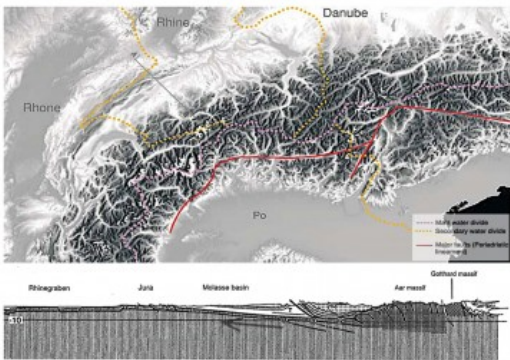


JURA MOUNTAINS: ASPECTS OF ORIGIN, TECTONICS AND MORPHOLOGY

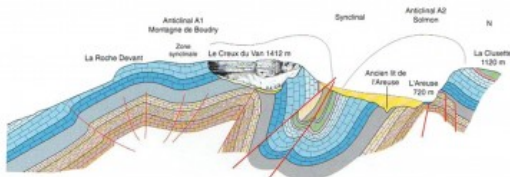
by Wilfried Winkler



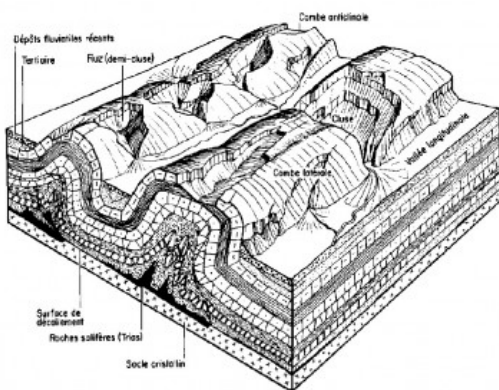
THE DRIVING FORCE OF FOLDING THE JURA



LAST GALCIER PERIOD 18000 YEAR AGO



GEOLOGICAL SECTION THROUGH THE CREUX DU VAN



THE SPECIFIC BOX-FOLDS IN THE JURA (KOFFERFALTEN) WITH STEEP LIMBS AND FLAT HINGES.

Could you shortly explain the formation of the Jura mountains and its relationship with the Alps?

The rocks which we find in the Jura mountains formed at the northern margin of the Alpine sea. This northern margin occupied a shallow marine environment where mostly limestones were deposited. Most important is the existence of evaporitic rocks at the base which were important as a lubricant during the deformation of the Jura mountains.

The sediments are characterized by the alternation of limestones, marlstones and shales which were deposited in different conditions in the shallow sea. The conditions (climate, water depth) changed during the time of deposition, which occupied a period of time of 120 million years.

What is the explanation of the layered condition of the Jura and the Creux-du-Van?

The morphology of the Jura firstly was controlled and made by the folding, which is the typical folding in box folds style. The sediments which were deposited earlier on the flat bottom were folded and shortened in about a 20%. So this early mountain chain was formed by the folding and compression folding. This of course controlled later the development of the river systems and the drainage. Secondly the morphology is a result of the different resistivity to erosion of the different rocks. In our case, in the Jura, limestones are more resistant to erosion than marlstones and shales. So erosion will affect more to the first sediments which are more vulnerable to it.

How are the physical conditions and morphology of the limestone?

Limestone in the Jura mountains has been quarried since historic times. A famous example is the pierre jaune de Neuchâtel which has been used for the construction of most of the churches and administration buildings in the cantons around the area.