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Geomorphology of a tropical shelf: Rio Grande do Norte Eastern Sector, NE Brazil

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Seafloor morphologic studies were developed on the Brazilian tropical shelf adjacent to Natal City. Located in the eastern Atlantic coast of Brazil (Fig. 1), this shelf represents a modern, highly dynamic system characterized by its narrowness (less than 30 km wide) and shallow waters; it is a sediment-starved shelf covered mainly by carbonates (bioclastic), with siliciclastic sediments nearshore [1, 2]. The continental shelf edge runs parallel to sub-parallel to the coast with a very sharp shelf break, that starts at a depth of about 50-60 m [1]. Currents are predominantly in the northern direction, correlated with the along-shelf wind component; cross-shelf currents are dominantly controlled by semi-diurnal tides, and water level variability is dominated by tides [3]. Prompted by the need to understand the contemporary intense coastal erosion hydroacoustical methods were applied. Regional studies were performed with a single beam echosounder, while a multibeam echosounder was used in selected areas (Fig. 1) to identify temporal variations in seafloor geomorphology.

The results show a variety of bedforms ranging from centimeters to kilometres in scale present in the shallower waters, such as very large longitudinal dunes, small wave- and current-generated dunes; submerged beachrock chains, incised-valleys and canyons (linked to modern Potengi and Ceara-Mirim Rivers) are associated with sea level variations, and a structural high in the most distal part of the Potengi River canyon indicates the presence of a gravity flow mechanism of transport and sedimentation.

References:

[1] Vital H et al. (2010) In: Braz. J. oceanography 58, 12-24

[2] Vital H (2014) In: Continental Shelves of the World: GSL Memoir 41, 35-46

[3] Ribeiro F (2014) In: *Caracterização das correntes da plataforma continental da Praia de Ponta Negra*:TCC UFSC, 57p.

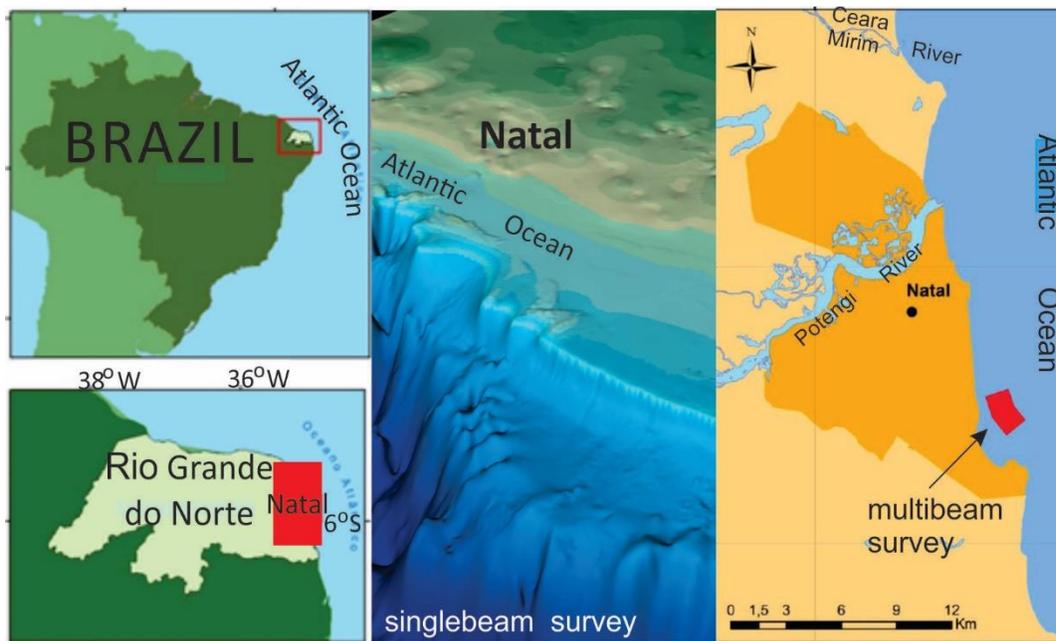


Figure 1: Location of the study area

