



Testing a 1-D Analytical Salt Intrusion Model and the Predictive Equation in Malaysian Estuaries

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Little is known about the salt intrusion behaviour in Malaysian estuaries. Study on this topic sometimes requires large amounts of data especially if a 2-D or 3-D numerical models are used for analysis. In poor data environments, 1-D analytical models are more appropriate. For this reason, a fully analytical 1-D salt intrusion model, based on the theory of Savenije in 2005, was tested in three Malaysian estuaries (Bernam, Selangor and Muar) because it is simple and requires minimal data. In order to achieve that, site surveys were conducted in these estuaries during the dry season (June-August) at spring tide by moving boat technique. Data of cross-sections, water levels and salinity were collected, and then analysed with the salt intrusion model. This paper demonstrates a good fit between the simulated and observed salinity distribution for all three estuaries. Additionally, the calibrated Van der Burgh's coefficient K , Dispersion coefficient D_0 , and salt intrusion length L , for the estuaries also displayed a reasonable correlations with those calculated from the predictive equations. This indicates that not only is the salt intrusion model valid for the case studies in Malaysia but also the predictive model. Furthermore, the results from this study describe the current state of the estuaries with which the Malaysian water authority in Malaysia can make decisions on limiting water abstraction or dredging.

Keywords: salt intrusion, Malaysian estuaries, discharge, predictive model, dispersion