



Sediment Transport Processes In River Dominated Sub-Tropical Estuaries

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The objective of this study is to present a comparative assessment of the largest three river dominated estuaries in the southern coast of the state of Santa Catarina, Brazil (Tubarão, Araranguá and Mampituba estuaries). The study was focused on mechanisms of transport of suspended sediments influenced by its morphologic and hydrodynamics characteristics. As shown in D'Aquino et al (2011), these estuaries share common attributes (climate and tides) and follow the basic conceptual model of fine sediment transport (presented by Toldo & Schettini (2006). However, each one has its own particularities regarding the geographical setting, land use, hypsometry, outfall, etc. The methodology used to the field measurements was the same for all estuaries, aiming at measuring the currents, water level, salinity, temperature and turbidity near the outfall for at least two complete tidal cycles (~25 hours). All the campaigns were carried on under syzygy tide conditions. During the sample collecting period, a longitudinal profile was conducted in each estuary, through acquisitions of salinity and temperature of the water column in every kilometer. In the Tubarão and Araranguá rivers estuaries, the concentration of suspended particulate matter (SPM) is mostly influenced by the periods of incoming tide, flood currents. In the Mampituba river estuary, the flocculation process was observed during the encounter of fresh and salt water in every tide entrance. It was possible to observe that the Araranguá river estuary, in what concerns the bottom SPM, responds to the variation of salinity and currents along the bottom. The Tubarão estuary presents a relation between the salinity and the bottom currents. In the Mampituba estuary no relevant correlation was found between the SPM, the salinity, and the bottom currents. Those aspects demonstrate that even sharing some characteristics there are significant differences among these estuaries. In addition, as a result of the comparative study, an analytical model was proposed that correlates the fluvial discharge, salt wedge, and SPM. This model might represent a tool to encourage discussions and help the scientific exploration of the estuaries in the south of Santa Catarina.