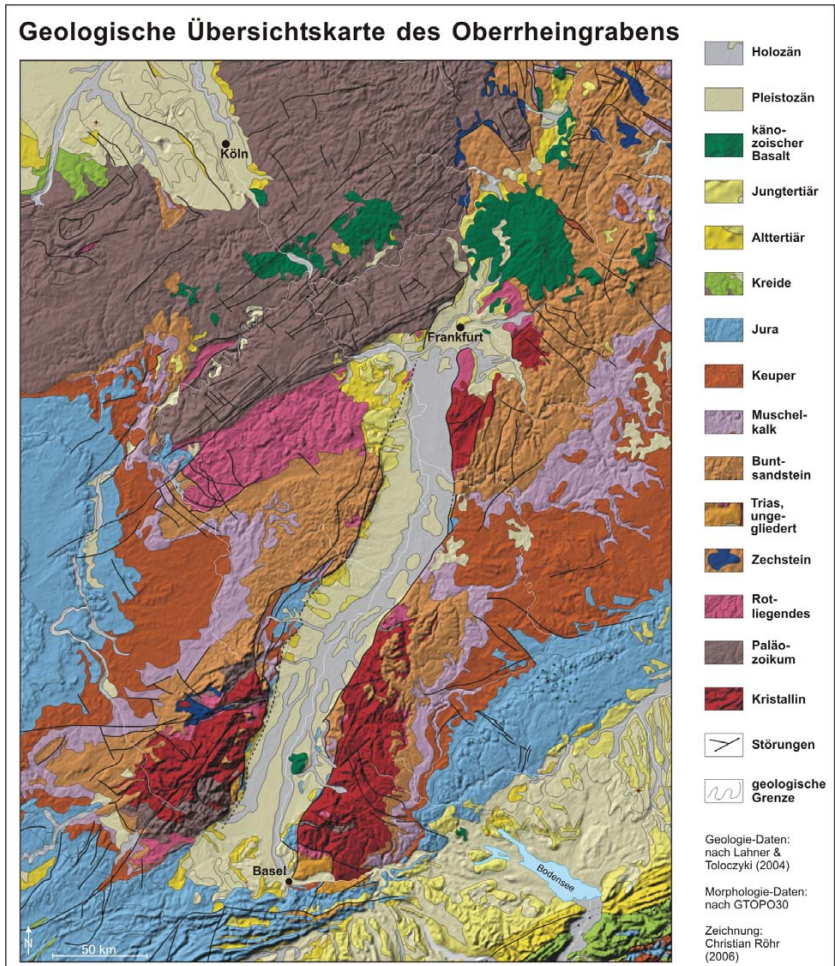


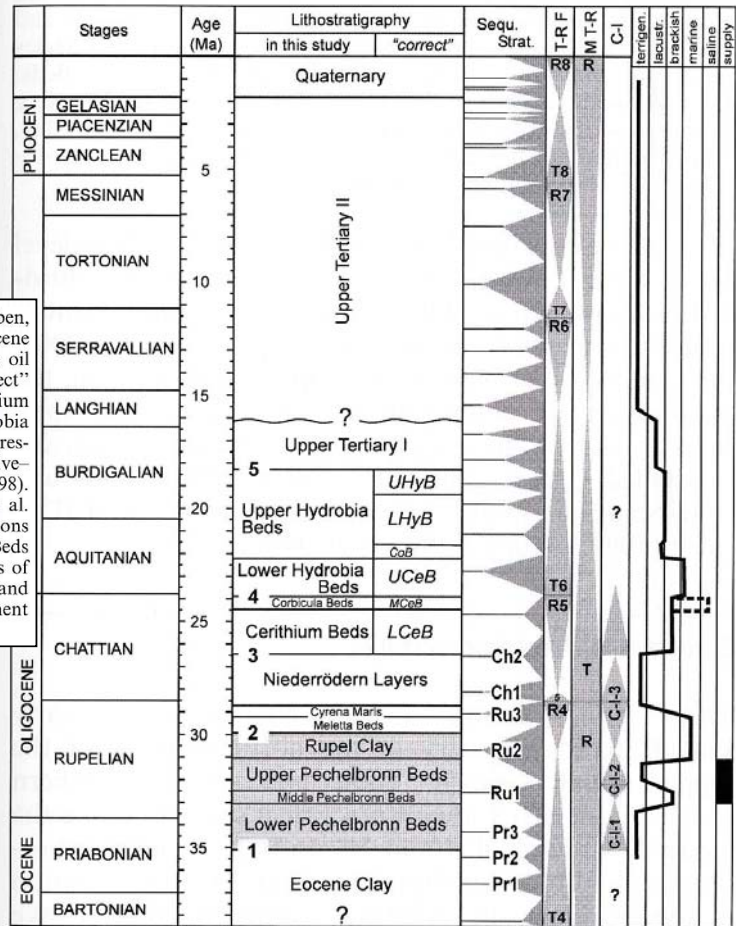
Stratigraphy, Basin fill, and Paleogeography



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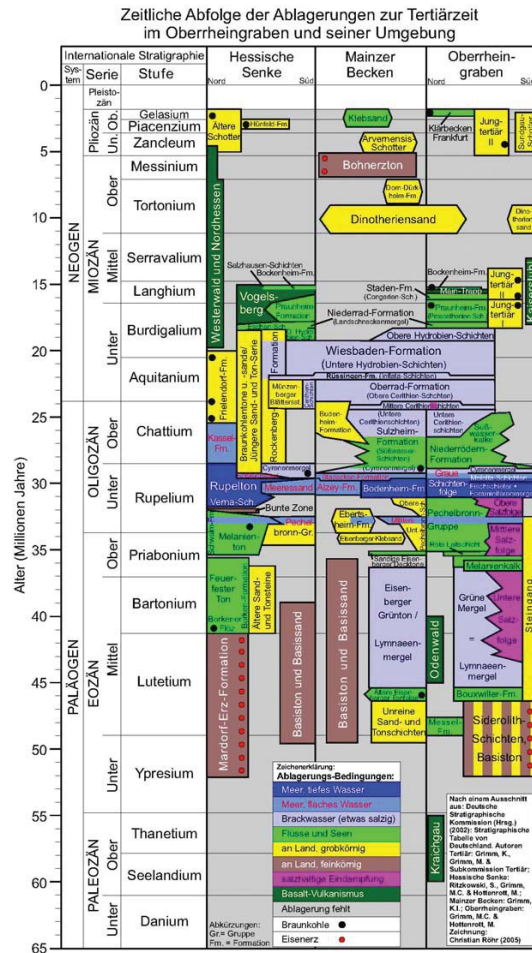
Fig. 5 Cenozoic stratigraphy in the northern Upper Rhine Graben, as from German Stratigraphic Commission (2002). The Miocene lithostratigraphic units used in this study correspond to the oil industry classification, which differs from the actual "correct" stratigraphy. *LCeB/MCeB/UCeB* Lower/Middle/Upper Cerithium Beds, *CoB* Corbicula Beds, *LHyB/UHyB* Lower/Upper Hydrobia Beds. The columns 'Sequence Stratigraphy', 'T-R F' (transgressive-regressive facies cycles) and 'M T-R' (major transgressive-regressive cycles) are according to Hardenbol et al. (1998). Base-level cycles are interpreted by Derer (2003), Derer et al. (2003), and in this study. **Bold numbers 1–5** correspond to horizons of Fig. 3. The early syn-rift succession is in the Pechelbronn Beds and Rupel Clay. The early syn-rift brackish and marine events of the graben probably had the same regional causes as the Ru 1 and Ru 2 floodings. 'Supply' (black) marks the interval of sediment input through the low-relief zone of the western border fault

