29 Poster Presentation

Geochemistry and isotope-chemostratigraphy of medium-grade marbles from the Austroalpine Basement (Eastern Alps)

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Calcitic marbles of different tectonic units of the Koralpe-Wölz nappe pile (Austroalpine Basement, Eastern Alps) were studied regarding their geochemical and isotope characteristics.
For stratigraphic purposes samples with primary compositions were selected using Mn/Sr- and Rb/Sr-ratios and Sr-, C, and O-isotope signals. Limits for Mn/Sr are ≤2 and for Rb/Sr ≤0.02. Primary isotope ratios are given by the spread of Phanerozoic seawater curves. Marbles reflecting primary signals do not exceed 0.70925 for $^{87}Sr/^{86}Sr$ and O- and C-values scatter between -8 to 0 and -1 to 6‰ respectively (V-PDB).
Although high-P/T metamorphic conditions may facilitate post-depositional changes of the signals, a sufficient quantity of samples falls within the primary fields. Mn/Sr-ratios vary between 0.036 and 2.814 and Rb/Sr-ratios between 0 and 0.132. Delta^{18}O- and delta^{13}C-values range from -12.95 to 0.10‰ and -1.58 to 4.78‰ respectively.
The evaluation of the signals allows distinguishing two distinct groups of marbles. The Rappold, Plankogel and Koralpe-Saualpe Complexes are summarized within group I which is characterized by low and less variable Sr-values (between 0.707997 and 0.708465). O- and C-data are scattering between -11.08 and 0.10‰ and -1.58 and 4.78‰ respectively. Just a few samples show altered values. Group II, including the Wölz, Greim, Millstatt and Radenthein Complexes, shows variable and relatively high Sr-ratios from 0.708556 and 0.711090, most of them exceeding the values provided by the seawater curve. Oxygen-isotopes fluctuate within -12.95 and -4.01‰ and carbon-ratios scatter from -0.9 and 2.02‰.
For group I a deposition age in the late Early to Middle Devonian is likely. Marble-chemistries of group II point to sedimentation ages from the late Silurian to the earliest Devonian.
The obtained deposition ages as well as lithologic successions allow comparing both groups with un- or weakly metamorphosed Paleozoic counterparts from the Austroalpine and Southalpine. The lack of an Ordovician magmatic event and a minor influence of the Variscan evolution are characteristic for group I and are similar to the evolution of the Paleozoic of Graz. Group II however shows similarities with the other Austro- and Southalpine Paleozoic units including the Greywacke Zone, Gurktal nappes, Carnic Alps and the Karawanken.