



## **Dolomitisation of Middle Triassic carbonates below the Vienna Basin: Early or late?**

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The first floor of the basement below the Neogene Vienna Basin of Austria consists of several thrust units of the continuation of the Northern Calcareous Alps. Middle and Upper Triassic carbonates comprise the dominating lithologies within these thrust sheets. Several dolomitic intervals have been drilled; most prominent are Middle Triassic dolomites of the Wetterstein carbonate platform and Upper Triassic Hauptdolomite. Dolomites, due to their strongly jointed appearance, constitute reservoirs for hydrocarbons with porosities up to xxx, whereas limestones do not show such high porosities. Therefore, the extent and genesis of dolomitisation has been investigated by applying isotope geochemical methods.

Stable isotope values of the dolomites range around 3 permil  $\delta^{13}\text{C}$  VPDB and -1 permil  $\delta^{18}\text{O}$  VPDB. Thus, carbon isotope values are near sea water values for the Middle Triassic and similar to limestone values.  $\delta^{18}\text{O}$  isotope ratios indicate diagenetic influence, and some correlation of carbon and oxygen isotopes is present. Strontium isotope ratios ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) range between 0.7078003 and 0.707980 and are similar to expected Middle Triassic sea water values and values from limestones of the same formation. This suggests early dolomitisation under the influence of Triassic sea water or formational pore waters. Dolomitisation under the influence of Jurassic-Cretaceous-Paleogene sea water, meteoric saline waters or metamorphic fluids can be ruled out based on isotope geochemistry.