

## 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):	Jericho area, West Bank, Palestine
2)	Reported by:	Ammar Da'as and Kristine Walraevens
3)	Type of medium (karst, porous, fracture)	Porous and Fracture
4)	Type of aquifer (phreatic or confined)	The Quaternary Aquifer System in the study area could be divided into an upper alluvial layer and a lower low-permeable Lisan layer, which crops out in the eastern part of the study area
5)	Main lithology - (e.g. gravel, sand and clay)	Upper Alluvial Aquifer: mainly composed of lenticular pervious beds of gravels and sands and lowly-pervious beds of calcareous clays and marl Lower Pleistocene Lisan Formation: mainly composed of thinly laminated marl with gypsum, conglomerate, chalk, thin limestone, halite, poorly sorted gravel and pebbles
6)	Hydrochemistry: fresh or saline	Fresh, Brackish and Brackish-salt
7)	Saltwater intrusion: lateral from sea or lakes - upconing	
8)	Aquifer geometry: hydraulic characteristics	Upper Alluvial Aquifer: thickness varying from 40 to 150 m Lower Pleistocene Lisan Formation: thickness over 200 m
9)	Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)	The climate in this area is arid where evaporation (2120 mm/y) exceeds precipitation (166 mm/y) during the entire year. 26.5 Mm <sup>3</sup> /year (4.5 Mm <sup>3</sup> /y from alluvial wells and 22.0 Mm <sup>3</sup> /year from springs) is used for irrigation in the study area
10)	Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m	
11)	Major chemistry (anions - ?; Cations - ?):	Na <sup>+</sup> , Mg <sup>2+</sup> , Cl <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> and NO <sub>3</sub> <sup>-</sup>
12)	Major salinity sources:	The probable sources of salinity are: mixing with saline end members; dissolution of the minerals of the Lisan Formation (calcite, dolomite, gypsum and halite); and to some extent, agricultural effluent pollution
13)	Population:	This is a fertile productive region, which constitutes 52% of the total irrigated land in the West Bank. It is described as the food basket of Palestine where citrus, bananas, date palms, vegetables and field crops are grown all over the year
14)	Aquifer status: special features - e.g. thermal springs, major faults,...	The Jordan Rift fault forms together with other smaller faults important channels for groundwater movement from deep to shallow aquifers feeding the main springs in the area
15)	Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),	Hydrochemical investigation, time Domain Electromagnetic Method (TDEM)
16)	Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD)	Water type classification by Stuyfzand (1986); Piper and Durov diagrams; saturation index; chemical composition and ion ratios, scatter diagrams and graphs of time-series for chloride and nitrate
17)	Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)	
18)	Management methods:	
19)	Aquifer management actions:	
20)	Identification of existing or potential problems:	Intensive agricultural activities of the last years favored the contamination of groundwater and lower quality
21)	Annexes:	
22)	Observations:	Good quality water is associated with lithology of dominantly coarse grained sediments of gravel and sand. Low quality water is associated with lithology which is dominantly of very fine grained sediments of marl, clay and gypsum