AUTOMATIC CLASSIFICATION OF BEDFORMS USING PHASE DIFFERENCING BATHYMETRIC SONAR

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Abstract: *This paper classifies bedforms and habitat using side scan images from a phase differencing bathymetric sonar. The study area is the inner shelf, between 3 and 15 m depth, of Barra da Lagoa – Moçambique beaches located on the northeast of Santa Catarina's island, Brazil. The data was collected with an EdgeTech® 4600 540 KHz interferometric system (phase differencing bathymetric sonar) which outputs side scan sonar images and swath bathymetry, proving images that are 3 and 4 times the width of the water depth. The data covered an area of approximately 12 km² and was collected using the softwares Hypack®2013 and Discover®, and processed with SonarWiz5® and SonarClass® for side scan and Hypack® for bathymetry. The preliminary results show an inner shelf dominated by finer sediments, but containing 0.5 to 0.7m lower elevation patches of coarse grain rippled sediments, validated comparing automatic and manual classification of the images on the SonarClass®, which uses textural parameters. The different bottom types were classified using SonarClass® and also validated with ground-truthing station besides the bedforms in accordance of literature classification.*

Keywords: *Inner shelf, Bedforms, Habitat Classification, Interferometry.*