28 Poster Presentation

Stable and Radiogenic Carbon- and Stable Oxygen Isotopes in Authigenic Carbonate from Lake Neusiedl, Austria

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Due to its low sedimentation rate and constant sediment remixing the age of Lake Neusiedl has never been determined analytically. Formation of authigenic carbonate in Lake Neusiedl has been reported since the 1960[ies]. Dating of these authigenic carbonate is an alternative method to determine the minimum age of water present – even episodically - at the lake.
To characterize the mineralogy we use X-Ray Diffractometry, Simultaneous Themo Analysis, and Fourier Transform Infra Red Spectroscopy. The stable C and O isotopes were determined on a ThermoFisher Delta[plus]XL with a Gasbench II (University of Innsbruck) and ^{14}C activities at the accelerator VERA (Vienna).
In this poster we present the results from one sample taken at the west shore of the lake north of Rust. The sample consists of 60% clay. To characterize the authigenic carbonates and find the fractions with highest authigenic carbonate minerals we investigate the size fractions <4 µm, <3 µm, <2 µm, <1 µm, <0.5 µm and <0.2 µm. The "coarser" fractions (4 µm to 2 µm) contain detrital minerals such as chlorite, muscovite, quartz, feldspar, stoichiometric calcite and stoichiometric dolomite as well as authigenic high Mg calcite. In contrast, the smaller size fractions (1 and 0,5 µm) lack well-crystallized detrital carbonate - just authigenic carbonate phases are found.
Stable carbon isotopes (vs. VBDB) show a mixing line between -3.8 ‰ in the finest fraction and -2.9 ‰ in the coarsest fraction. Stable oxygen isotopes also show a mixing line between -0.8 ‰ in the finest fraction and coarser samples (-3.85 ‰). The exception is the fraction <0.5 µm with aberrant $\delta^{18}O$ of + 8‰ that might be attributed to a new mineral formed possibly under evaporitic conditions.
Radiogenic carbon ages lie at 89 %pMC (0,2 and 0,5 µm fraction) and 72 %pMC (4µm fraction) this corresponds to an approximate age of 850 yBP for the fine fractions and 2 300 yBP for the coarsest fraction.