Derer et al. 2005

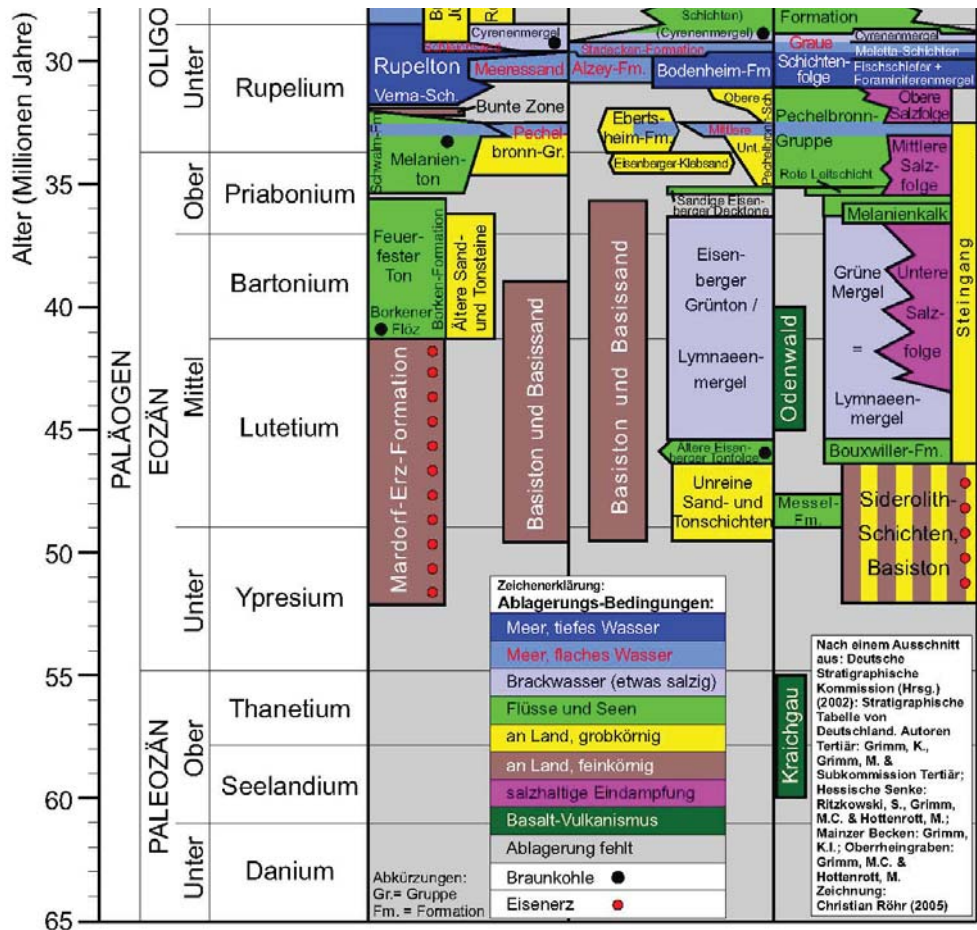


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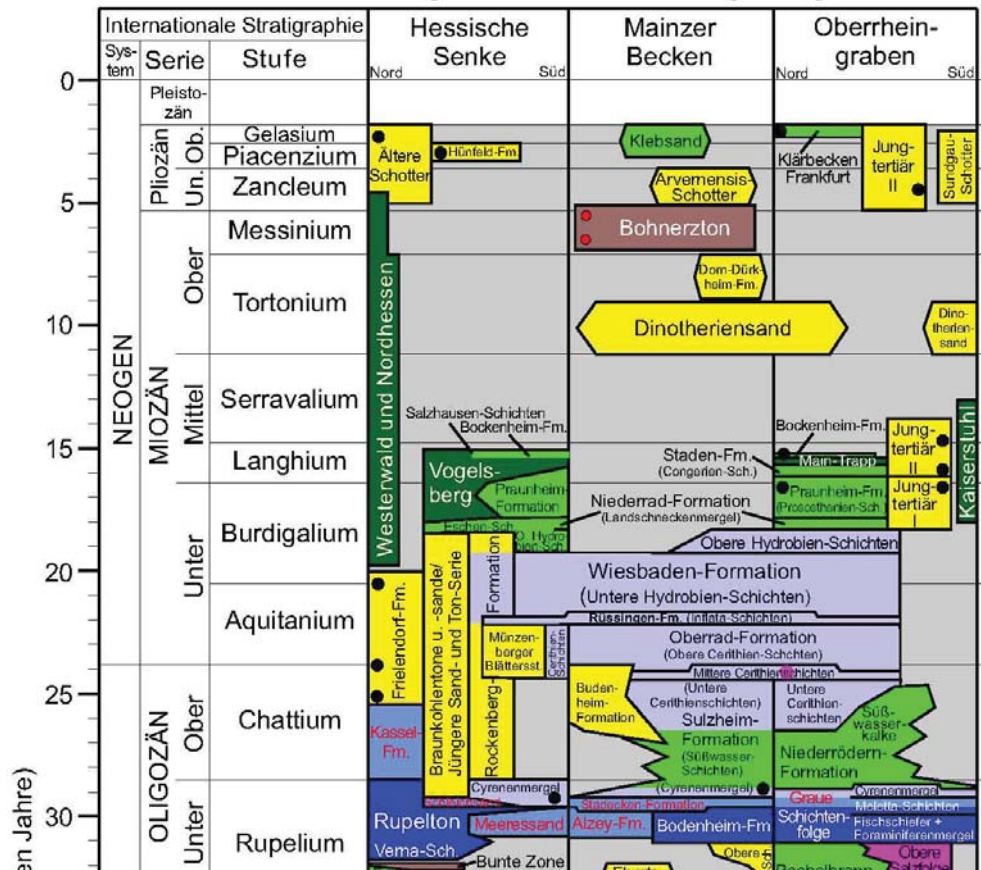
aus "Stratigraphischen Tabelle von Deutschland"
(Hrsg.: Deutsche Stratigraphische Kommission, 2002)



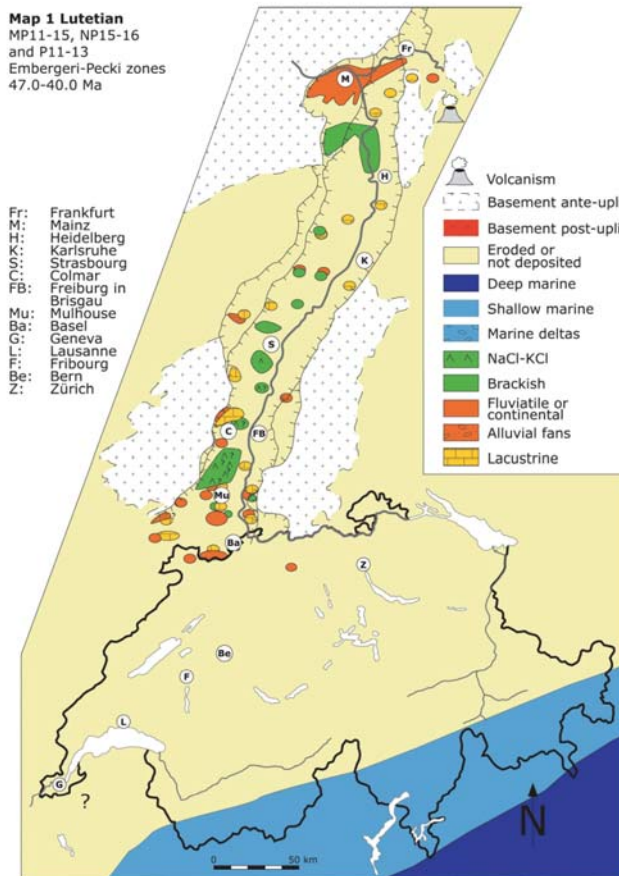
aus "Stratigraphischen Tabelle von Deutschland"
(Hrsg.: Deutsche Stratigraphische Kommission, 2002)



Zeitliche Abfolge der Ablagerungen zur Tertiärzeit im Oberrheingraben und seiner Umgebung

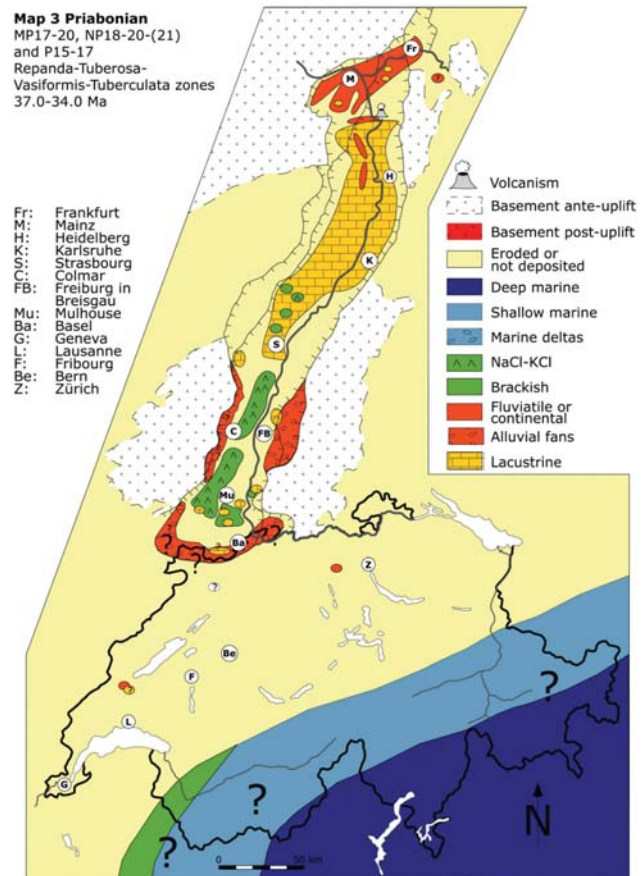


Map 1 Lutetian
MP11-15, NP15-16
and P11-13
Embergeri-Peck zones
47.0-40.0 Ma



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Map 3 Priabonian
MP17-20, NP18-20(21)
and P15-17
Repanda-Tuberosa-
Vasiformis-Tuberculata zones
37.0-34.0 Ma



