

GEOSTATISTICAL STUDY OF THE SALINIZATION RISK AT MEXILHOEIRA GRANDE – PORTIMÃO AQUIFER (PORTUGAL)

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ABSTRACT

The Mexilhoeira Grande – Portimão aquifer system, it is located at the south of Portugal, at Algarve region. In the last decades this aquifer was strongly affected by intense exploitation causing the appearance of saltwater intrusion phenomena.

The need to create capable tools for the evaluation of salinization was felt. Therefore, based in hydrogeological and physic-chemical parameters of the Mexilhoeira Grande – Portimão Aquifer, geostatistical tools were used to stochastically characterize the system.

Indicator kriging applied to the physic-chemical data allowed creating probability risk maps, of a previous selected threshold value be exceeded. This way was possible to obtain maps of the salinization risk.

In the temporal domain, piezometric levels and chloride content data were studied, as well as the exogenous factors that may influence them. Two trend analysis methodologies were applied, a non-parametric methodology – Mann-Kendall Test – to determine the temporal evolution of this variables, and another one – LOWESS – a smoothing operator method, that allows to relate the exogenous factors with the variables.

Keywords: Stochastic Characterization, Indicator Kriging, Trend Analysis, Hydrogeological Parameters, Physic-Chemical Parameters.

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