

A HYPOTHESIS TO EXPLAIN THE MEIOFAUNAL COMMUNITY CHANGES IN THE HUMBOLDT CURRENT SYSTEM OFF PERU

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Oceanographic conditions determine eventually the sediment biogeochemistry and this last one factor controls the meiofaunal structure. Interannual events such as El Niño-Southern Oscillation (ENSO) modulate this response and generate community changes. An explanation to understand the meiofauna-environment relationships in the Peruvian coast is proposed based on oxygen regime (OR) and organic matter sedimentation (OMS). Combinations of the parameters mentioned above will determine the nematode-dominated meiofaunal assemblages. Five possible different phases of the meiofaunal community are hypothesized. Diversity, dominance and density vary in each of these phases. There are metabolic transition periods of benthic system fluctuating among cold and warm ENSO periods. During cold periods (high OMS and hypoxia/anoxia on the bottom), the nematodes (bacteria-feeders/detritivorous-feeders, etc.) are dominant, and the total phyletic diversity is poorest in the meiofauna; the densities, however, are the highest. Intermediate periods correspond to improved diversity (with appearance of more nemertean, ciliates, gastrotrichans and copepods, among the more important). Vertical penetration is permanently fluctuant in both periods above. Periods with low OMS and high concentration of oxygen on the bottom (warm periods), determines both an improved diversity within nematodes (appearance of carnivorous nematodes) as an increase of phyletic diversity in the total meiofauna. Because the total number of nematodes decreases, the total meiofauna density has a significant decrease in these last cases. Arguments of this hypothesis and its possible implications are discussed.

Keywords: hypothesis, meiofaunal community, Humboldt Current System, Peruvian coast.