Abstract

Coastlines of barrier islands are affected by the dynamic behavior of the tidal inlets on either side of the island. The beaches of these islands often also show a strong dynamic behavior as a result of modulations in the sand by-passing process which regulates the natural nourishment of these beaches. In order to study the process of sediment by-passing in a dynamic tidal inlet system, the use of numerical models have become a necessity. One of the type of models that can be useful is the so-called dynamic-empirical model, in which the results of tidal hydraulic calculations are coupled with empirical morphological relationships to predict the morphological changes that result from developments in the hydrodynamic conditions. One of such empirical relationships is the relationship between the tidal prism and the cross-section of the flow channels in the ebb-tidal delta. A new approach is presented to derive such a relationship from basic physical concepts.