

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): | Baixa Tordera, BARCELONA, NE SPAIN |
| 2) | Reported by: | E. FALGÀS ¹ , J. LEDO, T. TEIXIDÓ, A. GABÀS, F. RIBERA, C. ARANGO, J. L. PLATA, F. M. RUBIO, J. A. PEÑA, A. MARTÍ and A. MARCUELLO |
| 3) | Type of medium (karst, porous, fracture) | Porous |
| 4) | Type of aquifer (phreatic or confined) | Multi-layered: upper aquifer is phreatic, deep aquifer is confined. They are separated by a clay aquitard |
| 5) | Main lithology - (e.g. gravel, sand and clay) | Multi-layered: upper aquifer: medium and coarse gravels and 6-20 m thick; aquitard: zone of low permeability formed by clay, silt and and fine sands, the maximum thickness is 25 m; deep aquifer: medium and coarse gravels |
| 6) | Hydrochemistry: fresh or saline | Fresh and Saline (especially in deep aquifer) |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Seawater (Lateral) intrusion in the Baixada Tordera system is localized at the deep aquifer |
| 8) | Aquifer geometry: hydraulic characteristics | |
| 9) | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually) | |
| 10) | Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m | |
| 11) | Major chemistry (anions - ?; Cations - ?): | |
| 12) | Major salinity sources: | Seawater intrusion close to the coast |
| 13) | Population: | The Baixada Tordera aquifer is located in the NE Mediterranean coast of Spain and is considered as a strategic aquifer for planning the management of regional water resources. Since 1980s, this area has been the subject of an important tourist and industrial development that has incremented the water demand |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,... | |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | VES, Electrical Resistivity Tomography (ERT), audiomagnetotellurics (CSAMT), AMT and seismic |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal) | Geological, hydrogeological and geophysical data has been acquired since late 1960s and in particular five VES field surveys were undertaken in the years 1969, 1994, 1995, 1996 and 2002; The AMT survey consisted of 40 stations located throughout the western deltaic zone during 2004 and 2005 |
| 18) | Management methods: | |
| 19) | Aquifer management actions: | |
| 20) | Identification of existing or potential problems: | This aquifer plays a strategic role in the development of tourism and industry in this area, but the excessive withdrawals of groundwater have exacerbated the risks to the environment and favored the seawater intrusion |
| 21) | Annexes: | |
| 22) | Observations: | |