

**IMPACT OF THE SUBMARINE WATER DISCHARGE ON THE HYDROLOGICAL  
HETEROGENEITY IN THE NORTH OF YUCATAN (SE, MEXICO).**

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**ABSTRACT**

In coastal regions where submarine discharges are the main freshwater inputs, the land-sea interaction is difficult to detect due to the non-punctual discharge in the sea zone. The submarine discharges as springs are a common feature in the coasts of Yucatan. These discharges must have an important effect on the water quality and hydrology of the coastal zone. In order to identify the spatial heterogeneity and the water quality in a karstic tropical coastal zone as Yucatan, four ports (Celestun, Sisal, Progreso and Dzilam) with different human and ground water influence were seasonally monitored (2000-2002) using an instrument for synoptic high resolution mapping of salinity, temperature, transparency and chlorophyll-a. The analysis of data were carried out using geostatistics models. Salinity and Chlorophyll-a are more spatially heterogeneous in Celestun and Sisal, while transparency and temperature were more homogeneous in these sites. The patterns at different scales (inter-sites and intra-sites) identify land-sea connections in areas with submarine discharges, and suggest areas with potential eutrophication problems.

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