



## **Quantifying component diversities along temporal and geographic gradients in Cenozoic circumalpine carbonates**

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This study explores the component relationships within indurated carbonates which can dominate sedimentary sequence. The data for the analysis is gained by point counting of numerous thin sections. Resolution of component identification is dependent on various factors including the presence and recognition of taxon specific character in the two dimensions available in thin sections; the microtaphofacies of the environment of deposition and component architectures determine fragmentation, abrasion, encrustation and bioerosion rates as well as diagenetic pathways. The highest taxonomic resolution is reached by coralline algae and larger foraminifera which are identified using characters derived from thin sections. Multivariate analysis (MDS, Cluster analysis) is used to component distributions within and between facies as well as localities. Component relationships, in part directly deduced within encrustation sequences, are explored using bivariate analysis.

Studied thin sections originate from detailed studies of localities both north (Southern Germany, Austria) and south (Northern Italy, Slovenia) and of the Alps. Detailed facies analysis, itself often based on statistical analysis of components, show variations in environmental factors at different scales including local shelf gradients and terrigenous influx, regional paleogeographic developments within the Mediterranean Tethys and Paratethys as well as global climatic change during the Oligocene and crossing into the Miocene. The localities differ in the diversity and abundance of a wide variety of components including coralline algae, smaller and larger benthic foraminifera, corals, bryozoans, barnacles and echinoderms among others. Generic and species identification of both coralline algae and larger foraminiferal taxa allow taxonomic gradients to be established.