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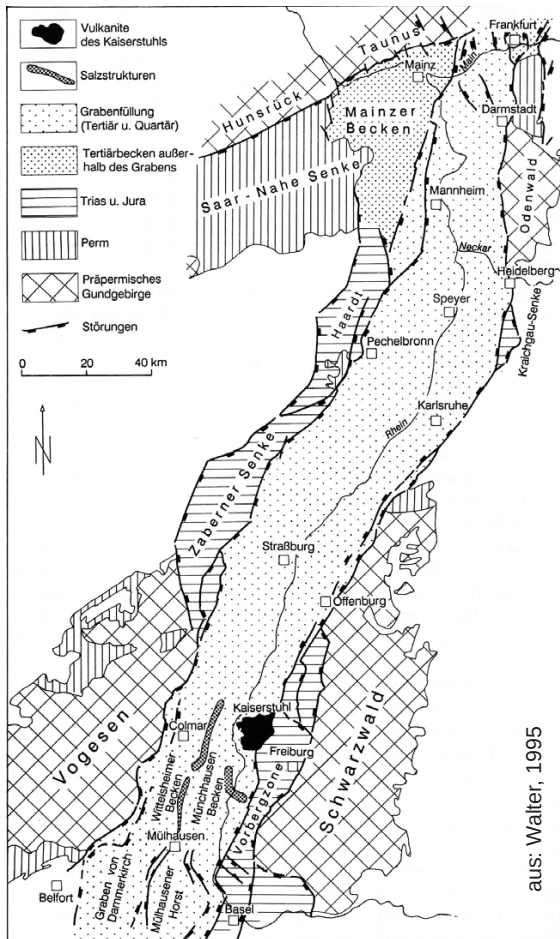
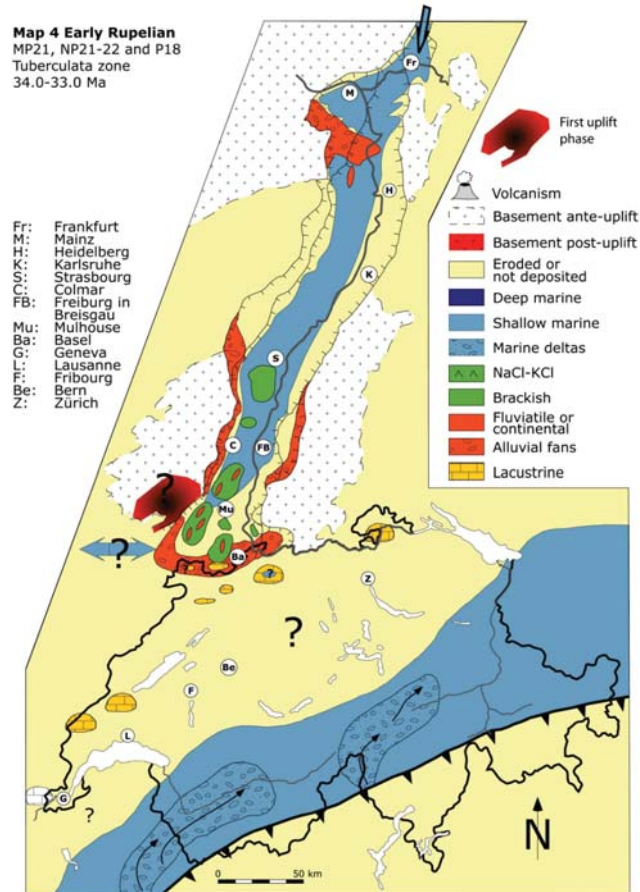
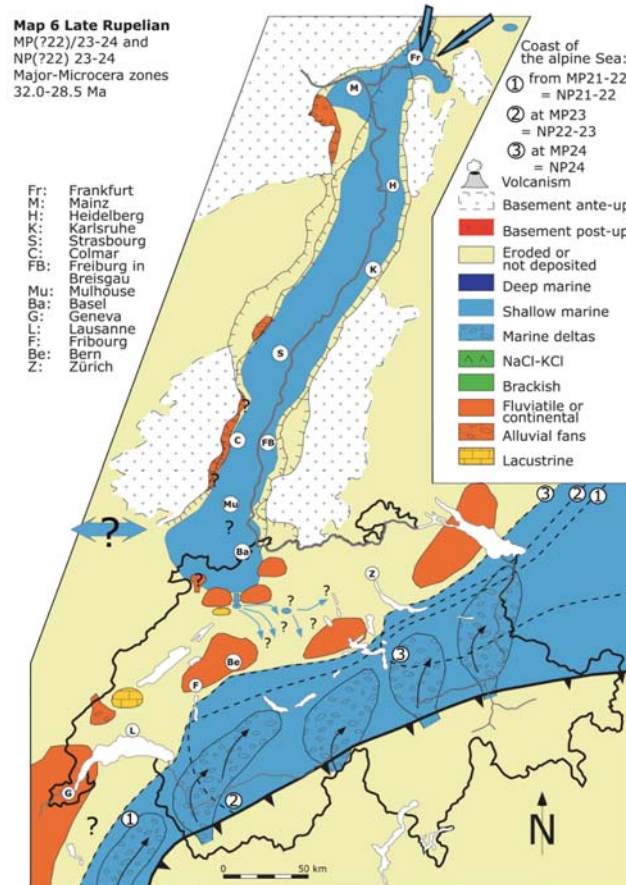


Abb.118. Tektonische Übersichtskarte des Oberrhein-Grabens und seiner Randbereiche.

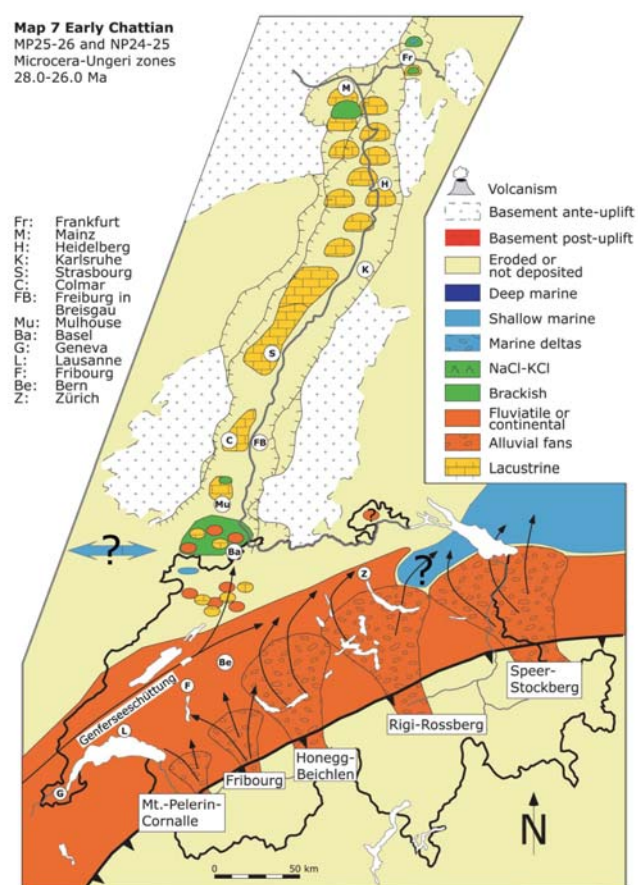
Map 4 Early Rupelian
MP21, NP21-22 and P18
Tuberculata zone
34.0-33.0 Ma



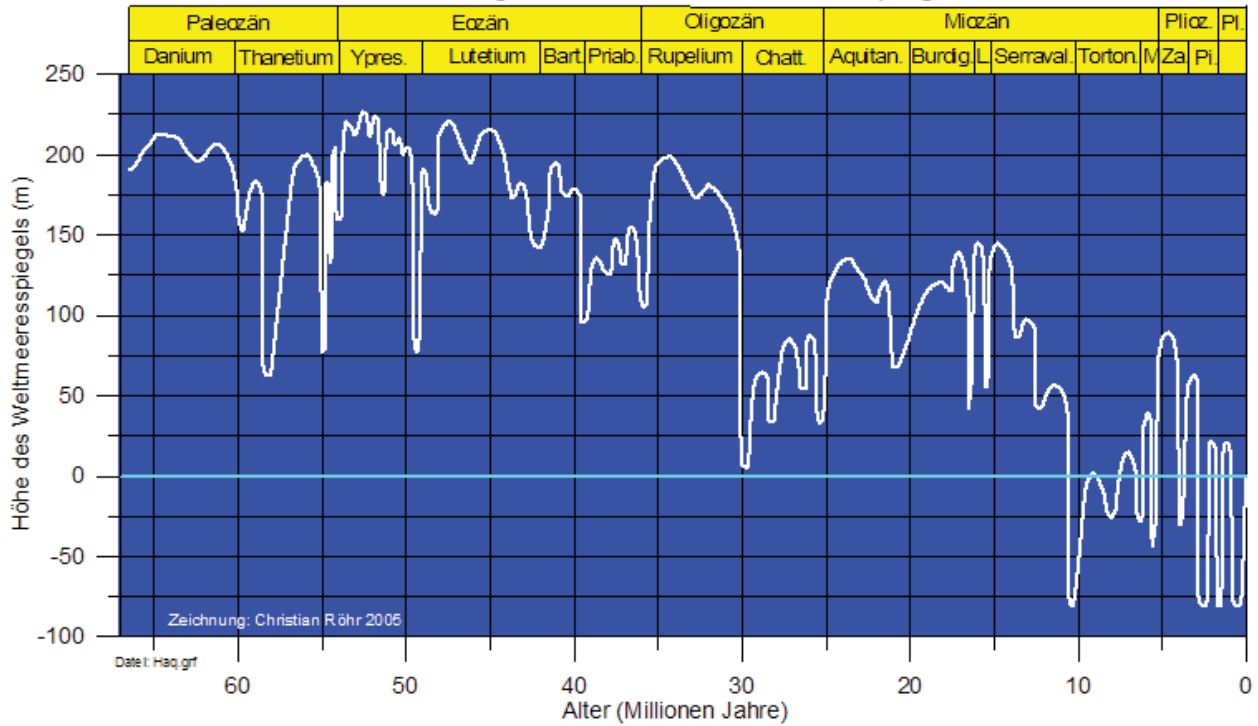
Map 6 Late Rupelian
MP(22)/23-24 and
NP(22) 23-24
Major-Microcera zones
32.0-28.5 Ma



Map 7 Early Chattian
MP25-26 and NP24-25
Microcera-Unger zones
28.0-26.0 Ma



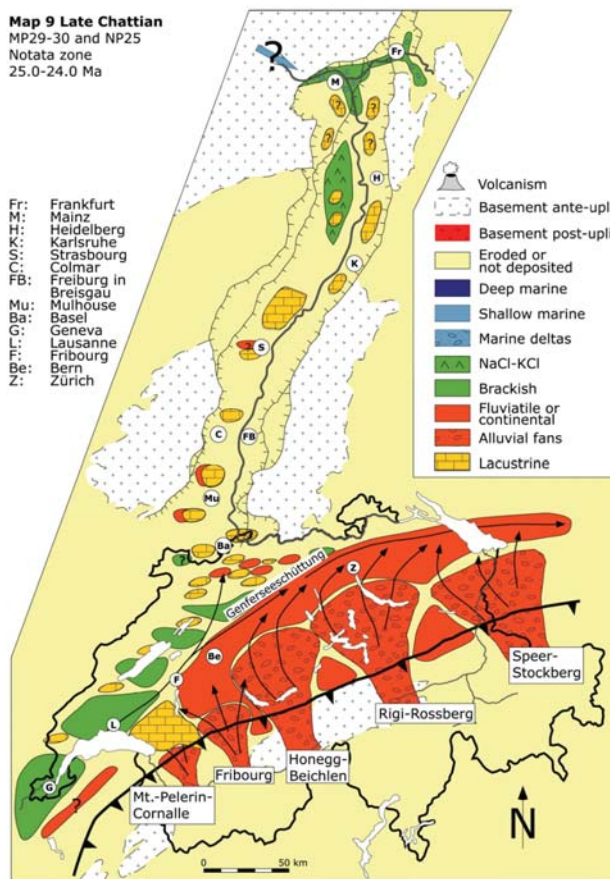
Zeitliche Veränderung der Höhe des Weltmeerespiegels nach Haq et al. (1987)



