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## Extended Abstracts

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**General hydrogeological problems**

**6.2**  
**Hydrogeology of karst**

title: **Management of karst water of Albania**

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Albania is situated in the southwester part of Balkan Peninsula, with a territory of 28,749 km<sup>2</sup>.

Karst rocks outcrop on about 25% of the territory of the country and on about 50% of the territory the karst rocks are covered by other sedimentary non karstic rocks. Karst aquifer is most important aquifer of Albania. Carbonate karst rocks form 25 significant hydrogeological structures; there are also two structures of sulphate rocks. In Albania, karst is more developed in wide and relatively plain carbonate structures consisting of Triassic and Cretaceous limestone formations, and is less developed in narrow longish carbonate structures.

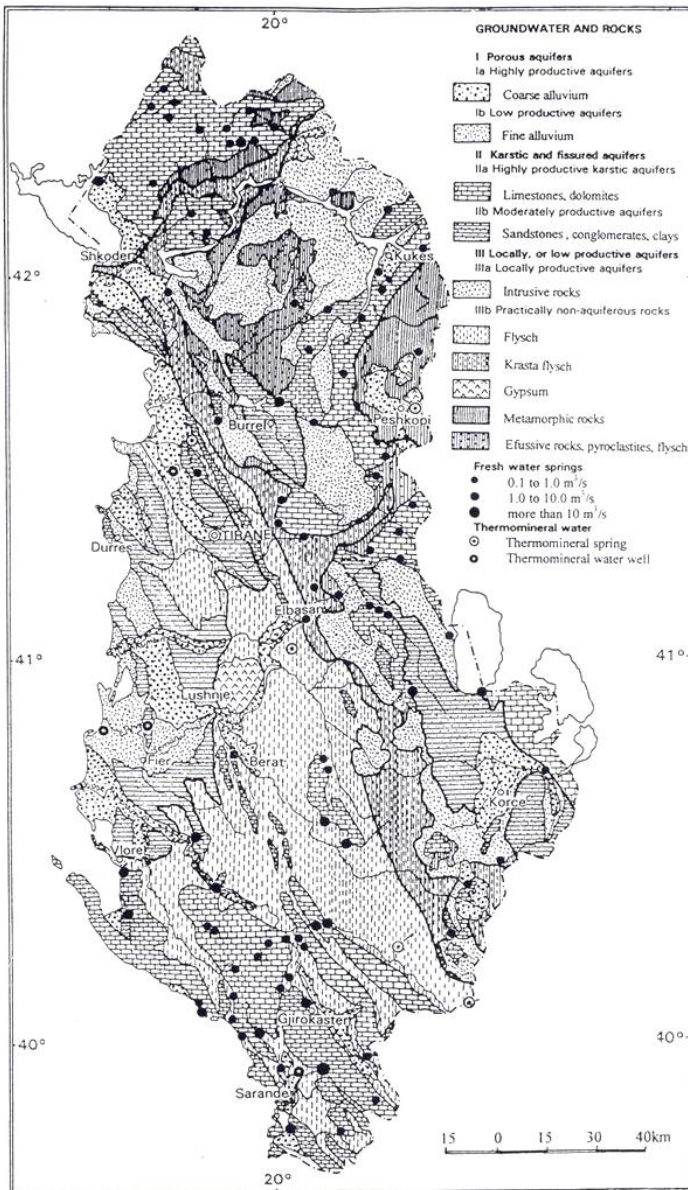
As karstified rocks in Albania mostly form high elevation massifs extending down to the valleys, high hydraulic gradients tends to drive linear conduits forming generally karst networks quite different from the fractured pattern. The surface hydrography practically is missing or is poorly developed, but in contrary the subsurface hydrography is very active and is finalised with formation of big karst springs. Disappearing and reappearing rivers in karst could be observed in karst areas of Albania. On special hydraulic situations, often is observed the "karst piracy"; a karstic area having lower hydraulic head is recharged by another one having higher hydraulic head.

At a regional scale the permeability of karstic rocks is very high but at a local scale it could be even not relevant. The results of many groundwater wells testify that the hydraulic parameters of karst rocks vary at very large limits. Usually efficiency wells could be located close to springs or at least at valley bottom sites.

The efficient infiltration, which represents the part of the precipitation recharging the karstic groundwater, consists about 50% of the mean yearly precipitation. It is varying from about 500–600 mm/year in southeaster Albania to about 3000 mm/year in North Albanian Alps zone. In Albania about 110 karst springs have mean yearly discharge bigger than 100 l/s, and among them 17 have mean yearly discharge more than 1000 l/s, while the mean discharge of Blue Eye Spring, the biggest Albania's spring, is 18.5 m<sup>3</sup>/s.

Karstic water has significant differences in physic-chemical characteristics. The main factors controlling the formation of chemical composition of karst water are the lithology of the karst rocks, the solution of carbonates and the calcite and dolomite saturation conditions. Most of karst springs are undersaturated with respect to calcite and dolomite, but being much more undersaturated with respect to dolomite than with respect to calcite.

Environmental isotope and hydrochemical studies are applied in order to better understand the karst water circulation patterns. Applying these methods is established that Prespa Lake intensively recharges the Ohrid Lake through the Mali Thate karstic massive; with the same methods have been established that Poçemi karst spring at about 80% is replenished by Vjosa River, as well as that Blue Eye Spring at about 35% is replenished by the Drinos River gravelly aquifer. The average total karst water resources of Albania consist about 227 m<sup>3</sup>/s.



**Figure 1.** Simplified Hydrogeological Map of Albania.

## REFERENCES

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