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Changes of stable C-isotopes and diversity of benthic microfossils in Rhaetian neritic and pelagic environments of the Northern Alps.

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High-resolution carbon isotope studies in Rhaetian sections of the Northern Calcareous Alps have demonstrated that a significant negative shift of bulk rock carbons isotopes (δ13Ccarb) occurs in late Rhaetian (Rhaetian 3) intraplatform deposits (Kössen Formation) (Mette et al. 2012; Korte et al. 2017). New carbon isotope data have also recorded a distinct negative δ13Ccarb-shift in late Rhaetian oceanic basin sediments (Zlambach Formation) of the Northern Calcareous Alps (unpublished data) and a positive δ13Ccarb-shift in Rhaetian hemipelagic limestones of the Southern Alps (Slovenia) which was related to a minor extinction event (Rozic et al. 2012). These results point to carbon cycle perturbations of regional extent. The benthic microfossil record (ostracods, foraminifera) and sedimentologic data of the intraplatform deposits are indicative of changes in redox conditions in the late Rhaetian (Rhaetian 3). Adverse environmental conditions in the Kössen Formation are proved by low diverse ostracod assemblages dominated by Pseudohealdia spp. and abundant casts of juvenile bivalves which point to episodic mass mortalities. Additional indications of low oxygenation levels were obtained from the size range and morphologies of benthic calcareous foraminifera. Quantitative microfossil data from the Zlambach Formation also show a distinct decrease of ostracod abundance and taxonomic diversity due to changes in hydrodynamic conditions and oxygenation.

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