

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): | KNOKKE, IN THE EASTERN COASTAL OF BELGIUM |
| 2) | Reported by: | Kristine Walraevens |
| 3) | Type of medium (karst, porous, fracture) | Porous |
| 4) | Type of aquifer (phreatic or confined) | unconfined to semi-confined |
| 5) | Main lithology - (e.g. gravel, sand and clay) | The shallow groundwater reservoir is formed by silty fine and medium sand. Is bounded to the bottom by the heavy clay and, in the polders, at the surface by the polder clay. In the dune area and the beach, the latter is missing. |
| 6) | Hydrochemistry: fresh or saline | Fresh, salt and brackish groundwater |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Saltwater intrusion lateral: from the sea in the north, and from the polders in the south; in the polders, salt water from former Holocene transgressions has been preserved |
| 8) | Aquifer geometry: hydraulic characteristics | |
| 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 | Aquifer depth: around 27 m |
| 11) | Major chemistry (anions - ?; Cations - ?): | Na ⁺ , Ca ²⁺ , Cl ⁻ and HCO ₃ ⁻ |
| 12) | Major salinity sources: | Salt water intrusion |
| 13) | Population: | The population of Knokke counts about 30,000 people and in this region there are diverse economic and social activities including seaports, agriculture, tourism, recreation, housing and nature |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,... | Dune aquifer is main water resource of eastern coastal area |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | Geophysical (Electromagnetic and Electrical tomography) measurements, water level and chemical analyses of groundwater sampled from piezometers |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | Chemical Methods, Stuyfzand classification
Groundwater modelling (MODFLOW) |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal) | VES, electrical and electromagnetic profiling, electrical tomography, piezometer installation with geophysical well logging: resistivity profiles, water level measurements, water sampling and analysis |
| 18) | Management methods: | Continuous follow-up of EC in water from different pumping well(s) (units) |
| 19) | Aquifer management actions: | Restricting pumped amounts and careful monitoring of selected wells for EC |
| 20) | Identification of existing or potential problems: | In this area, saline groundwater occurs laterally and (in the polders) in depth, which may limit the groundwater exploitation potential |
| 21) | Annexes: | |
| 22) | Observations: | |