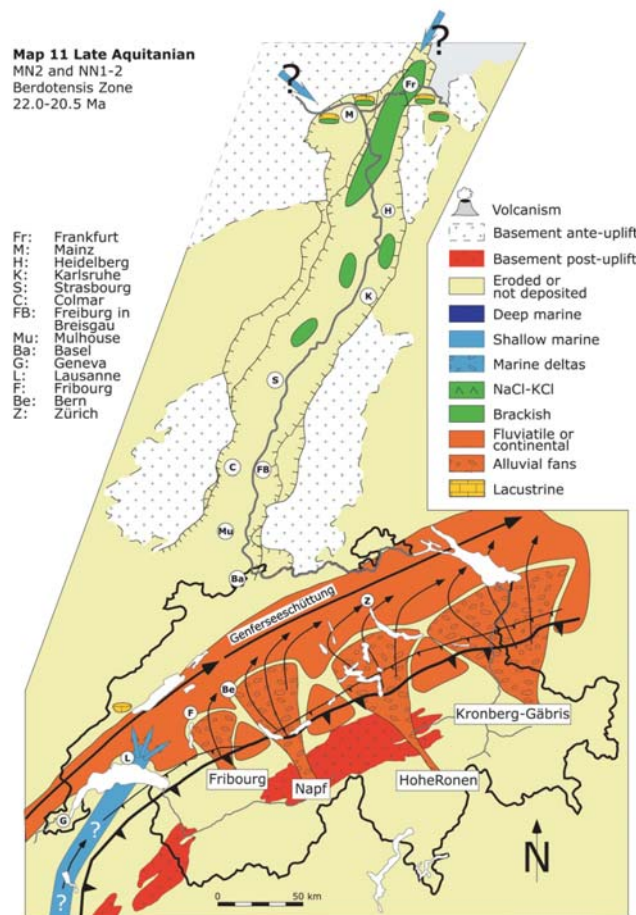
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Map 9 Late Chattian
MP29-30 and NP25
Notata zone
25.0-24.0 Ma

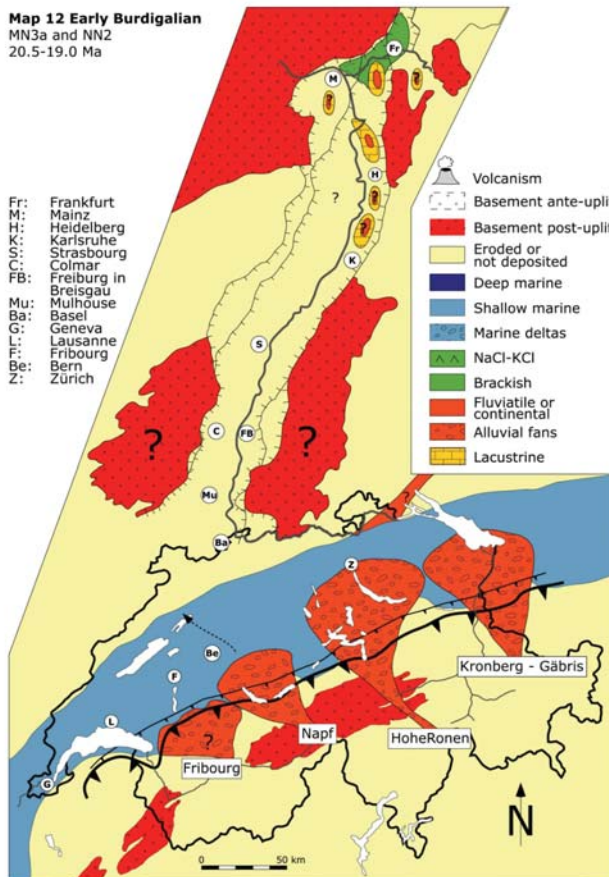


Map 11 Late Aquitanian
MN2 and NN1-2
Berdotensis Zone
22.0-20.5 Ma

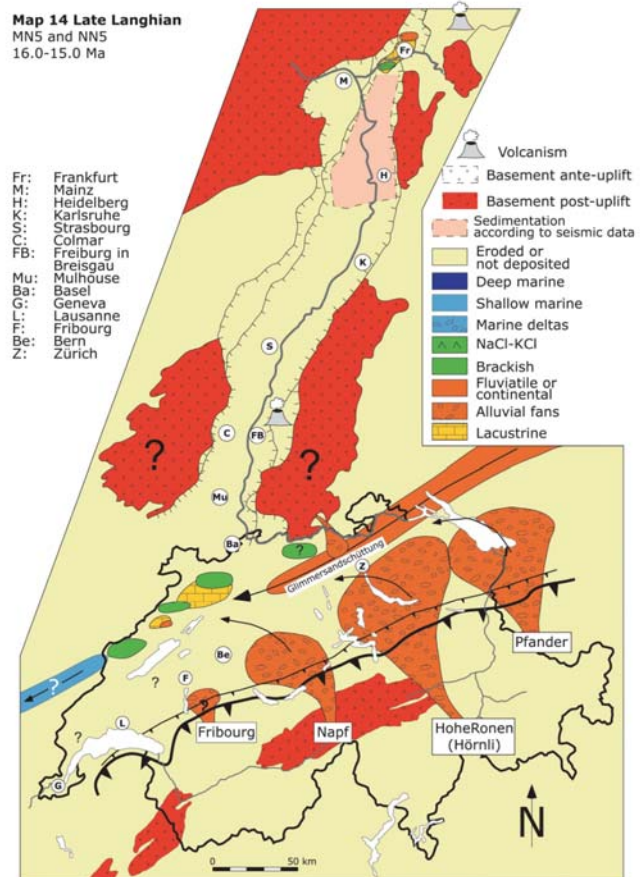


Berger et al. 2005

Map 12 Early Burdigalian
MN3a and NN2
20.5-19.0 Ma

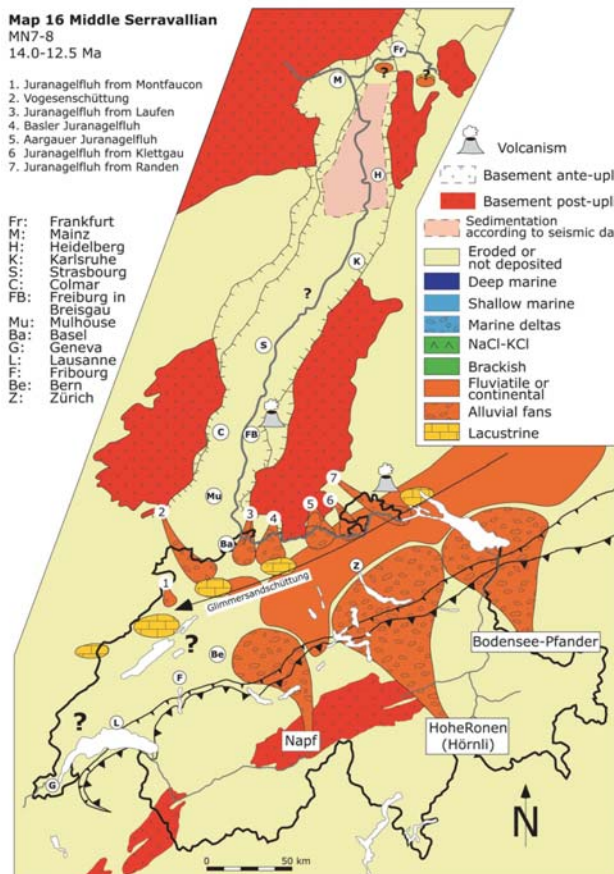


Map 14 Late Langhian
MNS and NNS
16.0-15.0 Ma



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Map 16 Middle Serravallian
MN7-8
14.0-12.5 Ma

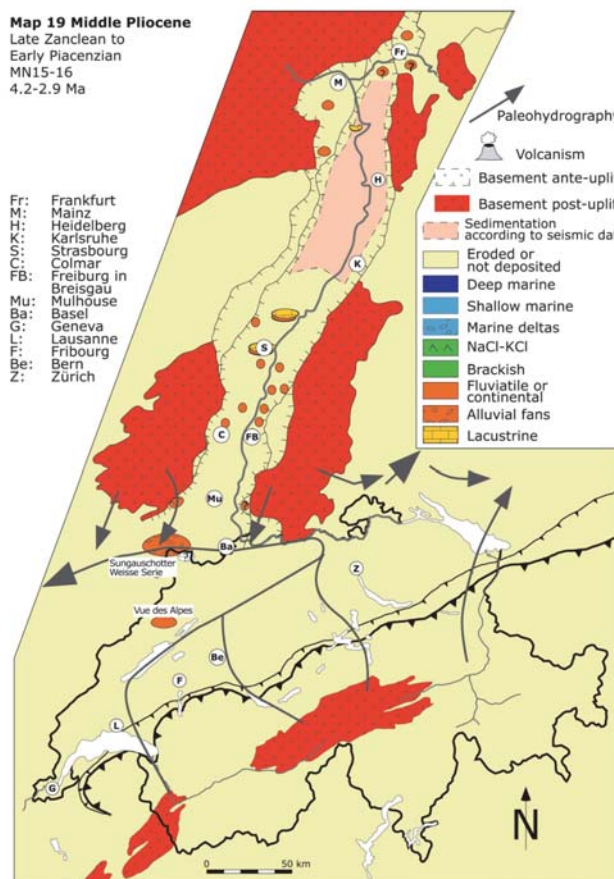


Berger et al. 2005

Map 19 Middle Pliocene

Late Zanclean to
Early Piacenzian
MN15-16
4.2-2.9 Ma

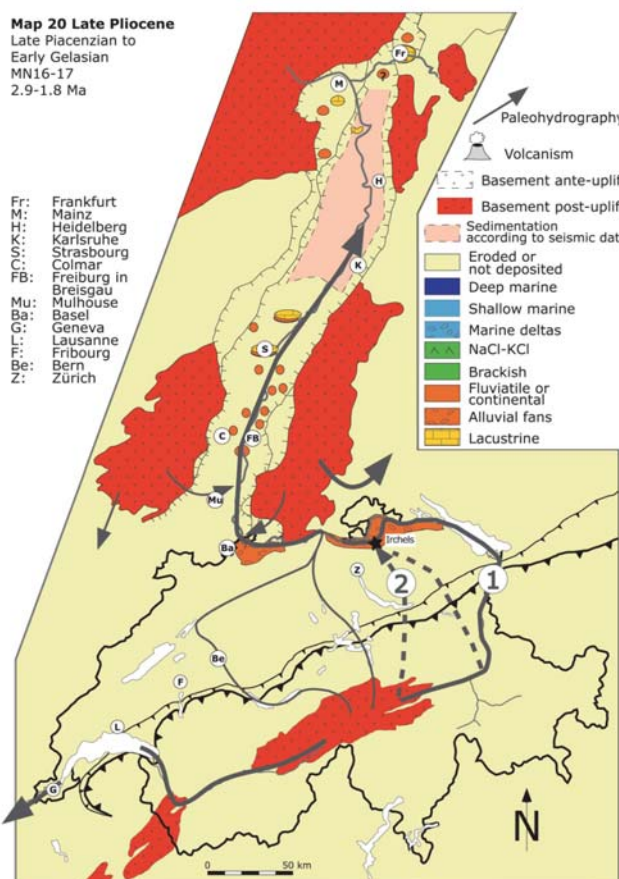
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M: Mainz
H: Heidelberg
K: Karlsruhe
S: Strasbourg
C: Colmar
FB: Freiburg in
Breisgau
Mu: Mulhouse
Ba: Basel
G: Geneva
L: Lausanne
F: Fribourg
Be: Bern
Z: Zürich



