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Extended Abstracts

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title: **Groundwater quality in the coastal aquifer system of Korinthos Prefecture (Greece)**

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GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS

The study area is situated in the northern coastal part of Korinthos Prefecture and the geological structure of it, is presented in Fig. 1. An aquifer system occurs in the recent basin deposits, which consists of unconsolidated material, namely sands, pebbles, breccias and fine clay to silty sand sediments, characterized by a high degree of heterogeneity. Recent and older fluvio – torrential deposits originating from the streams-rivers that flow across the study area disrupt the lateral continuity of these sediments, the thickness of which varies from 30 m to 70 m and exceeds 100 m along the deposits of the river Asopos (Koumantakis et al.,1999a).

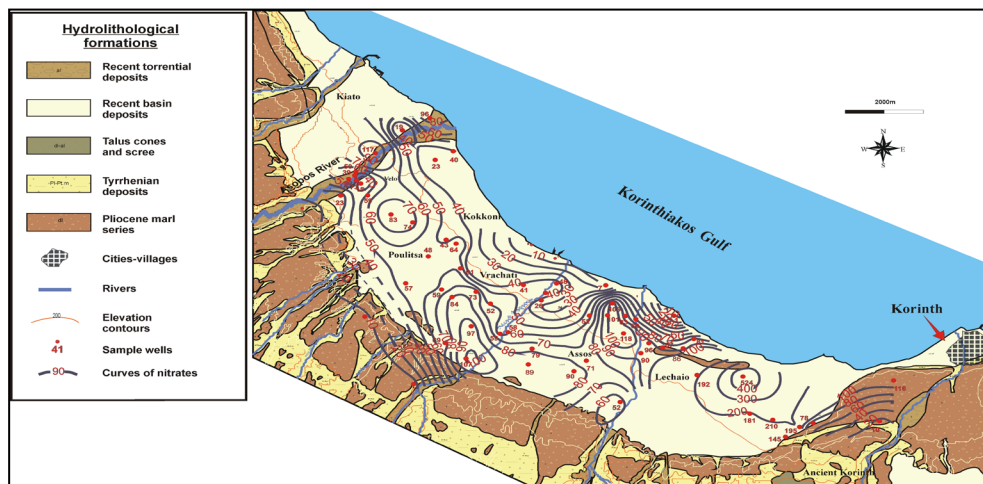


Figure1. Hydrogeological map of study area.

From a hydrogeological point of view the system consists of an unconfined phreatic aquifer superimposed on successive confined or semi-confined aquifers. Within the secluded thyrrhenian conglomerate blocks overhanging aquifers of low potential may develop. Despite the documented heterogeneities however, it is suggested that on a regional scale a uniform aquifer may be considered on the basis that observed lithological anomalies are not extensive and most groundwater level measurements are indicative of a single piezometric surface. Mean hydraulic gradient as measured from the compiled piezometric map is $i = 0.006$. Transmissivity and storage coefficient values vary between $T = 2 \times 10^{-1} - 9 \times 10^2 \text{ m}^2 \text{ d}^{-1}$ and $S = 0.2 - 5 \times 10^{-2}$ respectively in the finer deposits (Koumantakis et al., 1999; Hionidi et al., 2001).

HYDROCHEMISTRY

Sixty two groundwater samples collected from boreholes and dug wells in two periods in November 2008 and in May 2009, were analyzed for major ions, nitrites and ammonia.

The average pH of groundwater is 7.4, thus indicating a slightly alkaline type. Electrical conductivity varies between 1000–6800 $\mu\text{S}/\text{cm}$ and this is probably indicative of saline intrusion along the coastal areas of the studied system. The average value of TDS is between 750–4500 mg/l. The highest conductivity and TDS values are related to seawater intrusion as a result of the intensified exploitation (Panagopoulos et al., 2001). Chloride concentration shows increase values because of the intrusion. Nitrates are noticeable throughout the entire region due to the



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