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Abstracts
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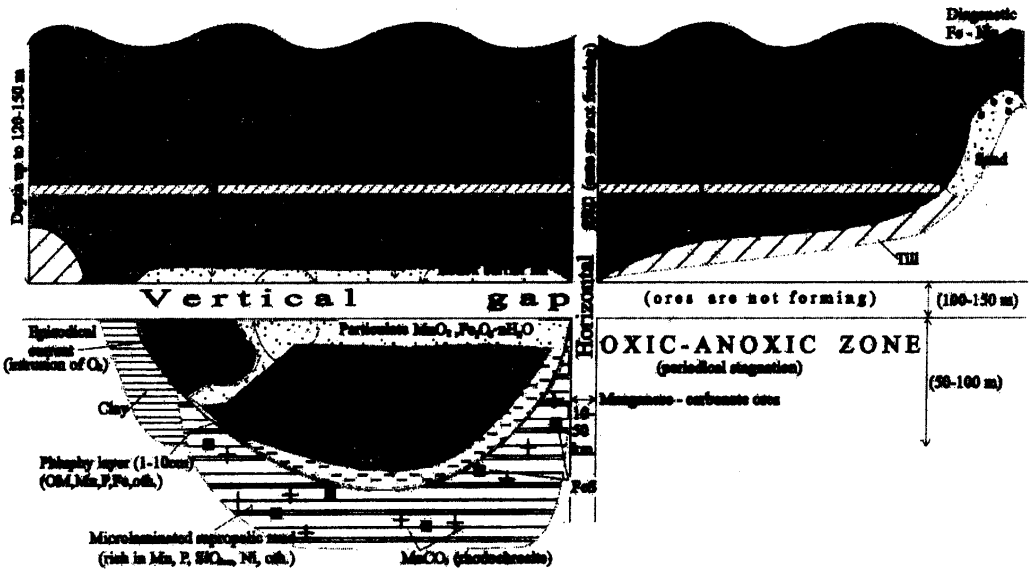

Model of formation of the oxic - carbonate Mn ores. HEF - high energy facies, OM - organic matter

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Bioturbation shifts in the coastal areas of the south-eastern Baltic Sea caused by Marenzelleria cf. viridis

D. DAUNYS[1], S. FORSTER[2], S. OLENIN[1], D. SCHIEDEK[2], M.L. ZETTLER[2]
[1.] Klaipeda University, Lithuania;
[2.] Baltic Sea Research Institute Warnemuende, Germany.

Bentho-pelagic coupling is well-expressed in the enclosed coastal waters, where active physical – chemical processes are accelerated by high functional diversity of the bottom macrofauna. The Curonian lagoon differs from many enclosed systems in the Baltic by wind driven irregular salinity fluctuations during autumn and winter months. This feature plays a driving force in population dynamics of the only deep-burrowing species Marenzelleria cf. viridis in the lagoon. Its colonization area is changing between years in response to salinity conditions, which regulate reproduction success and subsequent extent of population recruitment in the habitat.

Prior the establishment of the species, lagoon's bottom sediment was bioturbated down to 10-14 cm depth being most intensively reworked in the upper 5-6 cm layer. After M. cf. viridis occupied approx. one fourth of the lagoon's bottom, bioturbated sediment layer was extended to 35-40 cm depth with the highest bioturbation activity at 10 cm depth. As a result of species extinction and recolonization the volume of sediment occupied by worm burrows varied between 400 and 1200 cm3 per 1 m2.

Incubation experiments carried out with bromide tracer showed significantly enhanced diffusive transport by factor 1.6 ± 0.3 ($t=3.4$, $p=0.03$, $df=4$) if single-specimen were added to defaunated sediment incubations. In comparison to 5 cm depth reached by tracer within 2 days incubation of defaunated sediment, worm's irrigation activity caused bromide penetration as deep as 10 cm depth. This indicates considerable quantitative and qualitative shifts in the habitat functioning, induced by simple species presence in low abundance in the sediment, which in turn is determined by species response to variable salinity regime.