Paleoenvironmental and paleoclimatical reconstruction using a paleoecological model based on ostracods and X-Ray Diffraction on sediments: an example from the Paleogene of NW Switzerland (Laufen quarry, Jura mountains)

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The marine deposits of the stratigraphical Group *Septarienton* (Paleogene) crop out in several areas of the Swiss Jura Mountains (Picot 2002, Becker 2003). The mollasic deposits of the Laufen section have been subjected to detailed sedimentological and paleontological studies. Different fossil groups including foraminifers, ostracods, fishes, nannofossils, molluscs, pollens and spores were studied in terms of taxonomy, biostratigraphy and paleoecology. Paleoenvironmental and paleoclimatical reconstruction is based mainly on the studies of sedimentology, ostracods and X-Ray Diffraction on sediments. Different paleoecological statistical tools like PCA and taxonomical indices (Clarke & Warwick 2001) are used on ostracods to observe the repartition and the evolution of the associations with the depositional environments.

 The transgressive sequence is very abrupt and flooded immediately the Mesozoic bedrock, leading to a coastal marine environment. The regressive sequence shows a progressive evolution from outer marine to brackish continental paleoenvironments. New biostratigraphical data allowed the dating of the rhenish UMM transgression and regression in this area, corresponding to the stratigraphical nannofossil biozone NP22. Clay analyze shows an increase of the climate seasonality along the section. Heavy minerals study shows that the draining systems was constituted of different sources of materials, coming from the Scandinavian Shield, the Massif Central zone, and from the Vosges and the Black Forest areas, but without inputs from the Alpine zone.

These different studies lead to a better understanding of Paleogene paleoenvironments and their evolution. Based on the works of Berger et al. (2005a, b), an actualized paleogeographical map is suggested.

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