

Carbonate Systems and Trace Fossils

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Carbonate systems are dominated by pelagic and hemipelagic sediments composed mainly of calcareous nannoplankton, particularly coccolithophores.

Carbonate deposits, including deep-sea chalk and carbonate flysch, may preserve trace fossils belonging to six principal ichnofacies: Zoophycos, Cruziana, Glossifungites, Tripanites, Nereites, Skolithos.

Although carbonate and siliciclastic systems share many depositional principles, their ichnological expression differs in several important ways. carbonate flysch successions generally show a marked reduction in pre-depositional traces and are dominated by post-depositional ichnofabrics. Furthermore, deep-marine carbonate systems typically exhibit lower ichnodiversity than their siliciclastic counterparts.

Classic examples of deep-sea carbonate and mixed carbonate–siliciclastic flysch are well documented from the Alps and Apennines. The newly studied Akhmeta (Bakhtrioni) section in the Kakheti region of eastern Georgia shows striking lithological and ichnological similarities to these classic localities. Trace fossils found here include: Chondrites, Cladichnus fischeri, Phycosiphon, Planolites, Trichichnus, Tubulichnium, Ophiomorpha rudis. Bakhtrioni section differs from classic Alpine localities mainly in the absence of Nereites while retaining nearly all other characteristic elements of deep-marine carbonate ichnofaunas. This fact and also occurrence of new types of ichnofossils makes the Georgian locality an important addition to the understanding of variability within carbonate-dominated Nereites-type systems.