

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): | Italy,Sardinia NW, Asinara Gulf, Porto Torres Plain |
| 2) | Reported by: | Giorgio GHIGLIERI |
| 3) | Type of medium (karst, porous, fracture) | karst, fracture |
| 4) | Type of aquifer (phreatic or confined) | multi-layered aquifer system, confined or semiconfined |
| 5) | Main lithology - (e.g. gravel, sand and clay) | Miocene Hydrogeologic Unit: marl and limestone aquifer system; conglomerates |
| 6) | Hydrochemistry: fresh or saline | Fresh to saline |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | lateral from sea - upconing |
| 8) | Aquifer geometry: hydraulic characteristics | K=1x10 ⁻⁴ m/s |
| 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 | water level 1-30 m; aquifer depth 10-300m |
| 11) | Major chemistry (anions - ?; Cations - ?): | Ca-HCO ₃ and Na-Cl. 5,000 and 10,000 µS/cm |
| 12) | Major salinity sources: | Sea Water. sodium and chloride input. Encroachment of seawater, accompanied by cation exchange reactions. Both mineralization and salinization processes are involved, often together |
| 13) | Population: | |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,... | NNW oriented half-graben |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | piezometric level and an in situ analysis
pH, EC and temperature; aerial photo interpretation, geophysical prospecting (SEV); hydrogeochemic; isotopes |
| 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) | Water level measurement, water collection for chemical analysis |
| 18) | Management methods: | |
| 19) | Aquifer management actions: | |
| 20) | Identification of existing or potential problems: | high-medium aquifer vulnerability; Nitrate pollution; overexploitation (agricultural uses, but also for industrial and civil ones) |
| 21) | Annexes: | GHIGLIERI, G., CARLETTI A. PITTALIS D. (2012) Analysis of salinization processes in the coastal carbonate aquifer of Porto Torres (NW Sardinia, Italy). J. Hydrol. Vol. 432-433 pp 43-51 (2012), doi:10.1016/j.jhydrol.2012.02.016/ISSN 0022-1694 |
| 22) | Observations: | |