Abstract

Saltwater intrusion is a significant concern for agricultural production in several estuaries worldwide. The goal of this study is to develop a holistic methodology for estimating the impact of saltwater intrusion on agricultural production. The methodology consists of (i) analysing the system by conceptualising the elements and their processes that address saltwater intrusion and the resultant damage to agricultural production, (ii) defining the state of saltwater intrusion by calibrating and validating numerical model, (iii) predicting the variations of saltwater intrusion under the changes in boundary conditions through simulating scenarios, (iv) assessing the risk of saltwater intrusion by using GIS technique; (v) evaluating the direct and indirect damage of saltwater intrusion, and (vi) proposing measures to address saltwater intrusion. This methodology has been successfully tested in the Vu Gia Thu Bon Estuary, Vietnam and can be extrapolated to other estuaries.