

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):	Motril-Salobreña aquifer, Granada, South Eastern Spain
2)	Reported by:	J.P. Sánchez-Úbeda, M.L. Calvache, C. Duque, M. López Chicano
3)	Type of medium (karst, porous, fracture)	Porous
4)	Type of aquifer (phreatic or confined)	Phreatic aquifer (42 km ²)
5)	Main lithology - (e.g. gravel, sand and clay)	The aquifer is composed by detrital materials showing a wide variety of grain size: gravels, sands, silts and clays in stratified beds
6)	Hydrochemistry: fresh or saline	Fresh and saline (the zones of the aquifer that we detect as affected by seawater are more than 150 meters deep)
7)	Saltwater intrusion: lateral from sea or lakes - upconing	Lateral seawater intrusion
8)	Aquifer geometry: hydraulic characteristics	8 km North-South by 14 km East-West by 75 m of average depth
9)	Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)	Storage : 200 MCM, Available annual storage : 60 MCMA Pumping : 7 MCMA (highly variable)
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 - ?):	HCO ₃ ⁻ Ca ²⁺ Na ⁺
12)	Major salinity sources:	Seawater intrusion
13)	Population:	The population in this area is rapidly expanding due to tourism related to urban development
14)	Aquifer status: special features - e.g. thermal springs, major faults,...	"Gambullon" Spring : 5 MCMA Lateral Input from Karstic aquifer (Northern Boundary) : 6 MCMA
15)	Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),	Vertical Electric Soundings (VES); Time Domain Electromagnetic Soundings (TDEM); T° and EC measurements, water level, drilling
16)	Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD)	3D density-dependent model, transport model Isotops, datation, pumping tests, tidal methods
17)	Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)	From November 2001 to now, monthly measurements have been made of groundwater EC and T°, water level and general hydrochemistry analysis
18)	Management methods:	Hydrological features control by hourly measuring with dataloggers
19)	Aquifer management actions:	Control of inputs-outputs and maintainance of water requeriments
20)	Identification of existing or potential problems:	The Motril-Salobreña aquifer maintained exceptional water quality and quantity. This situation began to change at the start of this century with a series of circumstances: effects of global climate change, human pressure and overexploitation that favor the groundwater contamination and saltwater intrusion.
21)	Annexes:	***This aquifer shows artesian overflowing in the discharge zone (about 100 m from the shoreline), producing in some cases small wetlands, and boreholes with large artesian flows.
22)	Observations:	