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Shift in carbonate production after the Carnian platform demise (Dolomites, northern Italy)

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In the Dolomites of northermost Italy carbonate platform growth came to to a standstill late in the Early Carnian (Late Triassic). The uppermost Cassian Formation, the time-equivalent basinal rocks to the prograding carbonate platforms, is overlain by the Heiligkreuz Formation, whose basal succession was deposited in a restricted and oxygen-depleted environment. The succession consists mainly of mudrocks, marlstones, and peloidal packstones to microbial limestones, with mass occurrences of low-diversity ostracode and pelecypod faunas, and early diagenetic dolomite. The dysaerobic carbonate deposits lapout against the inactive, $c.$ 20˚ steep carbonate paleoslope. No dysaerobic deposits have been found on the platform top indicating that it remained subaerially exposed during deposition in the basin. The sharp lithologic boundary between the carbonate slope and the suboxic deposits above is interpreted as type I sequence boundary. Karst solution(s) with sandstone fillings on the platform top support this view. The present case study shows that in areas with low subsidence interplatform basins may become cut off from the open ocean even if amplitude of sea level fluctuations are small (e.g. meter-scale). The resulting unconformity is of local significance and may not be used for the interpretation of a major sea-level fall and for regional sequence stratigraphic correlation.

As a consequence of the inferred sea-level drop the locus of carbonate production shifted from the former shallow-water platform and slope to the adjacent basin. Circulation in the semi-closed inter-platform basin stagnated giving rise to low oxygen levels in its bottom waters as the influx of terrestrial organic matter exceeded the oxidation capacity of the bottom water. As a result, the basin turned into an intermittently

dysaerobic, stressed environment with mass occurrences of low-diversity biota. In this oxygen-depleted environment, microbial mats flourished and contributed significantly to *in situ* carbonate precipitation.