

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):	Island of Sylt, Northern Germany
2)	Reported by:	Kai Radmann, Sören Kathmann, Caroline Schlegel and Johannes Michaelsen
3)	Type of medium (karst, porous, fracture)	Porous
4)	Type of aquifer (phreatic or confined)	Phreatic
5)	Main lithology - (e.g. gravel, sand and clay)	The aquifer is formed by sand and gravel of the Tertiary and Quaternary age
6)	Hydrochemistry: fresh or saline	Fresh and saline
7)	Saltwater intrusion: lateral from sea or lakes - upconing	Saltwater intrusion from the North Sea, which underlies the freshwater lens
8)	Aquifer geometry: hydraulic characteristics	well permeable aquifer with conductivity values between $1,0 \cdot 10^{-4}$ to $1,0 \cdot 10^{-3}$ m/s
9)	Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)	The total pumpage amounts to more than $2,5 \text{ Mm}^3/\text{year}$ The Average precipitation is $745,3 \text{ mm/y}$
10)	Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m	water level from 0,0 up to 2,5 m above sea level, aquifer depth from 5 to 50 m below surface
11)	Major chemistry (anions - ?; Cations - ?):	Cations: Ca, Mg, Na, K, NH_4 ; Anions: Cl, NO_3 , SO_4 , HCO_3
12)	Major salinity sources:	The increasing groundwater extraction of this last 20 years has deteriorated the quality of the freshwater encouraging salt water intrusion
13)	Population:	The island of Sylt is a popular destination for fine food and water sports and the Tourism, in the last years, has contributed to the increase of water demand
14)	Aquifer status: special features - e.g. thermal springs, major faults,...	layered aquifer system with silt and sand in alternate strata
15)	Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),	EC, observation wells for water level measurements and hydrochemical samples
16)	Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD)	3D groundwater model
17)	Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)	water level measurements, EC (annual)
18)	Management methods:	groundwater modelling
19)	Aquifer management actions:	Sustainable management of the different utilizations of the aquifer
20)	Identification of existing or potential problems:	The island of Sylt faces the problem of a increasing drinking water demand and limited water resource
21)	Annexes:	
22)	Observations:	appr. 50 observation wells in different depth to represent different layers