

## Geological applications of resedimented skeletal materials.

Continental margins are one of the main zone of carbonate production. In this environment two separated styles of accumulation occur: framework production and loose grain deposition. While the biogenic framework is likely to resist to wave and current impact, skeletal grains and fragments may be transported outside the platform in to the deep-water depositional realm. Offshore sediment export account for 25% - 50% of platform gross carbonate production (Hubbard *et al.*, 1990; Ryan *et al.* 2001). Resedimented material represents an important budgetary factor which should be carefully considered. Skeletal grain transported towards the basin may have a remarkable preservation potential, and then they can be useful for various geological applications.

In paleocological studies transported skeletal remains might provide information on the shallow-water environment where they were produced, in the eventuality that the platform deposits become lost or unobservable (Nebelsick *et al.*, 2001). In particular coated grains, such as rhodoliths, bind skeletal particles of their formation environment during their growth. This "stored" material holds vital information on the carbonate factory where the coated grains developed, even when they are displaced from their native zone. Paleontological analyses on the rhodoliths from the Pietra da Cantoni Group of Piedmont Tertiary Basin proved that the grain association trapped within rhodoliths carefully depict rhodolith formation environment.

Erosion of outcropping limestone formation is an other source of carbonate debris toward deep-water setting. Limestone fragments may reenter sedimentary cycle as any other rock fragment, but they preserve, even in small volume, a wealth of useful information. Fossil association may be used to constrain the age of the formation in which fossiliferous clasts are found or, due to their peculiar characteristics, they may be helpful in provenance studies. Limestone fragments characterized by an heterozoan carbonate association of Late Eocene age, founded in the Como conglomerate of Gonfolite Group, suggest a likely sediment supply to the Gonfolite basin also from the Ternate Formation, which present a fossil association highly comparable to the one observed in the fragments.

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