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

1)	Location of aquifer (country, more specific location):	Ubatuba in the northern part of Sao Paulo Bight (southeastern Brazil)
2)	Reported by:	Thomas Stieglitz , Makoto Taniguchi , Skyler Neylon
3)	Type of medium (karst, porous, fracture)	fractured aquifer
4)	Type of aquifer (phreatic or confined)	Phreatic
5)	Main lithology - (e.g. gravel, sand and clay)	pre-Cambrian basement rock of granitic and metamorphic origin
6)	Hydrochemistry: fresh or saline	interface fresh-saline
7)	Saltwater intrusion: lateral from sea or lakes - upconing	
8)	Aquifer geometry: hydraulic characteristics	The geomorphologic and hydrogeological characteristics of the area are controlled by the presence of fractured crystalline rocks. The granites and migmatites of the mountain chain Serra do Mar with altitudes up to 1000 m reach the shore of the study area and limit the extension of the drainage systems and of the Quaternary coastal plains
9)	Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)	SGD flux ranging between ca 21 cm/day and 4.3 cm/day
10)	Depth of aquifer (water level and bottom) - water level 5- 30 m - aquifer depth - 50-200 m	unknown
11)	Major chemistry (anions - ?; Cations - ?):	unknown
12)	Major salinity sources:	seawater
13)	Population:	village
14)	Aquifer status: special features - e.g. thermal springs, major faults,...	fractures; groundwater seeps on beach face
15)	Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),	In situ measurements of electrical properties of the ground: Conductivity sensor. Electrical properties of the ground were investigated with the surface-deployed, commercial electrode array Sting R1 IP/Swift (AGI).
16)	Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD)	seepage meters; resistivity survey
17)	Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)	ground electrical conductivity profiles.
18)	Management methods:	outside scope of study
19)	Aquifer management actions:	outside scope of study
20)	Identification of existing or potential problems:	none
21)	Annexes:	Taniguchi, M., Stieglitz, T., and Ishitobi, T. (2008) Temporal variability of water quality of submarine groundwater discharge in Ubatuba, Brazil. Estuarine, Coastal and Shelf Science , 76 (3). pp. 484-492. Cable, Jaye, Martin, Jonathan, and Stieglitz, Thomas (2005) In situ evaluation of nearshore porewater exchange rates in Flamengo Bay, Brazil. In: Interactions of Groundwater and Surface Water at the Land-Sea Margin. From: 2005 Salt Lake City Annual Meeting , 16-19 October 2005, Salt Lake City, USA.
22)	Observations:	SGD flux ranging indicates the presence of strong spatial heterogeneities and preferential SGD flow paths. temporal variations in conductivity distribution do not follow the 'classical' model that suggests that high conductivity (saline) is coincident with high tide, and visa versa. Instead of a tidally oscillating pattern the data suggest a gradual freshening of the porewater with time. This is likely a response to recent aquifer recharge by rain, and thus to increased hydraulic head landward.