

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

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| 1) | Location of aquifer (country, more specific location): | Emborê Aquifer, Rio de Janeiro State, Brazil |
| 2) | Reported by: | Z. Chrispim, M.G. Alves, M.T. Condeso de Melo and G.C. Silva Jr. |
| 3) | Type of medium (karst, porous, fracture) | Porous |
| 4) | Type of aquifer (phreatic or confined) | From the hydrogeological point of view, the Emborê Formation is a multilayer confined aquifer that underlies Quaternary fluvial-deltaic and alluvial-lacustrine aquifer formations |
| 5) | Main lithology - (e.g. gravel, sand and clay) | The Emborê Formation is composed of poorly calibrated sandstone deposits with conglomeratic and fossiliferous bands, sandy coquinas, calcarenites and organic sandy clay with traces of pyrite |
| 6) | Hydrochemistry: fresh or saline | Fresh and saline |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Saline intrusion and upconing |
| 8) | Aquifer geometry: hydraulic characteristics | Thicknesses may vary from 100 to 2,000 m thick;
Average transmissivity values for the aquifer vary from 150 to 250 m ² /day |
| 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 | Aquifer depth : 200-300 m
Water level : -10 m to +2 m, relative to the topography |
| 11) | Major chemistry (anions - ?; Cations - ?): | Enrichment of Na,Ca and Cl |
| 12) | Major salinity sources: | Mixing processes with seawater (either modern or old seawater trapped in the sediments) |
| 13) | Population: | The Emborê aquifer is the most important aquifer in Rio de Janeiro State and the main source of freshwater for the region |
| 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), | pH, temperature, electrical conductivity
Hydrochemical (major and some minor elements) and isotopic (2H 18O) study |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | Chemical and isotopic methods |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal) | 28 groundwater samples were collected for major and some minor elements analysis and isotopic composition determination (2H and 18O). Field parameters (pH, temperature, electrical conductivity) were also determined with this samples |
| 18) | Management methods: | |
| 19) | Aquifer management actions: | |
| 20) | Identification of existing or potential problems: | The increasing demand for groundwater resources in the last decade has increased the risk of aquifers' overexploitation and salinization |
| 21) | Annexes: | |
| 22) | Observations: | |