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Turbid-water coral assemblages: a case study from the Oligocene Tertiary Piedmont Basin (N Italy)

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In the geological record, but also at the present time, coral assemblages thriving in permanently or episodically turbid waters as a result of terrigenous input are much more common than what is expected, thinking to the conventional optimal conditions for coral reef growth (i.e. warm, well-illuminated, oligothrophic shallow waters of the tropics and subtropics). Despite, in fact, relatively high turbidity conditions, restricted light penetration, and the presence of often mobile terrigenous sediment substrates, active coral growth is well developed and many coral bioconstructions in the past are actually associated with marly and mixed carbonate-siliciclastic sediments.

In the Tertiary Piedmont Basin (northern Italy) coral assemblages and associated bioconstructions developed under terrigenous sedimentation during the Oligocene. They occur in siliciclastic conglomerates and sandstone of fan delta and clay-rich prodelta settings.

Collected data provide information basically about the composition of the coral assemblages, facies and depositional products of coral growth together with taphonomic aspects.

The succession is characterized by the episodic production of abundant coral rubble of the branching corals *Acropora* and *Stylophora*. These rudstone and floatstone facies are distinguished on the base of their sedimentological and paleontological aspects, and taphonomic features such as bioerosion and encrustation provide useful informa-

tion about the different effetcts of turbidity and sediment accumulation. Coral rubble deposits are often buried or occasionaly represent a hard substrate for successive coral growth.

Corals in growth position also occur and consist of a suite of phaceloid and massive colonies (*Caulastrea*, *Goniopora*, *Astreopora*, *Diploria*, *Favia*, *Antiguastrea*) with growth habits and morphological characters typical of sediment-resistant corals. These corals form monospecific clusters or, especially towards the top of the succession, can co-exist together to form a small “framework”. Diversity and thickness of these coral bioconstructions, however, are quite reduced compared to many other Oligocene coral assemblages, suggesting that sediment imput, restricted light penetration, and maybe episodic high concentration of nutrients, were major controls on coral growth and carbonate production.