



## Changes of macrobenthos composition under different ENSO cycle conditions on the continental shelf off central Chile

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### Abstract

The course of environmental conditions and shelf macrobenthic communities off Central Chile (~36°S) during the strong 1997–98 El Niño (EN) event is compared with a subsequent and basically “normal” period (2002–2003). Changes in macrofaunal community, feeding mode structure, and biomass size spectra are contrasted over time with changes in oceanographic and sediment settings, in order to assess intra- and inter-annual changes in faunal composition during both ENSO periods.

During EN, there was a decrease in biomass and abundance of species known to be well adapted to organic-rich, oxygen-deficient environments, such as the interface-feeding polychaete *Paraprionospio pinnata*. On the other hand the abundance of highly mobile, burrowing polychaetes remained unaffected, or even increased in biomass. The decline of *P. pinnata* lasted several years after the demise of warm conditions, possibly due to negative interactions with those more mobile burrowing polychaetes. The percent contribution of subsurface-deposit feeders to total biomass increased during EN ( $49.3 \pm 12.4\%$  during summer) and declined only in the summer-fall period of 2002–03 ( $11.1 \pm 4.1\%$ ). An opposite trend was observed for interface and surface-deposit feeders. From EN to summer-fall 2002–03 (i.e., normal to low oxygen conditions) the size-structure of the macrobenthos switched from a larger to a smaller-sized assemblage. However, biomass was maintained due to successful recruitment and high abundance of both *P. pinnata* and the squat lobster, *Pleuroncodes monodon*.

Our results suggest that the shelf macrofaunal community structure exhibit fluctuations at various time scales, and that these changes are more pronounced during and after a strong EN event. In such cases, the effects of such an event may be recorded at latitudes as far south as 36°S, with consequences in the biota lasting for many years after the demise of warm conditions.

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