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### **Geotectonic Evolution of the Central Southern Alps (Dolomites) derived from Thermal Maturity Data and Basin Modelling**

Dolomites and Carbonate reservoirs are important targets for hydrocarbon exploration but the overall understanding of such reservoirs is still in progress. The Permo-Mesozoic sedimentary succession in the central Dolomites is ideally suited for an integrative interdisciplinary approach of thermal maturity investigations and basin modelling to unravel the thermal and geodynamic evolution of such a Carbonate system. The regional vitrinite reflectance pattern, measured on surface samples, indicates an increasing thermal maturity with stratigraphic age. For example, the late Triassic Heiligkreuz/Raibl formation is characterised by a lower maturity (around 0.5 % VRr) than the middle Permian Gardena formation (around 0.9 % VRr). This indicates a pre-orogenic coalification pattern and an overall low to moderate level of thermal maturity of the Permo-Mesozoic sedimentary successions, corresponding to the oil window. In the realm of the study area, only 1000 meters of the reconstructed overburden are preserved. An additional 750 meter thick eroded sequence had to be assumed to explain the measured thermal maturity. This indicates a longer lasting Mesozoic and Cenozoic sedimentation phase, which thus was more widespread than documented by the present-day sedimentary sequence. Maximum burial probably was reached during Upper Cretaceous times. The timing of maximum burial is yet a matter of discussion just as the question whether the eroded sequence consisted of autochthonous sedimentary rocks or of allochthonous thrust sheets. Ongoing fission track analyses and cross section balancing will help to minimise these uncertainties.