Benthic foraminifera as proxies for a paleoenvironmental reconstruction of the mud-belt in the Holocene core VV00/6 bis (Central Adriatic Sea, Italy).

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Detailed analysis of the benthic foraminiferal content of the core VV00/6 bis (42˚13'33"N; 14˚51'50"E) allowed a paleoenvironmental reconstruction of the Adriatic mud-belt off Punta Penna (Central Adriatic Sea, Italy). In this paper, benthic foraminifers are used as proxies to investigate the mud-belt formation at the beginning of the Holocene high-stand, witnessed by an abrupt faunal turnover.

The core, 421 cm long, was drilled at 68 m water depth and 42 samples (1 cm thick) were taken. Statistical analysis has been carried out on quantitative results from the >63 μm fraction . Q-mode Cluster Analysis clustered into three groups the samples characterized by similar environmental parameters, deducible by the ecological preferences of the most abundant species: Cluster A consists of *Bulimina marginata*, *Cassidulina carinata*, *Textularia bocki* and *Elphidium* spp.; Cluster B is characterized by circalittoral species such as *Bulimina marginata*, *Valvulineria bradyana, Nonionella turgida* and *Epistominella vitrea*; Cluster C is dominated by typical infralittoral taxa like *Ammonia* species and miliolids. Each cluster corresponds to a distinct biofacies. At the bottom of the core an infralittoral environment (Biofacies I) is found, characterized by shallow marine waters and a fine sandy/silty substrate; in Biofacies II the transition from a shallower environment to a deeper one is recorded and moreover, deeper species (B. *marginata*, C. *carinata*, *Globocassidulina subglobosa*, *Melonis* spp., N. *turgida* and V. *bradyana*) are mixed with shallower ones (*Ammonia* spp., *Asterigerinata mamilla*, *Elphidium* spp. and *Quinqueloculina* spp.). The development of the mud-belt is recorded by Biofacies III that shows the typical characters of the

modern mud-belt association (Morigi et al., 2005): high percentages of opportunistic, hypoxia tolerant and potentially infaunal taxa (e.g. $B.$ *marginata*, $E.$ *vitrea*, $N.$ *turgida*, $V.$ *bradyana*).

The composition of the assemblages (Biofacies I), supported by an AMS ^{14}C date on sample VV00/6b-415 (10960 $\pm$ 60 yrs BP), suggests that the bottom of the core corresponds to the very last part of the Late Pleistocene. Biofacies II is related to the Holocene sea level rise that operated a mixing of taxa belonging to different environments. Biofacies III corresponds to the beginning of the Holocene High Stand and the relative mud-belt formation due to the instauration of the modern circulation patterns. Within Biofacies III, alternations in the relative abundances of the principal taxa, suggest oscillations in the food availability and oxygen content at the sea bottom. The peak of *V. bradyana* should correspond to the late Bronze Age (Oldfield et al., 2001) when, due to the human activities impact, a maximum of deforestation and inferred soil erosion was recorded. This brought to an increment in the terrestrial derived nutrient content of the waters along with the organic matter and sediments input.

Morigi C., Jorissen F.J., Fraticelli S., Horton B.P., Principi M., Sabbatini A., Capotondi L., Curzi P.V., Negri A., 2005. Benthic foraminiferal evidence for the formation of the Holocene mud-belt and bathymetrical evolution in the central Adriatic Sea. *Marine Micropaleontology*, 57: 25-49.

Oldfield F., Asioli A., Accorsi C.A., Mercuri A.M., Juggins S., Langone L., Rolph T., Trincardi F., Wolff G., Gibbs Z., Vigliotti L., Frignani M., van der Post K., Branch N., 2003. A high resolution late Holocene palaeo environmental record from the Central Adriatic Sea. *Quaternary Science Reviews*, 22: 319-342.