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Circulation, particle fluxes and meiobenthos density in Blanes submarine canyon (NW Mediterranean)

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Within the framework of a multidisciplinary project studying Blanes canyon, physical, biological and geological data were obtained during an entire annual period (from March 2003 to May 2004). The present contribution aims for a multidisciplinary approach to establish the ambient conditions of the canyon as an habitat for benthic communities. Four moorings were located inside the canyon: one at the mouth (defined by an imaginary line joining both canyon walls along the shelf break isobath) and three further offshore, over each wall and over the axis. A fifth mooring was located out of the canyon. Moorings were equipped with current meters (at depths corresponding to different water masses and near the bottom) and automated sediment traps (30 m above seafloor). Multicorer samples were obtained at each mooring site and at three important fishing areas. Three main regions with different characteristics are observed. (i) The canyon mouth, an active zone defined by a significant local current-bathymetry interaction, also receives significant sedimentary flows from the continental shelf that canalize through the canyon axis. The particulate fraction of these flows is dominated by terrigenous materials. However, in absolute terms, the organic carbon fluxes are the most important of the entire canyon. Meiobenthos densities are also the highest in the canyon. Although they are highly variable, possibly because of the energetic nature of the emplacement, this site shows the potential of an important biological spot. (ii) The upstream canyon wall site shows large mesoscale variability. Higher suspended particulate matter, undisturbed sediment cores, and a meiobenthos density distribution in accordance to seasonal fluctuations suggest the absence of erosive processes, while

the high percentage of organic matter evidences its oceanic character. Finally, (iii) the downstream canyon wall is characterized by intense unidirectional currents due to topographic effects. Elevated sand content, together with corrupted sediment cores and highly variable meiobenthos densities, point out the erosive nature of the site, which could be potentially characterized as a non-preferred spot for benthic species.