

Conference Title:

Shelf-break communities: An integrated approach to marine boundary ecosystems

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Abstract:

The end of the continental shelf concentrates a series of processes and phenomena that occur both along the continental shelf and the slope. Sedimentary processes associated to continental runoff, together with coastal current regimes suddenly change when the steepness of the shelf becomes strongly pronounced. At this point, hydrodynamic processes accelerate particle transport, generate upwelling and downwelling processes and increase turbulence, generally in association with hydrographic fronts. All these environmental and geomorphological phenomena generate special habitat conditions that differ from the rest of coastal and deep-sea marine areas. These particular habitats have led to the development of unique benthic communities, observed in all oceans. Surprisingly diverse cold-water coral communities, sponge assemblages and many other invertebrate associations have been discovered in recent decades due to the increased availability to marine research expeditions of cutting-edge technology, which can be used at a lower cost in medium-sized vessels. Many of the habitats discovered have been poorly studied, mainly because of the interest of scientific programs in the exploration of deep oceans. Continental shelves were left in the hands of fishery studies, which were almost exclusively interested in assessing the

stocks of commercial fauna, showing no interest in the study of the habitats that provided shelter to those species. Commercial trawling fleets have destroyed many of those shelf-break habitats long before science has started to understand their ecological role in the functioning of the oceans. Recent studies demonstrate the existence of shelf-break areas that hold very high diversity rates, only comparable to high productive coastal areas. These habitats play a key ecological role in terms of nursery for larvae, as well as transition areas for many species of commercial interest. Furthermore, the transition zone between the continental shelf and the slope must be considered an ideal scenario for experimental studies to understand the important role that border communities develop in the marine environment.

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