ON THE INVESTIGATION OF COASTAL SEDIMENTARY DYNAMICS: INSIGHTS FROM MONITORING BEACHES AT ILHA GRANDE, SOUTHEAST BRAZIL

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The coastal sedimentary dynamics is a classical transient and non-linear problem relating hydrodynamics and sediment grain flows. Basically it comes from the relationship among high and low frequencies oceanographic phenomena, all together with the local sedimentology and coastal geomorphology. Therefore it is fundamental for understanding a number of coastal erosions problems that have been observed in various cities worldwide. By applying new technics, we had investigated for two years the sedimentary dynamics of two beaches at Ilha Grande: Dois Rios and Preta. These are particularly interesting due to their different hydrodynamical and sedimentological patterns, which allows interesting spectral correlation when monitoring their morphodynamics at the same time. We had monthly measured the seasonal variation at 21 beach profiles cross sections, hourly variations of the sedimentary height in 42 stations at the beaches' face and local physical oceanographic parameters. These data were interpreted together with the beaches' sedimentology and spectral analyses techniques. After processing we could locate the beaches' sectors most controlled by short and/or long wavelenght oceanographic phenomena. At Dois Rios beach, the sediment transport is controlled by the interaction of storm waves and tides. Otherwise, Preta's sedimentary dynamics is controlled by the interplay of Abraão's Brook discharge and tides. In particular we could successfully quantify the effects of tides on the beaches' sedimentary dynamics, which suggests the use of those techniques as an important tool on the research of coastal sedimentary dynamics and the shore's sustainable development.