



## **The Urgonian Formation in the Helvetic Alps (late Barremian to early Aptian): a geochemical and sequence stratigraphic correlation for pinpointed depositional geometries**

Lucie Bonvallet (1), Alexis Godet (1), Thierry Adatte (1), Jorge E. Spangenberg (1), Annie Arnaud-Vanneau (2), and Karl B. Föllmi (1)

(1) University of Lausanne, Institut des Sciences de la Terre et de l'Environnement, Switzerland (lucie.bonvallet@unil.ch), (2) Association Dolomieu, 6 chemin des Grenouilles, 38700 France

Urgonian platform carbonates are a common feature of subtropical and tropical shallow-water environments of late Early Cretaceous age. They include the remains of rudists, corals, chaetetids and stromatoporoids, which are interpreted as indicators of a predominantly photozoan, oligotrophic carbonate-producing ecosystem. The late Early Cretaceous is also marked by the occurrence of several oceanic anoxic episodes, such as the latest Hauterivian Faraoni and the early Aptian Selli Events, which are both interpreted as the consequence of generalized eutrophic conditions. These observations imply that the late Early Cretaceous underwent larger fluctuations in nutrient supply, which may have interfered with the evolution of the widespread Urgonian platforms.

Our goal is to study the interactions between paleoceanographic and paleoclimatic change, and Urgonian carbonate buildup in the northern, Helvetic Alps. This unit remains understudied relative to its counterparts in eastern and central France. We specifically intend to compare the Urgonian units of late Barremian age and early Aptian age, which are separated by the so-called "Lower Orbitolina Beds". The late Barremian was less affected by anoxia, whereas the early Aptian witnessed progressive change in paleoceanographic conditions, which led up to the Selli Event.

The preliminary results of a selection of representative sections from the Helvetic Alps will be shown. They were analyzed both for their phosphorus and stable-isotope (C, O) contents, as well as for their microfacies in order to develop a sequence stratigraphic framework. One of the key features is the total disappearance of a late Barremian depositional sequence in proximal areas, and the progressive morphological change of the platform, from a ramp-like (early Barremian) to a distally-steepened platform (late Barremian and early Aptian).