



An alluvial plain - sabkha - lagoon system in the Upper Triassic of the Dolomites, northern Italy

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The Travenanzes Formation (Upper Carnian) deposited after a major turnover of the Southeastern Alps basin physiography. Its sedimentary environment has been reconstructed in the Dolomites area (northeastern Italy). At the end of the Early Carnian the complex topography of the Dolomites area, consisting of small rimmed platforms and deep basins, was almost completely filled and levelled by the shallow-marine sediments of the Heiligkreuz Fm. In the Late Carnian, the siliciclastic-carbonate sediments of the Travenanzes Fm. deposited over a flattened topography. The Travenanzes Fm. consists of almost 200 m of dolostones and multicoloured clays with sandstone to conglomerate intercalations and evaporitic intervals.

Four sections have been logged along a 60 km long N-S transect. They highlight a transition from continental to paralic and marginal-marine facies belts has been observed in a northerly direction. The southernmost, more proximal section displays the coarser clastic facies, with a basal 6 m thick fluvial pebble-size conglomerate passing upwards to predominant fine-grained red beds, with rare conglomerate point-bar sequences. In the central sections three depositional sequences have been identified, each consisting of a transgressive carbonate interval grading into a regressive terrigenous unit. The carbonate interval is composed of aphanitic, laminated and peritidal dolostones, alternating with dark clays. The peritidal dolostones are some times indistinguishable from those of the overlying Norian-Rhaetian Hauptdolomit/Dolomia Principale. The terrigenous intervals are mainly made up of multicoloured clays sparsely alternating with quartz-arenites interpreted as crevasse splays and local, shallow channel fills. Gypsum and calcic paleosols are also characteristic of the regressive phases, with the more developed paleosols marking the top of higher-order sequences. Facies analysis suggests an interfingering between terminal-fan, coastal sabkha and lagoonal deposits.

The northernmost, more distal section consists of aphanitic, laminated and marly dolostones with dark clay intercalations.

The correlations highlight the lateral interdigitation between land-derived clastic input of southern provenance and carbonate deposits. The Travenanzes Fm. passes upwards into the Hauptdolomit/Dolomia Principale without major gaps and unconformities. Only the disappearance of clay intercalations may be used to define a boundary between the formations. The depositional system of the Travenanzes Fm. thus marks the establishment of the wide marginal-marine sedimentary environment where the Hauptdolomit/Dolomia Principale started to form as soon as the terrigenous input came to an end.