

Zeitschrift: Eclogae Geologicae Helvetiae
Herausgeber: Schweizerische Geologische Gesellschaft
Band: 85 (1992)
Heft: 3: Symposium on Swiss Molasse Basin

Artikel: Structural configuration of Swiss Molasse Basin : western part
Autor: Gorin, G.
DOI: <https://doi.org/10.5169/seals-167037>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 20.08.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

Structural Configuration of Swiss Molasse Basin: Western Part

By G. GORIN

Department of Geology-Paleontology, University of Geneva, 13, rue de Maraîchers

Seismic data in the greater Geneva area and in the Canton Vaud, calibrated by wells and outcrop information, give a good structural definition of the Molasse Basin between the Jura and the alpine front, except for the part underlying the Lake of Geneva where seismic resolution is too poor.

In the **Geneva area**, the Molasse Basin consists of two parts:

- a) The “**Geneva cuvette**” stretches from the Jura outcrops to the Salève thrust fault. It is limited to the west by the Vuache wrench fault. The Lower Freshwater Molasse (USM) unconformably overlies the relatively undisturbed and karstified Barremian carbonates, which dip southeastwards towards the frontal depression of the Salève. Seismic data can be properly calibrated with the deep Humilly-2 well and provide structural information down to the Palaeozoic. The Vuache wrench fault and the Salève thrust seem associated with deep-seated Permo-Carboniferous faults. Mesozoic and Molasse sediments are affected mainly by NW-SE trending wrench faults with little vertical throw.
- b) The “**Bornes Plateau**” stretches between the eastern flank of the Salève and the front of the subalpine Bornes Massif. It is limited to the NE by the prealpine nappes thrust front, where it joins up with the “Geneva cuvette”. Seismic data can be tied to the Faucigny-1 deep well. The lower part of the Tertiary sedimentary fill consists of Lower Marine Molasse (UMM) onlapping northwestwards onto Barremian carbonates, but most of the Tertiary fill is made of USM deposits, affected by numerous thrusts. The western front of thrustsed molasse seems to coincide with a hinge zone forming the NE continuation of the Salève. The Molasse Basin of the “Bornes Plateau” overlies a SE-dipping Permo-Carboniferous half-graben limited by a major fault zone directly underlying the alpine front. The Mesozoic sequence thins towards the latter front.

In the **Canton Vaud**, seismic data can be tied to wells such as Essertines-1 and Savigny-1. In the NW part of the Molasse Basin, deposits onlap towards the NW a relatively undisturbed, SE-dipping, eroded Mesozoic surface and are essentially affected by transcurrent faulting with little vertical throw. In the SE part of the Molasse Basin, a SW-NE trending, fault-associated hinge line underlies the western front of thrustsed molasse sediments. SE of this hinge line, UMM sediments seem well developed underneath the thrusts of USM. A major thinning of the Mesozoic sequence occurs towards the alpine front. Important faulting at Permo-Carboniferous level might be present underneath the latter front.

In summary, seismic data reveal striking similarities in the structural configuration of the Molasse Basin between the greater Geneva area and the Canton Vaud: a SW-NE trending, deep-seated and probably fault-controlled hinge line separates the Molasse

Basin in two parts: to the NW, a relatively undisturbed basin thinning out towards the Jura and filled essentially with USM deposits. To the SE, an older and deeper basin where UMM sediments are present and overlain by thick thrust USM deposits. This configuration resembles that recently described from seismic in the Molasse Basin of Central and Eastern Switzerland.

The Mesozoic strata in the Swiss Molasse Basin: An overview

By R. Wyss

geoform/Swisspetrol, Anton Graff-Str. 6, CH-8401 Winterthur

Based on surface data and on 8000 km of seismic lines, 24 exploration wells have been drilled within the last 30 years through Swisspetrol and its partners in the Swiss Molasse Basin and adjacent regions. Of these wells 19 drilled into or through the Mesozoic strata.

Two characteristic stratigraphic sequences, mainly influenced by basinal facies in Western Switzerland and platform facies in Eastern Switzerland, show the different evolution during Mesozoic times. The Mesozoic sediments are bordered by two main unconformities. Below the underlaying "Base Triassic Unconformity" crystalline basement or permocarboniferous sediments are found. Above the predominantly carbonaceous sediments of Mesozoic age, the clastic Molasse sequence is overlaying the "Base Molasse Unconformity". These two unconformities mark not only two tectonic events but also a change in the depositional environment.

The facies and distribution of Mesozoic sediments in the Swiss Molasse Basin show the migration of the trough axis and the depositional environment during time. These movements are induced by tectonic movements along different tectonic trend lines. Transpressive faulting is an important process in forming the Mesozoic realm in the region of the future Swiss Molasse Basin.

The Basal Tertiary unconformity in the Helvetic realm

By R. HERB

Geological Institute, University of Bern, Baltzerstr. 1, CH-3012 Bern

In the Helvetic domain, including the Aar Massif, the onlap of shallow water sediments on the basal Tertiary unconformity which occurred between the Middle of the Paleocene and the Late Eocene, reflects the progradation of the coastline in NW direc-