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2D Sedimentary and Subsidence History of the Slope of a Mid-Triassic Carbonate Platform: the Rosengarten/Catinaccio, Dolomites, Italy

The western side of the Rosengarten/Catinaccio platform is ideally suited for a combined interdisciplinary approach of stratigraphic forward and basin modelling to unravel the regional patterns of sedimentation and geodynamic evolution. The tectonically undisturbed transect covers the lagoonal interior of the platform to the toe-of-slope interfingering with basinal successions. Existing data from this section provided the exact bio-/chronostratigraphic timing of slope progradation. The essential data sets for stratigraphic forward (PHIL) and basin modelling (PetroMod 2D) were derived from new and detailed facies architecture and thermal maturity analyses. Stratigraphic forward modelling quantified the accommodation development of the entire platform. Sedimentation and erosion rates were calculated to gain data on thicknesses for the reconstruction of palaeogeometries. From the reconstructed coalification pattern the thermal evolution was deduced using basin modelling tools. New thermal maturity data yielded calibration parameters for the subsidence modelling. Our results indicate that carbonate production at Rosengarten at least reached modern carbonate environments. Production strongly outpaced subsidence during platform growth. The regional vitrinite reflectance pattern (0.4-0.6%VR_r) indicates an increase of thermal maturity with stratigraphic age. First basin modelling results imply that the present-day surface was overlain by an approximately 750m thick sequence at times of maximum burial with a concurrent basal heat flow of 60mW/m^2. It remains, however, to be solved when maximum burial and maximum temperatures were reached. Further investigations e.g. fission track and organic geochemistry data will be used to narrow down these uncertainties.