

The margins of the Early Jurassic Trento Platform (Southern Alps)

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Examples of Lower Jurassic carbonate platform margins are rare, probably due to the scarcity of good outcrops. One of the major palaeogeographic units of the Mesozoic Tethys, the Trento Platform, however, shows two different margin types facing the Belluno and the Lombardian basins.

While the western margin, facing the Lombardian Basin, is showing an ooidal unit with frequent mud mounds (Massone Oolite), the eastern margin was poorly characterized, mainly due to difficult stratigraphic definition and problematic accessibility of outcrops. The eastern platform margin characteristics are strictly controlled by tectonic activity and the type of carbonate factory; the differences between the eastern and the western margin could be linked to windward-leeward position of the platform margin, more protected to the west than to the east.

Subsidence increased since Late Triassic, due to the opening of the Alpine Tethys, defining shallow water areas, dominated by subtidal and peritidal muddy carbonates, and deeper basins, such as the Belluno and Lombardian Basin. More than 500 m of mud-dominated carbonates developed until Early Sinemurian, when major switch in the carbonate factory occurred. The Hettangian-Early Sinemurian margin is usually not well exposed and is strongly dolomitized and appears to be a tectonically controlled escarpments.

Since Late Early Sinemurian, the carbonate factory changed and led to a huge production of peloids and ooids, promptly shed in the surrounding basin: in the Eastern Trento Platform we recognize a 400/500 m thick wedge of Sinemurian to Pliensbachian ooidal calcarenites pinching-out towards the basin, with scattered bioconstructions made of calcareous sponges across the margin. This wedge pinches out also towards the platform interior, showing that the ooids were poorly preserved on the platform top. The preserved slope shows an angle of about 20–25°. In the western margin, the resedimented ooids are more limited, probably due to the limited size of the marginal carbonate factory.

In the Late Pliensbachian, probably in the Margaritatus zone, a drowning phase affected part of the eastern carbonate platform, switching to encrinitic calcarenites, while in the western one carbonate production continued until Bajocian. These encrinites are extremely thin on the platform top, but a resedimented wedge in the proximal basin highlights the position of the topographic margin.

The margins of the Trento Platform is a rare example of Early Jurassic carbonate platform margin that can be used as a reference for coeval carbonate platform depositional systems.