



Live (stained) benthic foraminifera from the Rhône prodelta (Gulf of Lion, NW Mediterranean): Environmental controls on a river-dominated shelf

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In this paper, we investigate the ecology of live (rose Bengal stained) benthic foraminifera collected at 20 stations ranging from 15 to 100 m depth in the Rhône prodelta (Gulf of Lions, NW Mediterranean). These sites were sampled in September 2006, five months after the Rhône River annual flood. Statistical analyses based on foraminiferal communities (> 150 µm) divide our study area into six main biofacies directly related to environmental conditions. Miliolid species are abundant in the relict prodeltaic lobe which is characterised by sand with low organic matter content. Close to the river mouth, the limited oxygen penetration in the sediment combined with important hydro-sedimentary processes constitute stressful conditions for foraminiferal faunas dominated by opportunistic species (e.g. *Leptohalysis scottii*). With increasing distance from the river mouth, foraminiferal faunas (e.g. *Nonionella turgida*, *Eggerella scabra*) adapted to thrive in sediments enriched in Rhône-derived organic matter under more stable hydro-sedimentary conditions appear. In the distal part of the Rhône River influence, benthic species (e.g. *Valvulineria bradyana*, *Textularia agglutinans*) living in fine sediment enriched in both continental and marine organic compounds emerge. At the deepest stations located in the south-eastern part of our study area, benthic foraminiferal faunas (e.g. *Bulimina aculeata*, *Melonis barleeanus*, *Bigenerina nodosaria*) are highly diverse, underlining stable environmental conditions characterised by marine-derived organic matter supplies and relatively deep oxygen penetration depth in the sediment. We also compare foraminiferal faunas sampled in September 2006 with communities sampled in June 2005, one month after the Rhône River annual flood (Mojtahid et al., 2009). This comparison suggests that opportunistic species (e.g. *B. aculeata*, *Cassidulina carinata*, *V. bradyana*) have responded to organic matter inputs related to marine primary production in June 2005.

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