

## Why hasn't a seawater intrusion yet happened in the Kaluvelli-Pondicherry basin, Tamil Nadu, India?

Aude Vincent (1) and Sophie Violette (2)

(1) Département d'Hydrogéologie, UMR EMMAH, Université d'Avignon et des Pays de Vaucluse, Avignon, France  
(aude.vincent@univ-avignon.fr), (2) UMR.8538-Laboratoire de Géologie, ENS-PSL Research University & CNRS, Paris, France (sophie.violette@upmc.fr)

Worldwide, coastal aquifers are threatened by seawater intrusion. The threat is even bigger when those aquifers are overexploited, for example for irrigation, or when their recharge is low due to a semi-arid or arid climate. The sedimentary basin studied here presents both this characteristics, and water level records in the main aquifer can be as low as 30m below MSL. Though, no seawater intrusion has been monitored yet. To understand why, and because a good knowledge of a system hydrodynamic is a necessary step to an efficient water management strategy, hydrogeological numerical modelling of this multi-layered system has been conducted. Existing and acquired geological and hydrodynamic data have been implemented into a quasi-3D hydrogeological model performed with NEWSAM code. Recharge had been previously quantified through the intercomparison of hydrological models, based on surface flow field measurements. During the hydrogeological modelling, sensitivity tests on parameters, and on the nature of the boundary condition with the sea, led to the hypothesis of an offshore freshwater stock. Extension of this fresh groundwater stock has been calculated thanks to Groen approximation.