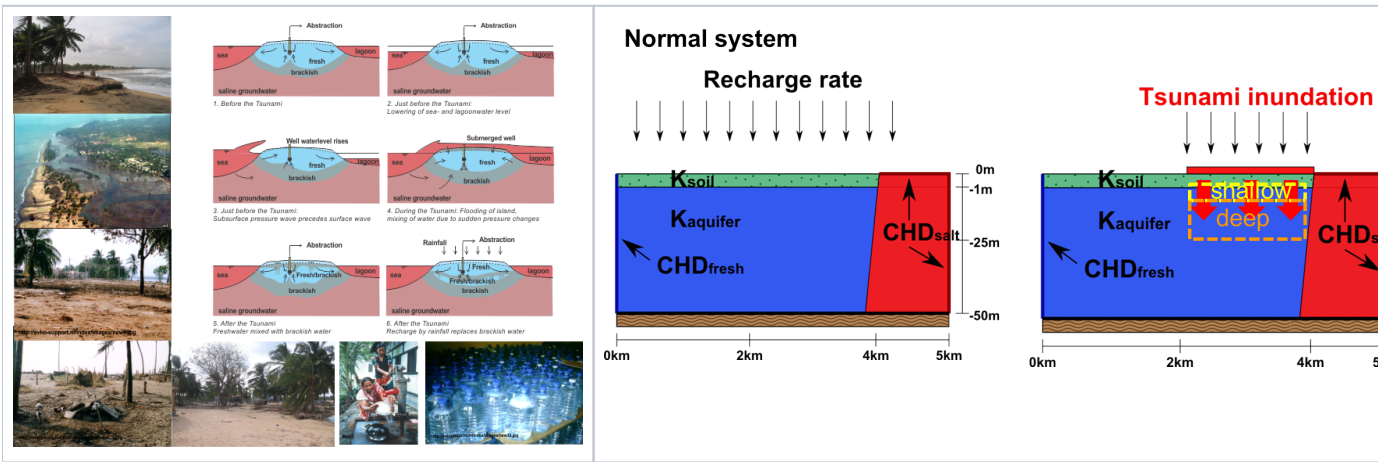


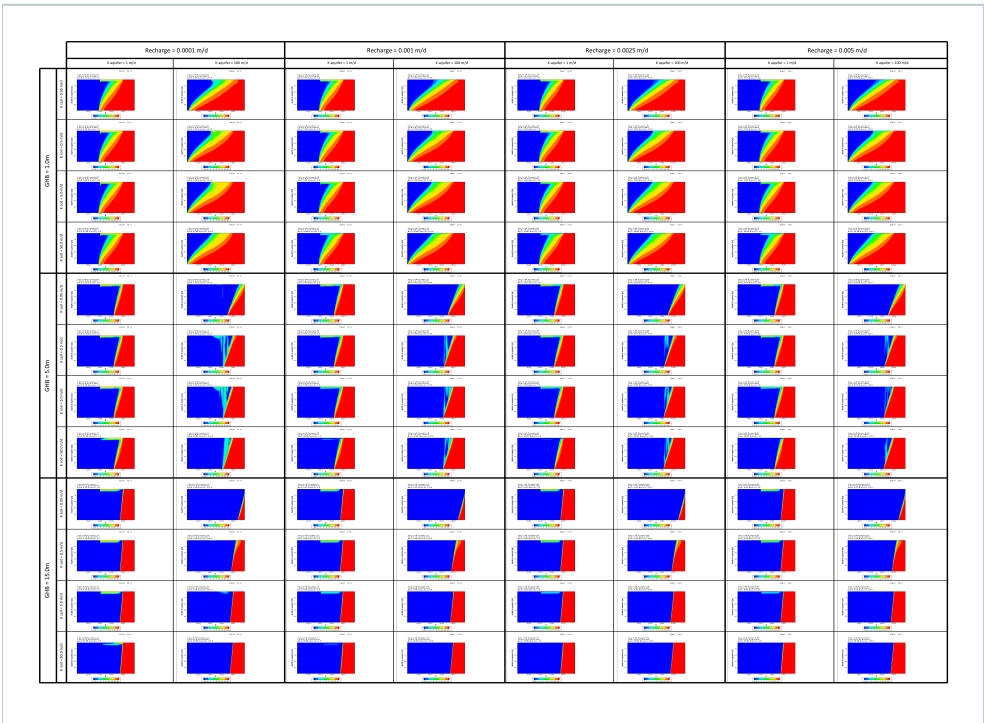
Global Quick Scan of the Vulnerability of Groundwater systems to Tsunamis - and other flooding events

Abstract



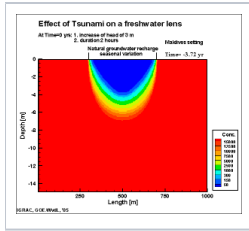
Major tsunami events have struck the coasts around the world with fatal consequences in terms of human casualties and material damage. While effects of a tsunami are clearly visible and well documented on the surface, little is known about the impacts on groundwater resources in the inundated areas. This study focuses on finding the most vulnerable areas to groundwater salinization caused by tsunami inundation. In our study, we present a Global Quick Scan of the vulnerability of the deltaic fresh groundwater resources to tsunamis. Two major steps were taken. As a first step, a vulnerability index is constructed. It is calculated using different types of topographical data. Regions with income below poverty line (1\$/day per capita) are picked as the most vulnerable ones, due to no availability of alternative freshwater resources. Once these areas are selected, a search for parameter statistics is performed using a method of raster masking (overlay). Parameter statistics help to create ranges of values for relevant model parameters such as soil type and precipitation, which are then used in the second step. This step is a modeling process of salinization of fresh groundwater aquifers due to tsunami inundation. The severity of salinization is quantified as time necessary for a specific area to restore a freshwater concentration in more than 90% of its original extent.

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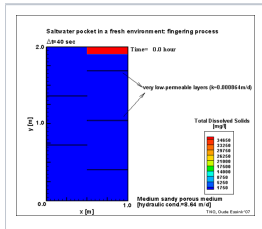


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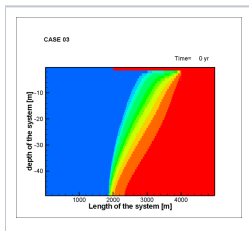
[Effect of a Tsunami of a freshwater lens](#)



Saline fingering processes in the subsoil



Case 3 out of 96: Effect of a Tsunami of a coastal groundwater system



More Information

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