Map 20 Late Pliocene

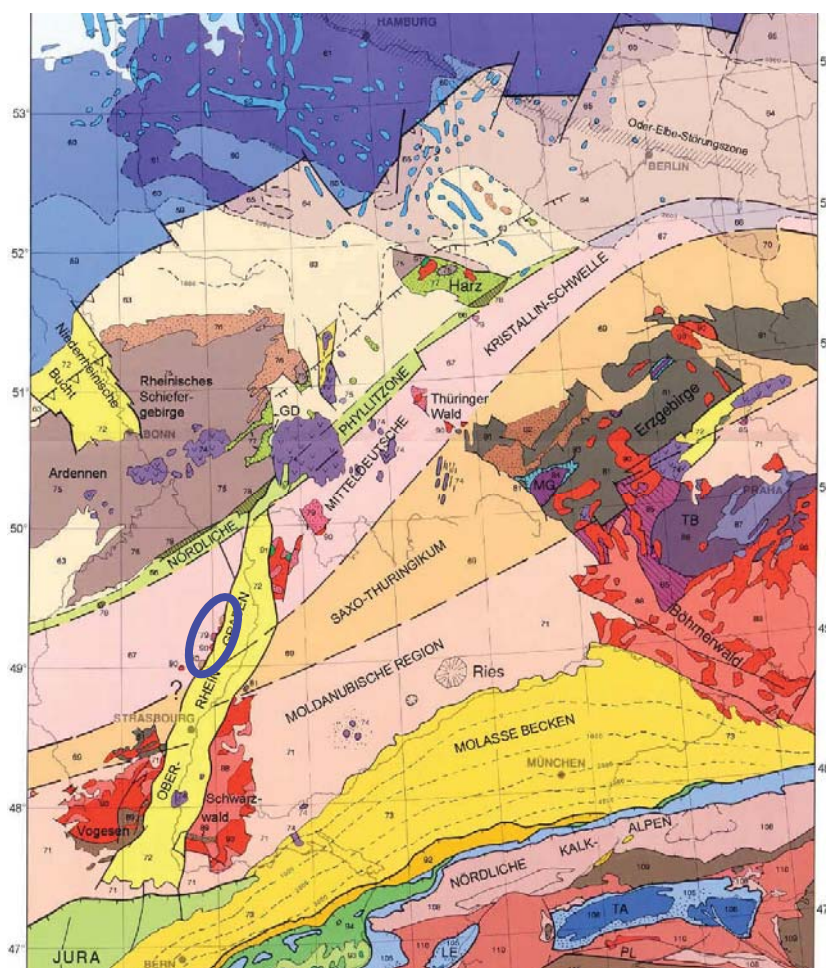
Late Piacenzian to
Early Gelasian
MN16-17
2.9-1.8 Ma

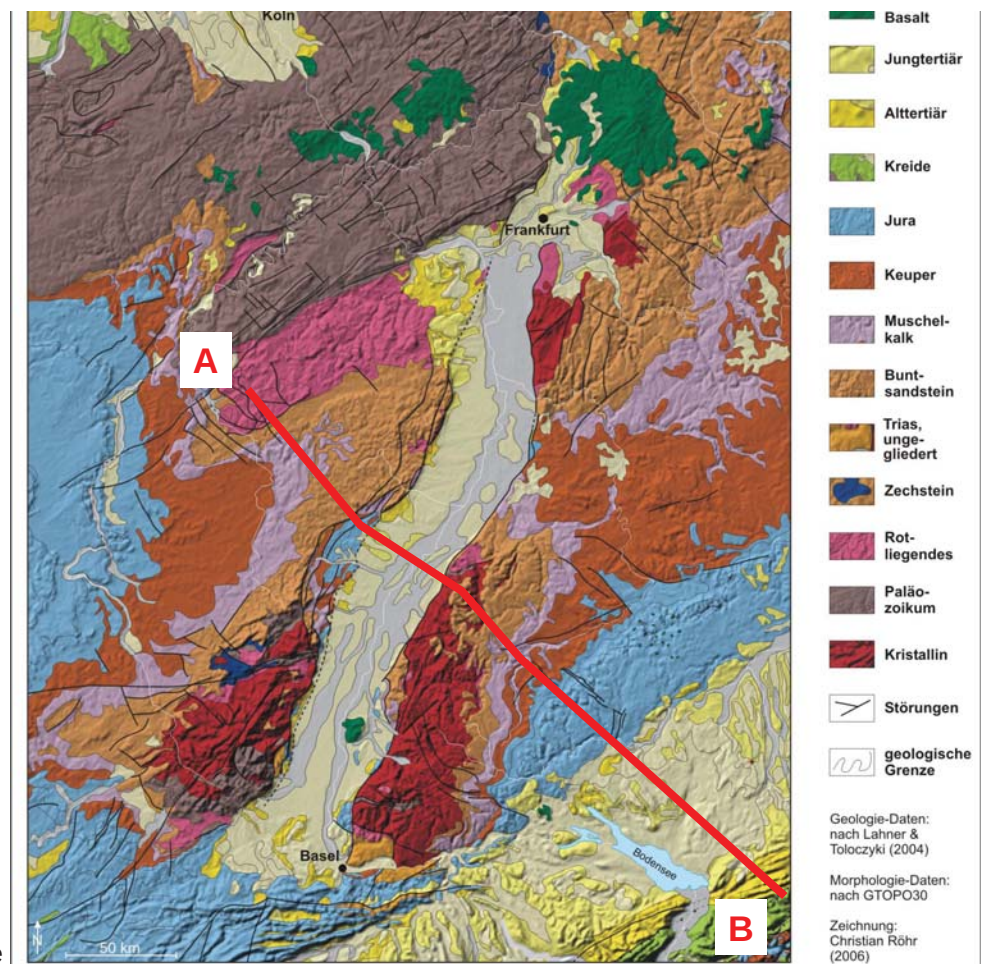
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M: Mainz
H: Heidelberg
K: Karlsruhe
S: Strasbourg
C: Colmar
FB: Freiburg in
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Mu: Mulhouse
Ba: Basel
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F: Fribourg
Be: Bern
Z: Zürich

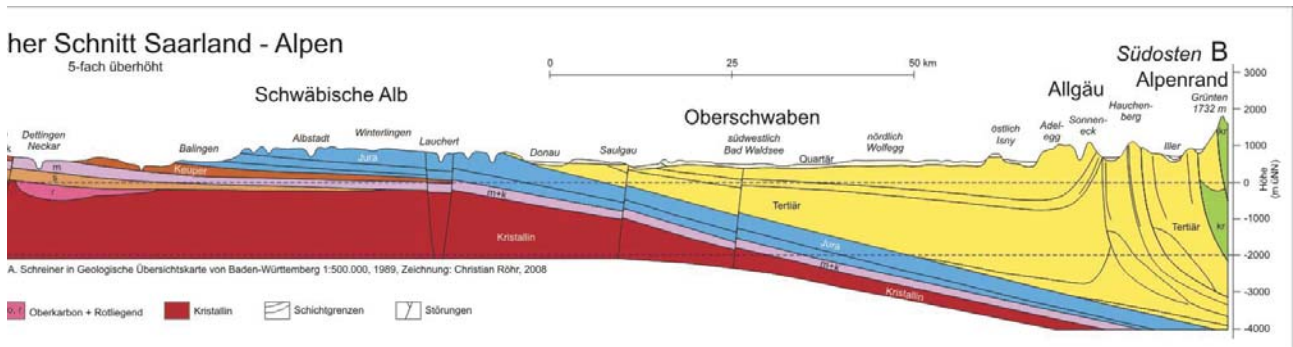
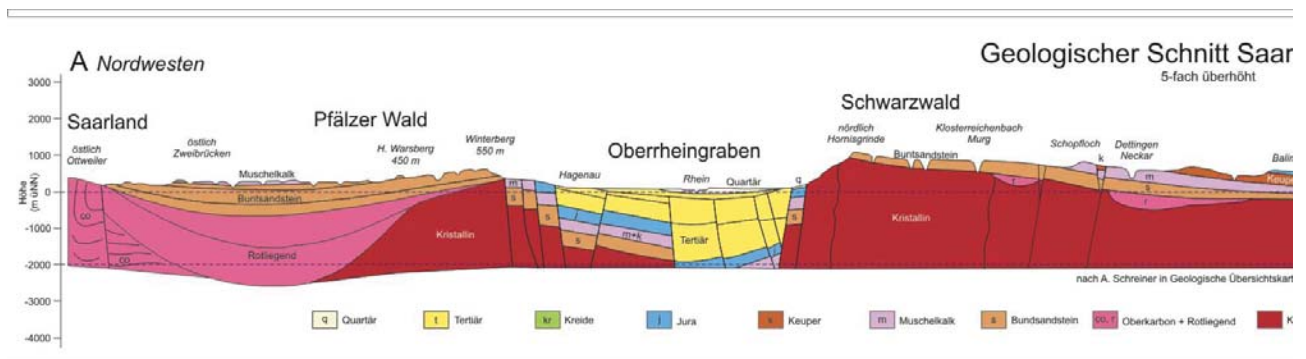


