



INNER CONTINENTAL SHELF LIMITS AT PARANÁ, SOUTHERN BRAZIL

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The inner continental shelf is usually defined on the basis of morphological, hydrodynamic and sedimentary processes. Its lower limit is referred to the storm wave-base. The upper limit of inner shelf is often described in literature superimposed to beach limits. Some authors define it at the beginning of the surf zone, encompassing part of shoreface, and others refers to it as the fairweather wave-base. By means of sedimentary processes the inner shelf is defined as the zone where muds and sands occur interfingered, its upper limit is the transition to sands with sedimentary structures formed by waves and currents and the lower limit is the transition to mud where no significant water movement occur allowing fine sediment to settle. We estimated the mean fairweather and storm wave-bases to Paraná inner shelf, at southern Brazilian shelf. We used wave period data available to the area and derived wavelength from these. The wave-base was calculated as a half of wavelength. Sedimentological charts at scales of 1:1,100,000 and 1:500,000 were used to validate the estimated limits. We estimated that storm wave-base is located between 67 and 96 m water depth assuming the most frequent storm-waves periods of 11 to 12 seconds. Fairweather wave-base was estimated between 33 and 54 m, with most frequent fairweather wave periods of 7 to 9 seconds. Waves have potential to constantly promote sediment mobilization at regions shallower than 33 m. The region between 33 and 96 m is frequently subjected to wave action, 80 % of time, and areas deeper than 96 m only 6 %. Therefore, bellow 96 m depth sediment settling conditions prevails for 94 % of time. The inner shelf lower limit placed at 96 m can be verified at small-scale (1:1,100,000) sediment charts that shows the sand-mud transition approximately at this depth. Otherwise, the upper limit is not so clear considering sediment charts. Previous studies have suggested that this limit may be placed between 8 and 10 m regarding to changes on depth gradient. We distinguished the upper limit in three categories. The first is the lower limit of surf zone, where waves starts to increase in steepness, estimated at 5 m. The second is the toe of lower shoreface which coincide with the depth of closure, between 8 and 10 m. The lower one is the fairweather wave-base estimated at 33 m.

Keywords: wave base, shoreface, surf zone, wavelength.

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