

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): | Cape Verde Santiago's island |
| 2) | Reported by: | Fernando A. M. Santos, Rui M. D. Goncalves, Patricia Represas and Eugénio P. Almeida |
| 3) | Type of medium (karst, porous, fracture) | Porous and altered |
| 4) | Type of aquifer (phreatic or confined) | Three main hydrogeological units have been identified at Santiago:
<i>Base unit</i> (the oldest one), <i>Mead unit</i> (the principal aquifer) and <i>Recent unit</i> |
| 5) | Main lithology - (e.g. gravel, sand and clay) | <i>Base unit</i> : is a Palaeogene and inferior-mid Miocene complex, with compact low permeability formations; <i>Mead unit</i> , the most extended formation and thick eruptive (basaltic, pillow lavas and pyroclastic) and <i>Recent unit</i> , with some pyroclastic cones and high permeability |
| 6) | Hydrochemistry: fresh or saline | Brackish and Saline, minimally freshwater |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Lateral from sea |
| 8) | Aquifer geometry: hydraulic characteristics | <i>Base unit</i> : Transmissivity is small, from 0,2 to 5x10-5 m2/s
<i>Mead unit</i> : Transmissivity ranging from 10-1 to 2x10-2 m2/s
<i>Recent unit</i> : Transmissivity of 10-1 to 2x10-2 m2/s, |
| 9) | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually) | The precipitation mean annual value is 323 mm
<i>Base unit</i> : maximum extraction of 5 to 7 m ³ /h
<i>Mead unit</i> : mean extraction of 35-40 m ³ /h
<i>Recent unit</i> : mean extractions of 40 m ³ /h |
| 10) | Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m | water level between 10-20 m-aquifer depth between 40-50 m |
| 11) | Major chemistry (anions - ?; Cations - ?): | Mg ²⁺ , Cl ⁻ , Na ⁺ , HCO ₃ ⁻ , Ca ²⁺ and SO ₄ ²⁻ |
| 12) | Major salinity sources: | Seawater intrusion, salt dissolution, marine aerosols and anthropogenic contamination |
| 13) | Population: | Is the largest island of Cape Verde, its most important agricultural centre and home to half the nation's population (272,312) |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,... | The exploited aquifers are in the creeks. The end part of the aquifers is strongly contaminated by salt water. The rest of the aquifer is in general in good conditions but in risk |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | Geochemical, Isotopic data (from wells and boreholes) and several geophysical surveys (TDEM) |
| 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) | Geochemical and isotopic groundwater data were collected from 130 points at Santiago; TDEM soundings were done at four study areas and the measures were taken from 2005 to 2006, with annual repetitions at some points, until 2009 |
| 18) | Management methods: | |
| 19) | Aquifer management actions: | |
| 20) | Identification of existing or potential problems: | Overexploitation of coastal aquifers and pollution are among the main problems related to groundwater resources assessment and management in Santiago Island (Cabo Verde) |
| 21) | Annexes: | |
| 22) | Observations: | |