

IAH network on “Coastal aquifer dynamics and coastal zone management” QUESTIONNAIRE

IAH national committees, IAH members and non members from all around the world involved in SWI and SGD research and management are kindly asked to fill in the questionnaire in this page with as many details as possible.

A world database will be set up and made available, with basic coastal aquifer main characteristics.

We expect to gather standard and comparable information on the knowledge level and hopefully the state of the art of the research on SWI and SGD, and coastal aquifer management methods adopted around the world

- | | | |
|-----|---|---|
| 1) | Location of aquifer (country, more specific location): | Sfax, South East of Tunisia |
| 2) | Reported by: | R. Trabelsi and M. Zairi |
| 3) | Type of medium (karst, porous, fracture) | Porous medium |
| 4) | Type of aquifer (phreatic or confined) | Phreatic |
| 5) | Main lithology - (e.g. gravel, sand and clay) | The shallow aquifer system is located in the Mio-Pliocene layers formed by sand and clay and with several permeable zones separated by less-permeable beds. |
| 6) | Hydrochemistry: fresh or saline | Freshwater and seawater |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Lateral from sea |
| 8) | Aquifer geometry: hydraulic characteristics | Thickness of the aquifer is than 75 m |
| 9) | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually) | The average annual precipitation is around 230 mm.
The annual pumping flux increased from 36.5 Mm ³ in 2000 to 56.6 Mm ³ in 2005 through 9547 pumping wells |
| 10) | Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m | Water level (-10) to 30 m in the coastal zone and may reach 100 m inland; aquifer depth 50 to 200 m |
| 11) | Major chemistry (anions - ?; Cations - ?): | Major elements (Na, Ca, Mg, HCO ₃ , Cl, SO ₄); minor elements (K, NO ₃) |
| 12) | Major salinity sources: | Existence of various salinization processes such as: dissolution of gypsum and calcite, intensive agricultural practices that produce effluents that infiltrate to the saturated zone and seawater intrusion |
| 13) | Population: | In this area population is about 500000 and groundwater constitutes the main water resource for agriculture development, industry and drinking water |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults, ... | No special features are observed expected local leakage with Sebkhah (salt lake) |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | EC, T° and ph were measured in situ, laboratory chemical analyses
Water level measurements with more than 180 wells and 80 piezometers |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | A numerical modeling is undergoing |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal) | The piezometric monitoring network is monthly supervised by the local water management authorities since 1983, with a total number of piezometers increasing from 39 in 2002 to 85 in 2005.
The EC and Nitrate concentration in groundwater are monitored monthly on 53 pumping wells. |
| 18) | Management methods: | Absence of integrated water resources management plan |
| 19) | Aquifer management actions: | The aquifer area with notable decreasing GW level is prohibited for new pumping well digging |
| 20) | Identification of existing or potential problems: | Over-exploitation of groundwater create serious problems: intense mineralization of groundwater, land desertification, degeneracy of vegetation, deterioration of the ecosystem |
| 21) | Annexes: | |
| 22) | Observations: | |