Berger et al. 2005

Tectonics & Basin structure







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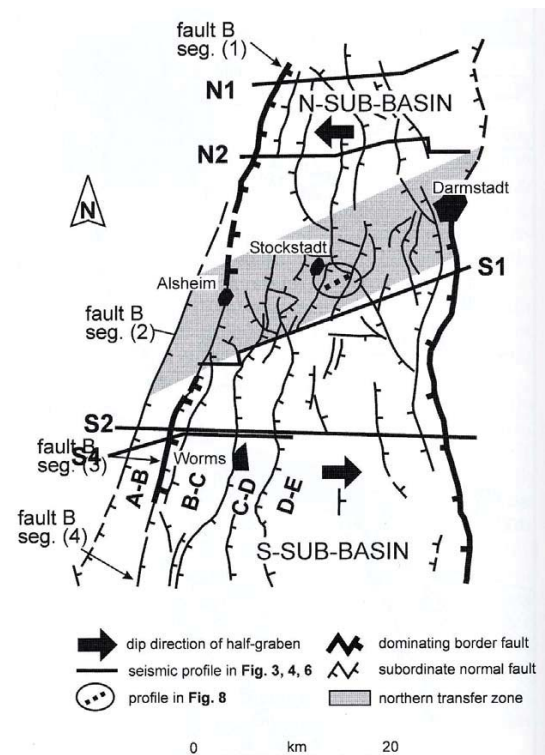
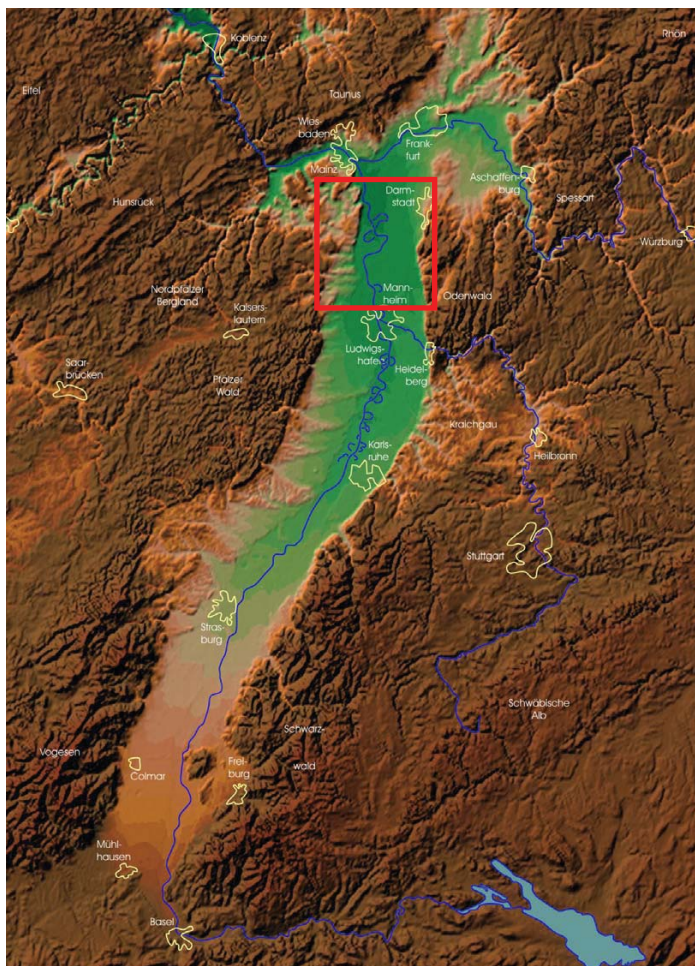
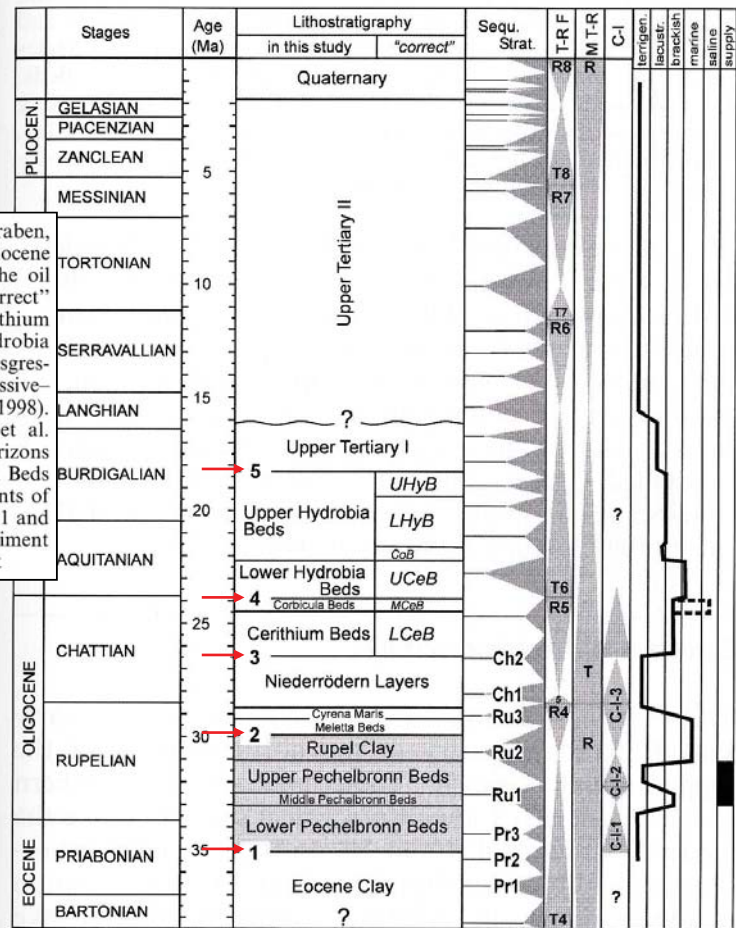


Fig. 2 Structural map of the northern Upper Rhine Graben, modified from Andres and Schad (1959), Straub (1962), Stapf (1988), Durst (1991), Plein (1992), Mauthe et al. (1993), and Jantschik et al. (1996). The northern transfer zone separates two half-grabens with opposite tilt directions. The seismic sections N1, N2, S1, and S2 are shown in Fig. 3, the seismic section S4 and its depth converted interpretation in Fig. 4

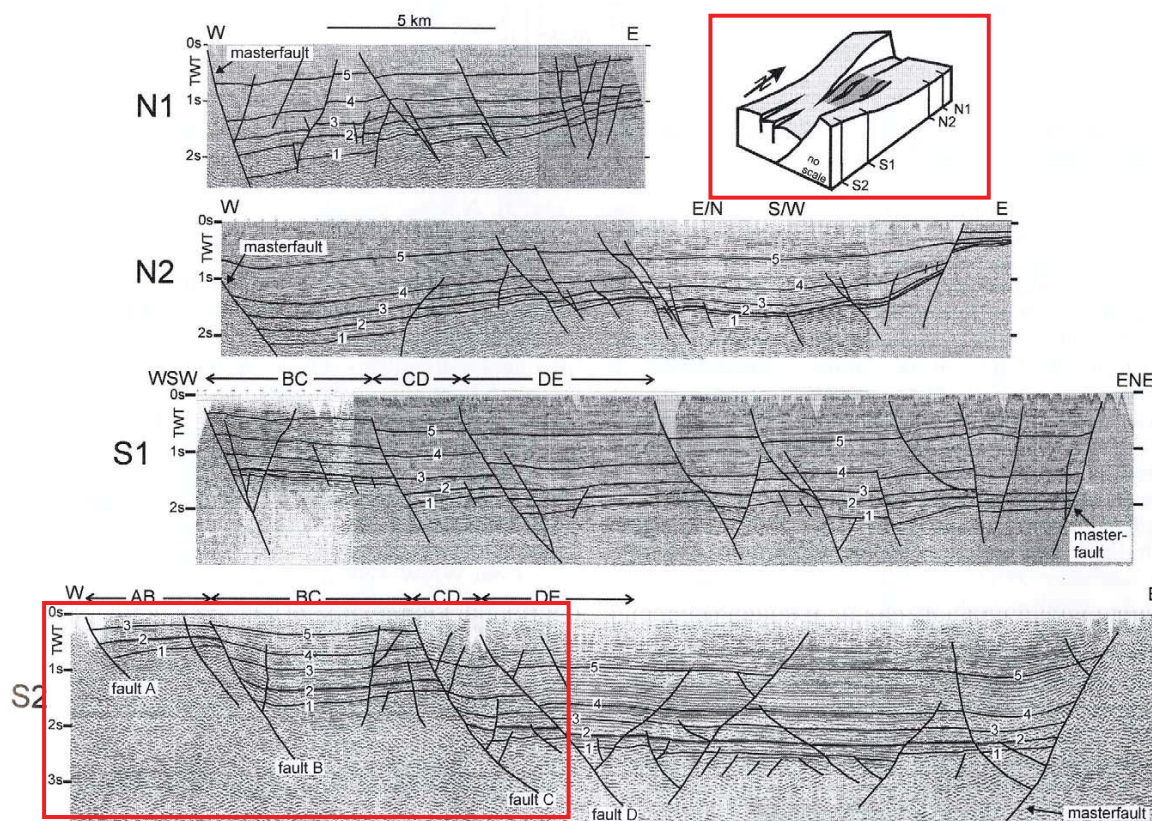
Derer et al. 2005

Fig. 5 Cenozoic stratigraphy in the northern Upper Rhine Graben, as from German Stratigraphic Commission (2002). The Miocene lithostratigraphic units used in this study correspond to the oil industry classification, which differs from the actual "correct" stratigraphy. *LCeB/MCeB/UCeB* Lower/Middle/Upper Cerithium Beds, *CoB* Corbicula Beds, *LHyB/UHyB* Lower/Upper Hydrobia Beds. The columns 'Sequence Stratigraphy', 'T-R F' (transgressive-regressive facies cycles) and 'M T-R' (major transgressive-regressive cycles) are according to Hardenbol et al. (1998). Base-level cycles are interpreted by Derer (2003), Derer et al. (2003), and in this study. **Bold numbers 1–5** correspond to horizons of Fig. 3. The early syn-rift succession is in the Pechelbronn Beds and Rupel Clay. The early syn-rift brackish and marine events of the graben probably had the same regional causes as the Ru 1 and Ru 2 floodings. 'Supply' (black) marks the interval of sediment input through the low-relief zone of the western border fault

