Analytical analysis of timescales of seawater intrusion and retreat

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Abstract

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1. Introduction

2. Methodology

2.1. Conceptual model

The conceptual model used in this study was a confined coastal aquifer with length L and thickness B which is shown is Fig. 1. The left boundary is coast and the right boundary is the inland aquifer. h_s is the initial seawater level and h_f is the initial inland freshwater head. The initial condition is regarded to be steady state.

2.2. Theoretical method

Basic assumptions [2]:

- Darcy's flow is valid.
- The standard expression for specific storage in a confined aquifer is applicable.

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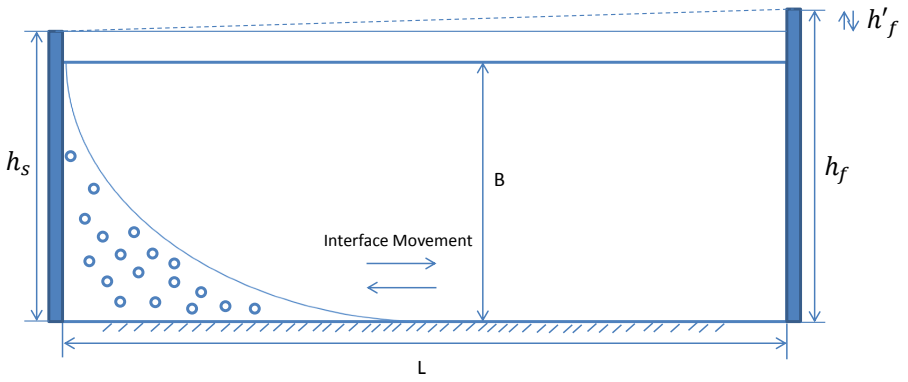

Figure 1: Conceptual model of the seawater intrusion and retreat. Following the same concept of [1]

- The diffusive approach to dispersive transport is based on Fick's law.
- Isothermal conditions prevails.
- The porous medium is fully saturated with water.
- A single, fully miscible liquid phase of very small compressibility is taken in to account.

The governing equations [2]:

3. Result and discussion

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References

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