Study of hydraulic connectivity to sea by discrimination of hydraulic and
hydromechanical effects induced by tidal loading in the coastal aquifer
system of La Plata river estuary

Mar Alcaraz (1,2), Jesus Carrera (3), Julian Cuello (2), Luis Guarracino (2,4), and Luis Vives (1)
(1) Large Plain Hydrology Institute, Argentina, (2) National Scientific and Technical Research Council, Argentina, (3)
Institute of Environmental Assessment and Water Research, Spain, (4) National University of La Plata, Argentina

Coastal aquifers in urban areas are submitted to high antrophic pressure. As a consequence, these overexploited
aquifers have salinization problems and the water resources is reduced.
The salinization could be avoided by locating the pumping wells in those sites where the aquifers are hydraulically
poorly connected to the sea.
The hydraulic connection can be analyzed by the hydraulic diffusivity obtained from piezometric heads observa-
tions in piezometers located next to the coastline. However, these head observation reflects not only the hydraulic
effects, but also hydromechanical effects induced by tidal loading, which could not represent the hydraulic con-
nection to the sea.
In this work we identify the perturbations induced by hydraulic and hydromechanical effects in order to define the
hydraulic connectivity to the sea in the coastal aquifer system of La Plata river estuary.