Derer et al. 2005



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Derer et al. 2005

Fig. 3 Interpreted seismic sections across the northern Upper Rhine Graben, showing opposing tilt of the northern (N1 and N2) and southern sub-basins (S1 and S2); the location of the sections is shown in Fig. 2. Vertical scale in seconds two-way travel time. The 3D-block gives a simplified model of the transfer zone and the two half-grabens. The stratigraphy is as in Fig. 5: 1 top pre-rift, 2 top Rupel Clay, 3 top Niederröden Layers, 4 top Corbicula Beds, and 5 top Hydrobia Beds. Seismic section S2 (part of DEKORP 9N) is based on data from the GeoForschungsZentrum Potsdam

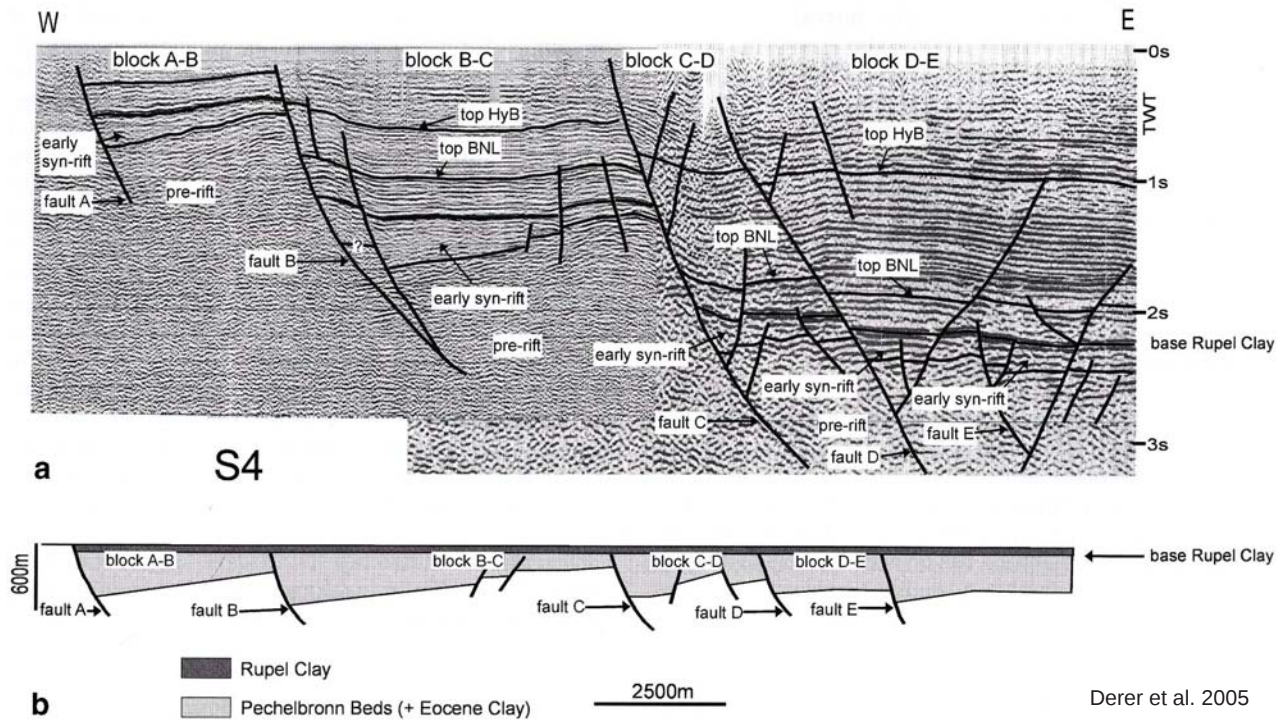
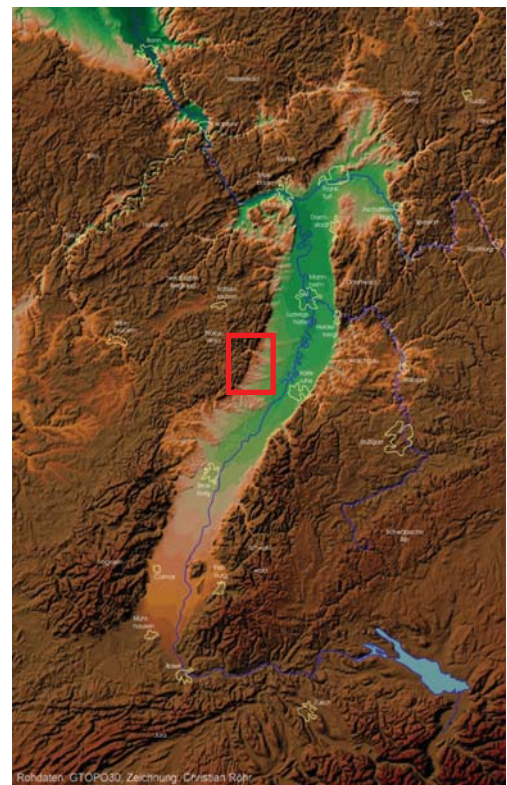
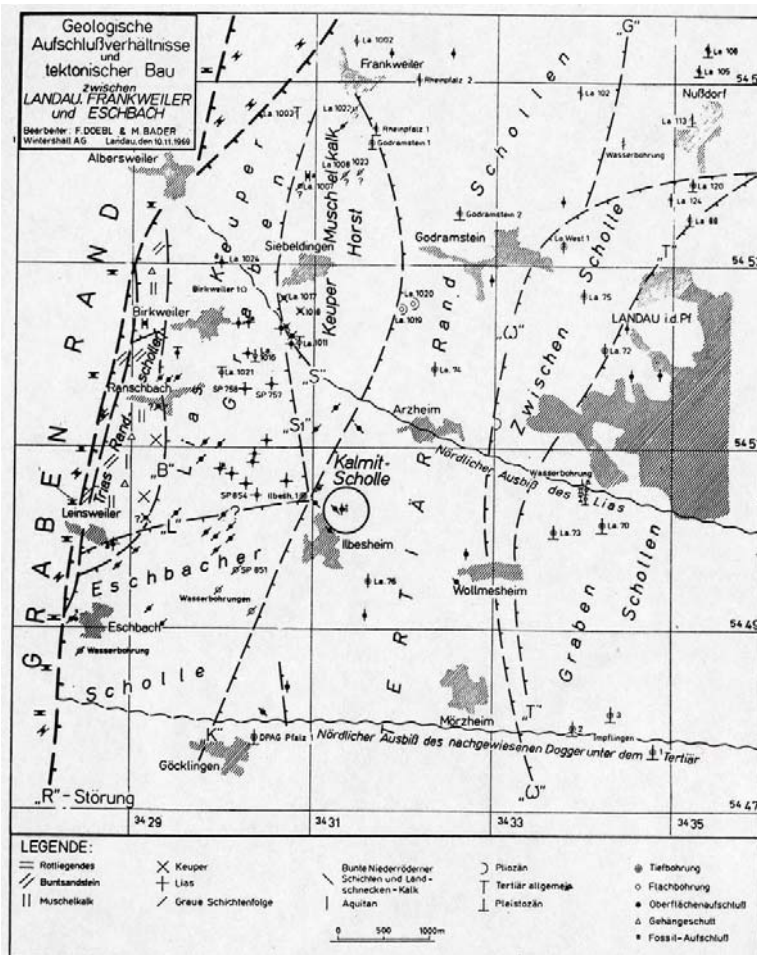
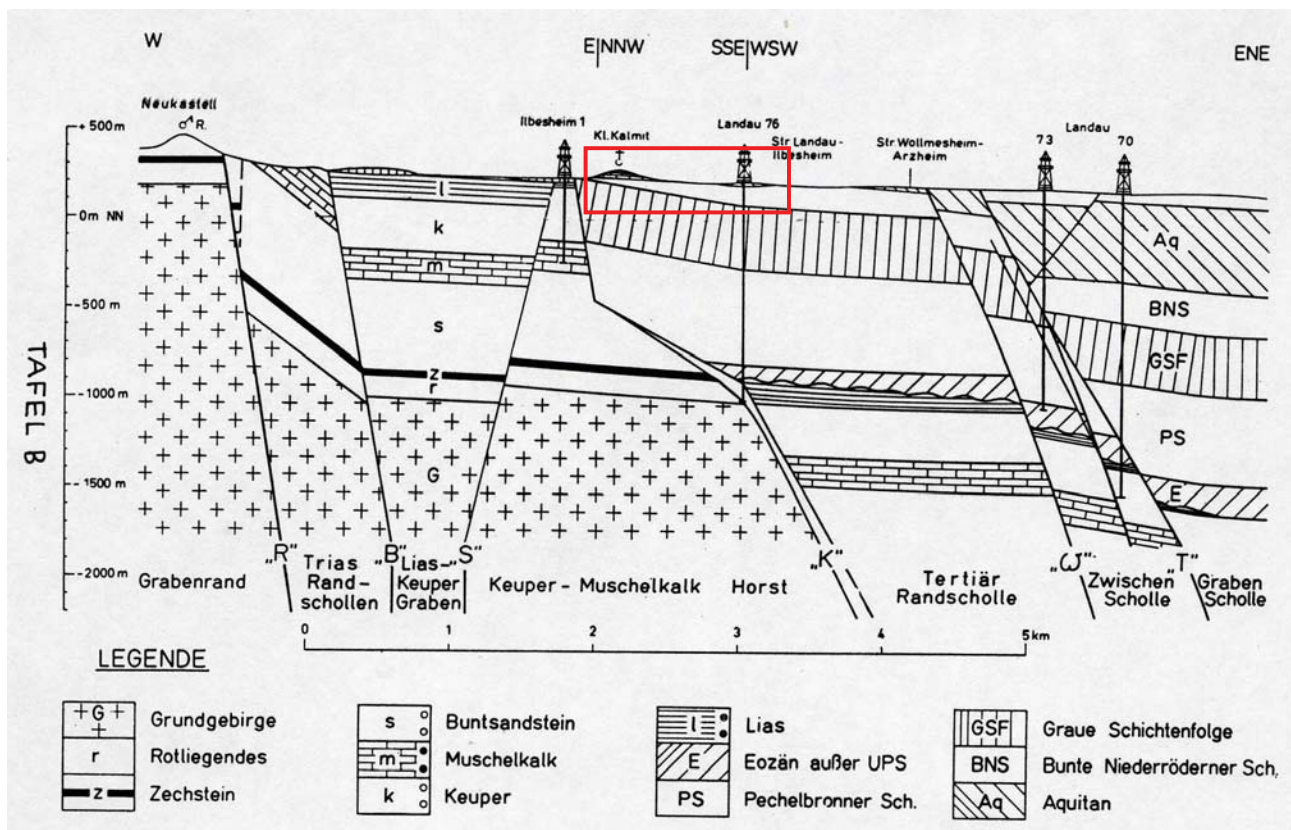


