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Quantified Carbonate Platform Development: The Rosengarten Transect (Middle Triassic, Dolomites)

A combination of basin and stratigraphic modelling was carried out on the Rosengarten platform (Schlern Formation) in order to quantify basin dynamics and platform evolution. The essential data sets for stratigraphic reverse/forward (PHIL) and basin modelling (PetroMod) were derived from existing studies and new detailed analyses on facies architecture and thermal maturity.

We identified two major stages of platform evolution – the first one with high subsidence rates and aggradational sedimentary characteristics and the second one with low subsidence rates and strong progradational characteristics. The maximum of the total subsidence was reached after the first biozone of platform growth - 870m/Ma in proximal and 750m/Ma in distal parts. An explanation for the sudden stop in subsidence is the coeval development of a huge magmatic chamber in the area of Monzoni/Predazzo neighbouring the Rosengarten.

The mentioned modelling results are corroborated by the porosity evolution of the sediment package below the slope mimicing the N-S trend of slope progradation. Values of the regional vitrinite reflectance pattern in the underlying Permian lie around 0.55%VR_r. The temperatures during maximum burial (presumably during Late Cretaceous times) most probably did not exceed 100ºC. However, samples from the Rosengarten area neighbouring the Monzoni volcanic centre reveal values between 0.7 and 0.8%VR_r indicating that the thermal influence of the Monzoni event was restricted to its nearest vicinity. The next step of our investigations will be pinpointing the timing of subsidence with the help of fission track analyses in apatites.