Experimental studies on mixing salt wedge estuary

Abstrak

Estuaries, which are rich in nutrient, act as a habitat to some aquatic lives, including mangroves. Human-induced activities such as dredging and shoreline development influence estuarine dynamics which includes mixing process. This will further affect estuarine salinity and adversely affect the aquatic life. A laboratory investigation was conducted in a flume to observe the mixing in a salt-wedge estuary. Three conditions were studied, i.e. mixing in ordinary estuary, mixing in an estuary with a presence of smaller deep channel and mixing in an estuary with a presence of resisting structures along the channel banks. Freshwater was run from one end of the channel, overflowing a weir at the other end, while salt water was introduced at the base of the weir and intruded upstream as gravity current. Mixing in open channel occurs in longitudinal, vertical and transverse directions. The spatial and temporal salt-water intrusions were studied where the mixing patterns were visualized using red dye tracer. To have better understanding on the mixing process, salinity patterns are studied through the plotted isohalines. The spatial and temporal salinity profiles in the flume are also studied through plotted graphs. The results show that salinity differences occurred due to the interfacial mixing between saline and freshwater