Assessment of Coastal Aquifer Properties and Depth-wise Water Quality with use of *State- of- art* Multi-electrode Imaging Techniques

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ABSTRACT

Even as the inland aquifers are suffering from the maladies of over exploitation of ground water by way of unscrupulous pumping, the coastal aquifers encounter the danger of sea water intrusion and saline water upcoming. Fresh water skimming is the only alternative in coastal zones to stabilize crop production. The aquifer properties and depth-wise water quality need to be assessed to harvest the shallow depth fresh water in coastal sands. Using the multi-electrode imaging survey, layer-wise 2D- resistivity images were obtained upto a depth of 12m for 24 locations of Bapatla coastal area. Based on the image data, for all the locations, depth-wise groundwater quality assessed using the laboratory relationship ($Y = 25.624\ X^{-0.9448}$, where X is the salinity of groundwater in dS/m and Y is the resistivity of water sample in sands in ohms-m) developed. For agricultural productivity, one can tap the existing shallow depth fresh water or marginal waters only without the upconing of saline waters for which, suitable extraction structures such as improved skimming techniques or pumping strategy are to be planned.

Key words : Multi-electrode imaging, Resistivity, Salinity