

Clumped-isotope thermometer applied on ostracod shells: a new proxy to identify continental climate changes

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In many modern and ancient lakes, ostracod shells constitute the only carbonates capable to record climatic and environmental changes at high-resolution. Ostracods are small aquatic crustaceans (mostly 0.3-5 mm) with a stable low-Mg calcite shell mineralogy, which makes them ideally suited for targeted geochemical analyses. Therefore, ostracods represent the best candidate to develop a new carbonate clumped isotope (Δ_{47}) lacustrine paleothermometer able to disentangle the effects of global climate changes at regional scale. Ostracod- Δ_{47} paleothermometry would significantly reduce the uncertainties associated with lake paleotemperatures reconstructions and changes in the precipitation over evaporation relationship.

To establish the relationship between Δ_{47} and the temperature for ostracod shells, the species *Eucypris* sp. and *Herpetocypris* sp. have been collected in monitored environment at 4°C and 12°C. Preliminary analyses were performed at the Vrije Universiteit Brussel (AMGC-VUB lab) using a Nu Instruments Perspective-IS stable isotope ratio mass spectrometer in conjunction with a Nu-Carb carbonate sample preparation system. First results show a linear regression between ostracod- Δ_{47} and calcification temperature that is in good agreement, within the uncertainties, with previous I-CDES published calibrations. A first application made on a late Pleistocene record from the shallow Lake Trasimeno (Italy) allowed to identify warmer/colder and humid/dryer conditions during Greenland Interstadial and Greenland Stadial respectively.