Salt Intrusion in Malaysian Estuaries

Jacqueline Isabella Gisen and Hubert H.G. Savenije

Department Water Management, Deflt University of Technology, Delft, Netherlands

Abstract: In Malaysia, most of the major cities are located on or near estuaries. As the coastal length of Malaysia is about 9300 km, and about 80 % of Malaysia population lives within 100 km from the coast, estuaries are very important both in economic and transportation terms. This is because the flat topography around the estuaries offers easy access to fresh water and ocean trade. Estuaries also provide a unique habitat for a huge variety of flora and fauna. Most of the rivers in Malaysia serve as a main resource for drinking water supply to the population in the area. Excessive extractions of fresh water upstream result in less river discharge into the lowland area. This phenomena has subsequently allowed the salt water to intrude further upstream into the river system and affect the economic activities as well as the natural habitat for the aquatic life. Therefore, it is essential to model the salinity in the estuaries to ensure the sustainability of the fresh water supply and preserve the estuarine ecosystems. The main concerns of this research are to classify the estuaries in Malaysia and to test the existing analytical equations for salt intrusion (Savenije, 2005) in these estuaries. The database of estuaries now includes 28 estuaries with convergence length ranging between 0.3 and 331 km. Subsequently, we aim to develop a predictive way to use the classification for application in ungauged estuaries.

Keywords: salt intrusion, salinity, convergent estuaries, tide, water supply