

SKELETAL ASSEMBLAGES AND GRAIN-SIZE DISTRIBUTION OF SEAMOUNT SEDIMENTS OFF THE CANARY ISLANDS

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Abstract: Grain-size distributions and skeletal assemblages of surface sediments from the Amanay Seamount, El Banquete, and Conception Bank (Canary Islands) were combined to better understand the textural variability in carbonate microfacies of seamounts in temperate waters. Grain size was determined in half phi intervals by wet-sieving (< 63 µm) and dry-sieving (> 63 µm) and resulting fractions were stored separately in plastic bags and vials for subsequent provenance studies. Skeletal assemblages were obtained by grain counts in bulk and half phi intervals using a camera-coupled microscope (1x-600x). These compositional datasets were further analysed using multivariate methods.

In general terms, unimodal and polymodal distributions show major modes within fine sands (125-180 µm), medium sands (250-355 µm), coarse sands and fine gravels (> 1 mm). Poorly sorted sediments occur at shallow depths (< 200 m bsl) on Amanay and El Banquete, due to coarse material (e.g.: rhodolites, gastropods, serpulids, bryozoans), whereas bathyal and well sorted fine sands show peaks at 125-180 µm comprising mainly forams, pteropods and bryozoan debris. In contrast, sands of Conception Bank show an ubiquitous mode at 250-355 µm of planktic forams at bathyal depths (> 300 m bsl), whereas of mixed relict and recent grains towards the summit (< 300 m bsl) that shifts to coarse-skewed distributions due to millimetric bivalves, and subordinate bryozoan and echinoid remains.

Grain-size distribution of carbonate sediments at seamounts results of complex interactions between grain source (planktic vs. benthic), fragmentation, preservation, oceanography, and bathymetry. Hence, the analysis of grain size and skeletal assemblages combined may help constraining whether grain sources or environmental processes control the textural features of surface sediments on seamounts, and ultimately help modelling seamount carbonates and their spatial distribution using suitable prediction algorithms.

Key words: Canary Islands, Carbonates, Composition, Seamounts, Sediments