛ НА ЯКІСТЬ ВОДИ ТА ЕВТРОФІ ТЕНДЕНЦІЇ
РІКИ АЛЬТМЮЛЬ У ПІВДЕННІЙ ФРАНКОНІЇ (НІМЕЧЧИНА)**

Представлені результати гідрологічного дослідження, результатом якого стала оцінка впливу карстових джерел на якісні характеристики ріки Альтмюль. Під час досліджень вивчався хімічний склад, екологічні властивості як ріки Альтмюль, так і всіх карстових джерел, а також незначних притоків.

Ключові слова: вплив, карстові джерела, ріка Альтмюль, якість води.

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**ВЛИЯНИЕ КАРСТОВЫХ РОДНИКОВ НА КАЧЕСТВО ВОДЫ
И ЕВТРОФНЫЕ ТЕНДЕНЦИИ РЕКИ АЛЬТМЮЛЬ В ЮЖНОЙ ФРАНКОНИИ (ГЕРМАНИЯ)**

Представлены результаты гидрологического исследования, результатом которого стала оценка влияния карстовых родников на качественные характеристики реки Альтмюль. Во время исследований изучался химический состав, экологические свойства как реки Альтмюль, так и всех карстовых родников, а также незначительных притоков.

Ключевые слова: влияние, карстовые родники, река Альтмюль, качество воды.

The Altmühl river with a catchment area of 3258 Km² and a length of 220 Km, located in Bavaria region in South of Franconia is a northern tributary of die Danube.

The river acquires its nutrient load from a catchment which is under intense land use with different hydrological and geological conditions turning the region of South Franconian into a fragile landscape in terms of water quality. Within the karstic area the river shows a low incline caused by landscape and river development during Tertiary and Quaternary times. Additionally the regulation of the Altmühl by water mills and weirs caused a further reduction of the stream velocity being one of the slowest rivers in Germany.

Official water quality maps of the Bavarian Water Management designate the Altmühl river as moderate to critical polluted water. A different supply of water and chemical load to the Altmühl river with a possible water purification is observed at several karst springs and minor tributaries.

Especially during spring and summer a dramatic increase of water temperature produced by the intense solar radiation occurred. Often a considerable algal bloom and a fish decease due to oxygen deficiency also occur.

Scope of the hydrological study is to evaluate the influence of the karstic input to water quality of the Altmühl river and show how the behaviour of the Altmühl (two szenarios), with flood-water on the one hand and in base-flow on the other, therefore we apply a hydrological model called "ATV-Gewässergütemodell" of National Office of

Environmental. Along a thirty kilometer range discharge measurements, sampling of water referring to chemical load (e.g. chloride, nitrate, phosphate) and selected ecological survey of the Altmühl river itself and all karst springs and minor tributaries were accomplished.

Main focus is whether the karst of the South Franconian Alb exhibits an ability to improve water quality of the Altmühl river. If yes, at which time the influence of karst is most effective.

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