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Distribution of living benthic foraminifera off the Douro river (western Iberian margin): the importance of the terrestrial organic matter.

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Living (stained) benthic foraminifera assemblages and geochemical characterization of the organic matter (phytopigments, amino acids, δ13Coc, BIT) were investigated on a cross-margin transect off the Douro River (Northern Portuguese margin) in order to assess the role of the quality of organic matter on the distribution of live benthic foraminifera. For this, 5 stations ranging from 50 to 2000 m depth were collected in March 2011 about one month after the Douro River annual flood. Faunal abundances generally decrease from the coast to the slope with maximum total densities of 3051 ind./50 cm3 in the mudbelt (Q50=32μm) at 100 m and minimum density of 63 ind./50 cm3 found at 500 m water depth where grain size is coarse (Q50=190μm). Faunas of the shallow most station are dominated by Ammonia becarii, Eggerella scabra, Bulimina aculeata and Nonion scaphum while N. scaphum and to a lesser extent Uvigerina bifurcata dominate the assemblages at 100 m. The deepest stations are dominated by Uvigerina mediterranea, Hoeglundina elegans and Reophax scorpiurus. In general, live benthic foraminiferal densities are higher where the indicators of organic matter are more concentrated. However, some species appear to have strong affinities with Chl-a (e.g., N. scaphum, U. bifurcata), while others (A. becarii, E. Scabra, B. aculeata) are more abundant where labile organic matter is high as show by the EHAA/THAA amino acid ratio. The species that show a good correlation with Chl-a also show affinity with organic matter of terrestrial origin as show by the δ13Coc suggesting 1) that Chl-a measured in the coastal zone is not only marine and 2) that land plant derived organic matter could be an important source of food for marine benthic communities.