

Hydrodynamic and sediment measurements in estuaries of Rio de Janeiro State, Brazil: methodology and application

GERALDO WILSON JUNIOR

PENOCOPPE – Rio de Janeiro Federal University – UFRJ; Technology Center, Bloc C, 209, Rio de Janeiro 21945-970, Brazil

gwj@predialnet.com.br; jrwilson@gmail.com

Abstract Accurate cross-sectional field data on water currents and sediment concentrations, among other variables, are required to understand and describe hydrodynamic, sedimentologic and morphologic processes in estuarine environments. Hence, cross-sectional field measurements have to be simultaneously and continuously obtained, by a well equipped team, during at least one tidal cycle. Unfortunately, Brazilian hydrometric teams are neither well equipped nor numerous. To address this problem, a new method was developed and applied in Estuaries of Rio de Janeiro State: (a) in the Iguaçu River estuarine stretch, by a team equipped only with one current meter and conventional sediment samplers, and (b) in the São Francisco Channel Estuary, where traditional and modern equipment, such as an Acoustic Doppler Current Profiler – ADCP was used. This method is also applicable for measuring hydrodynamic and sediment phenomena in non-permanent open channels during high-flow events (e.g. during floods).

Key words sediment and morphological processes; fluvial and estuarine morphology; hydrodynamic and sediment measurements; Brazilian estuaries; sediment movements