

## **\*Interprétation sismique 3D dans le Zürcher Weinland (CH): paléotectonique et discordance Malm-Tertiaire**

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This DEA (Diplôme d'Etudes Approfondies) was carried out at the seismic interpretation laboratory of the Institute of Geology and Palaeontology at the University of Lausanne (Switzerland) and supervised by Professor G. M. Stampfli and Mr. P. Birkhäuser from the Nagra (National Cooperative for the Disposal of Radioactive Waste). The Charisma™ (Schlumberger-Geoquest™) software was used for interpretation of the seismic data from the Nagra 2D OPA-91 and 3D OPA-97 field acquisitions. This data set was acquired in order to find the best repository for high-level and long-lived waste in the Dogger Opalinus Clays formation. The 3D data were mainly used during this work. The study concentrated on two aspects, first the Triassic palaeotectonic, then the Malm-Tertiary unconformity.

The detailed mapping of horizons and faults between the basement-Mesozoic limit and the Dogger allowed the presence of a major permo-carboniferous (PC) fault delimiting a trough (Marchant 2000) to be confirmed, some inverse faults were also highlighted. The study of these faults showed that some were parts of the major PC fault, others were normal inverted faults and only a few were newly created inverse faults. The Charisma™ tools permitted to define that the faults were active during a tectonic inversion phase from Middle to Late Triassic and that they remobilized PC structures. Some plate tectonic reconstructions from Stampfli & Borel 2001 are presented to understand the geodynamic situation during this tectonic inversion phase.

The palaeotectonic study also comprises subsidence curves from the Benken borehole data, situated on the OPA-97 acquisition field, and from the Weiach one situated to the west. These curves are presented with some others from the Plateau and Helvetic domain (Allia 1996, Wildi et al. 1989), the major events are interpreted and commented.

The second part is focused on the Malm-Tertiary unconformity. First, it comprises an introduction on the geodynamical context responsible for the 90My gap, then a cartography of the unconformity and the corresponding palaeogeological map are presented. The cartography allowed a karstified and thickened zone to be highlighted. That zone corresponds to the SW corner of the 3D OPA-97 seismic survey and is delimited by the major PC fault. The correlation between the thickened zone and the PC deposits seems to indicate a possible syn-sedimentary reactivation along the PC trough during Liassic time.