

## 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):  | West side of the Gulf of Cagliari, Southern Sardinia, Italy   |
| 2 )  | Reported by:  | Giovanni BARROCU  |
| 3 )  | Type of medium (karst, porous, fracture)  | Porous medium   |
| 4 )  | Type of aquifer (phreatic or confined)  | Pleistocene to Olocene aquifer system consisting of a phreatic aquifer and 5 semiconfined levels  |
| 5 )  | Main lithology - (e.g. gravel, sand and clay)   | gravel, sand, and clay  |
| 6 )  | Hydrochemistry: fresh or saline   | Fresh to brackish   |
| 7 )  | Saltwater intrusion: lateral from sea or lakes - upconing   | lateral intrusion from the sea, salt pans, and lagoon; upconing   |
| 8 )  | Aquifer geometry: hydraulic characteristics   | Phreatic aquifer: $K=1.82 \times 10$ m/d - semiconfined aquifers: $K=5.87 \times 10^{-2}$ m/d   |
| 9 )  | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)  | 4 MCMA  |
| 10 ) | Depth of aquifer (water level and bottom) - water level 5- 30 m - aquifer depth - 50-200 m  | Water level: 5-30 m; aquifer depth: 10-200m   |
| 11 ) | Major chemistry (anions - ?; Cations - ?):  | Na, Ca, MG, Cl, SO4   |
| 12 ) | Major salinity sources:   | Sea, salt pans, lagoon, and deep salt waters  |
| 13 ) | Population:   | Industrial area and some farming  |
| 14 ) | Aquifer status: special features - e.g. thermal springs, major faults,...   | Lateral recharge from the fractured crystalline western Graben Horst  |
| 15 ) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),                                       | pH, T°, EC, TDM, seismics   |
| 16 ) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | 3D numerical modeling   |
| 17 ) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)                                    | Water level, pH, T°, EC measurements, water sampling, and chemical analysis carried out montly in 1992-94, and 1998. Sporadic later measurements.             |
| 18 ) | Management methods:   | Drilled well development  |
| 19 ) | Aquifer management actions:   |   |
| 20 ) | Identification of existing or potential problems:   | high-medium aquifer vulnerability; Nitrate pollution; overexploitation (agricultural, industrial, and civil uses)   |
| 21 ) | Annexes:  | I.P. survey in a coastal area west of Cagliari (Southern Sardinia)”. Proceedings of the 13th Saltwater Intrusion Meeting, Cagliari, Ed. G. Barrocu – 235-240. |
| 22 ) | Observations:   | Monitoring network of 79 surface excavated wells and 66 deep drilled wells established in 1992. Surveying carried out only for research projects.             |