



## **Last glacial-interglacial cycle palaeoclimatology and palaeoecology reconstruction in the southern Balkans: an ostracod stable isotope record from Lake Ohrid (Albania).**

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Lake Ohrid (40°55,002N, 20°40,297E, 705 m a.s.l., Albania) is one of the oldest and largest lakes in Europe. It is recognised as a significant center of biodiversity and offers the possibility to provide a very long and unique record. Here we present results of the stable isotope analyses of ostracods from the first sediment core ever taken in the deeper part of the lake. The record is 10 m long, and probably, covers the last glacial - interglacial cycle.

Lake Ohrid is fed by inflows, springs and from underground aquifers below the karstic mountain range. This hydrological complicated setting is probably responsible for the relatively high fluctuations in the  $\delta^{18}\text{O}$  signal (within a range of 1.5 ‰). These fluctuations are most likely linked to water balance effects observed in the large offset between the isotopic composition of modern precipitation and lake water (evaporative enrichment), thus hampering a quantitative reconstruction of the climate signal.

However, the carbonate isotopic signal of  $\delta^{13}\text{C}$  seems to respond more accurately to climate changes in agreement with the other proxies. The ostracod  $^{13}\text{C}$ -signal is directly linked to the  $\delta^{13}\text{C}$  of the dissolved inorganic carbon (DIC), which in our case is mainly controlled by first, atmospheric  $\text{CO}_2$  exchange at the lake surface, second, by the isotopic composition of DIC in the incoming water. At the beginning of the

Eemian, the negative excursions of  $\delta^{13}\text{C}$  ( $\sim -3 \text{ ‰}$ ) is likely due to an increase of the biogenic  $\text{CO}_2$  production in the soils (mainly linked to the plant respiration and microbial activity). Conversely, the high values ( $\sim +3 \text{ ‰}$ ) observed at the Rissian late glacial is a consequence of the decrease in the vegetation and soil activities. This shows the high potential of this continental record over the last climate cycle.