

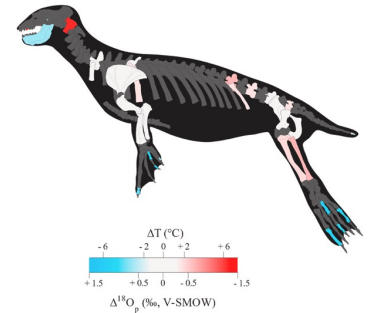
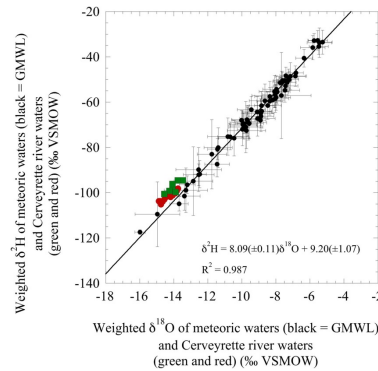
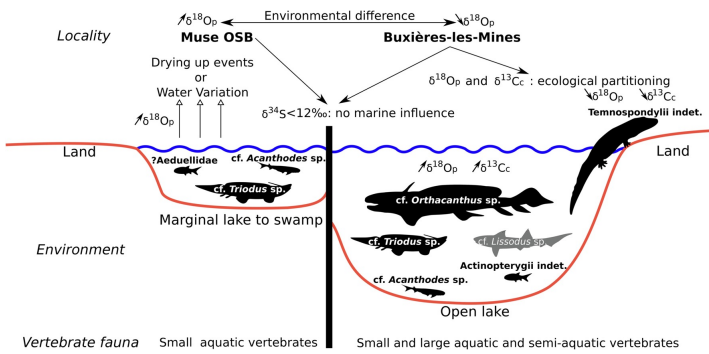


SHORT COURSE

# Stable isotope geochemistry in low temperature environments

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## Program

This course aims to provide a thorough comprehension of utilizing stable isotope geochemistry in cold environments. Attendees will acquire practical experience in applying and understanding stable isotope fractionation principles. The course will explore various topics such as oxygen isotope thermometry from calcium carbonate and calcium phosphate minerals, hydrogen and oxygen isotope ratios in the water cycle, and the implications for paleoclimate by combining theoretical concepts with hands-on activities, including marine and air temperature reconstructions from the Paleozoic to the Holocene.

May 27, 2024	
09:00 - 12:00	Principles of stable isotope fractionation in the low temperature environment: <ul style="list-style-type: none"> <li>- Isotopic fractionation between substances: equilibrium and kinetics processes</li> <li>- Oxygen isotope thermometry using calcium carbonate and calcium phosphate minerals. How to establish experimental and empirical calibration curve? The recent contribution of clumped isotopes to marine paleothermometry.</li> </ul>
May 28, 2024	
09:00 - 12:00	Hydrogen and oxygen isotope ratios in the water cycle and paleoclimate implications <ul style="list-style-type: none"> <li>- The meaning of local meteoric water lines (LMWL) over Europe</li> <li>- Does water have a memory of recent climates thanks to its stable isotope composition?</li> <li>- The volume of continental ice and the oxygen isotope composition of seawater</li> </ul>
May 29, 2024	
09:00 - 12:00	Examples of marine and air temperature reconstructions from the Paleozoic to the Holocene <ul style="list-style-type: none"> <li>- The seawater temperature curve during the Jurassic-Cretaceous period</li> <li>- How to solve both marine temperature and the oxygen isotope composition of seawater? The advantage to combine the oxygen isotope analysis of both fishes and reptiles</li> <li>- Reconstruction of seasonal variations in surface oceans (molluscs, cephalopods) and continents (mammals such as the bison)</li> </ul>