Fig. 4 Composite seismic section S4. **a** Several intermediate-scale tilted fault blocks are bounded by growth faults (TWT two-way travel time in seconds). *BNL* Niederröden Layers, *HyB* Hydrobia Beds. Location in Fig. 2. **b** Palinspastically restored and depth-converted cross section of the early syn-rift graben fill, derived from the seismic section S4 (restoration datum is base of Rupel Clay). Note the half-graben geometry of the individual depocentres

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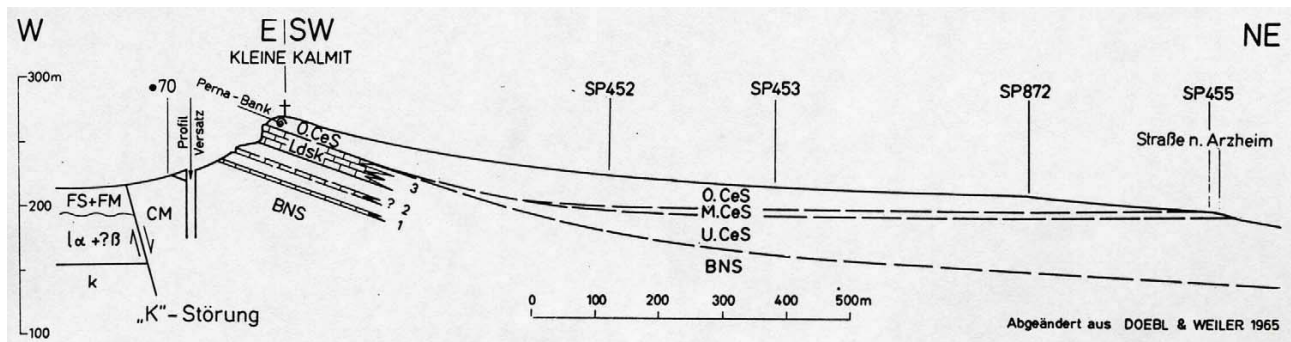


Doebel & Bader 1970



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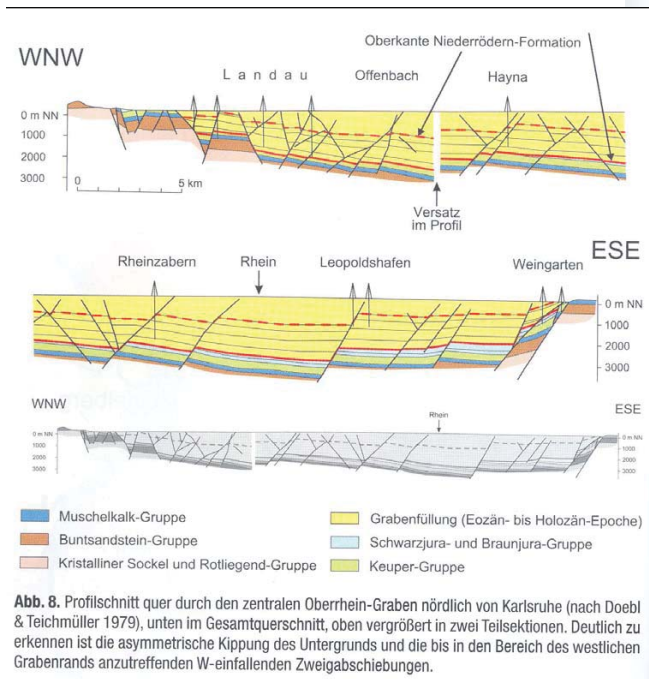
Doebel & Bader 1970



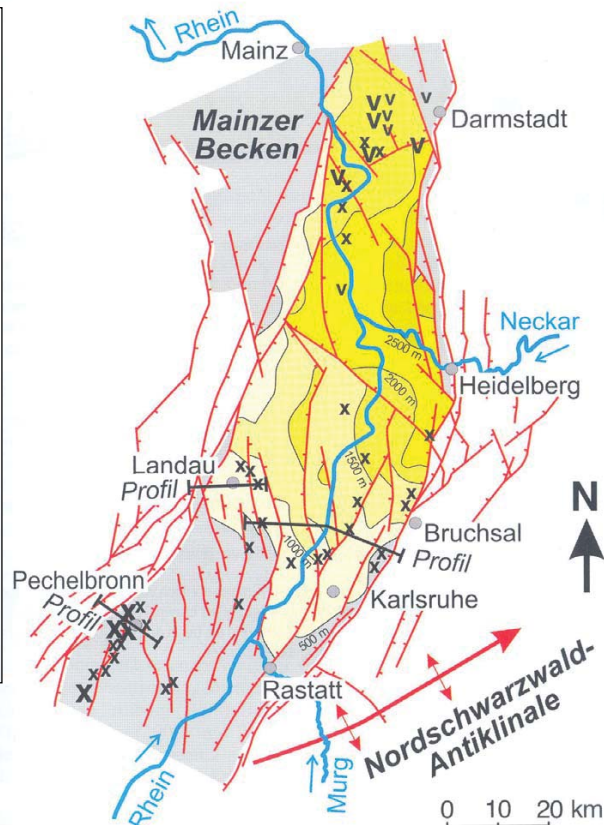
Doebel & Bader 1970



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Eisbacher & Fielitz 2010



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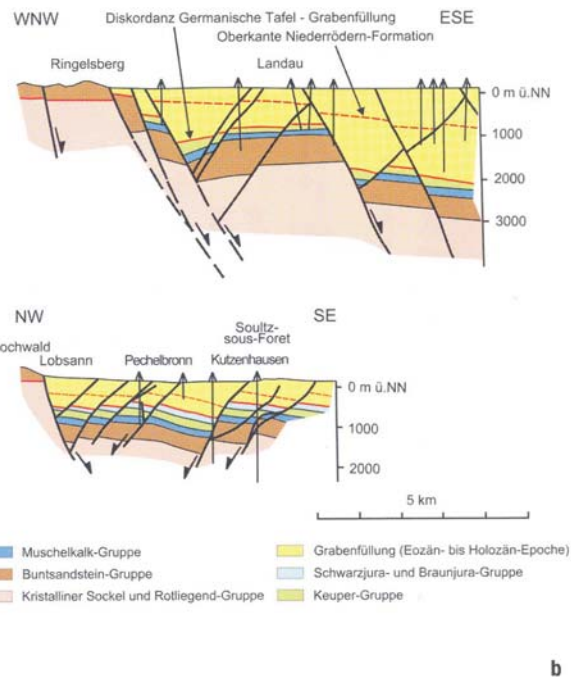
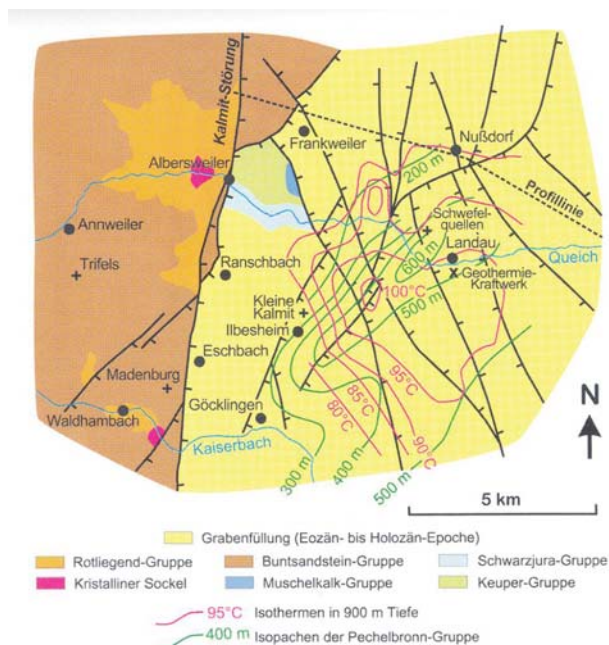


Abb. 48. a. Geologische Kartenskizze mit dem Verlauf des in Abb. 48b gezeigten Profilschnitts (vereinfacht nach Schad 1962b; Doehl & Bader 1970; Parini 1981), den Isopachen der Pechelbronn-Gruppe (grün) sowie Isothermen in 900 m Tiefe (rot). Erläuterungen im Text. **b.** Profilschnitte durch die Erdölfelder von Landau und Pechelbronn (Lage der Schnitte in Abb. 7 und 48a).

Eisbacher & Fielitz 2010

Summary

Schwarz & Henk 2005

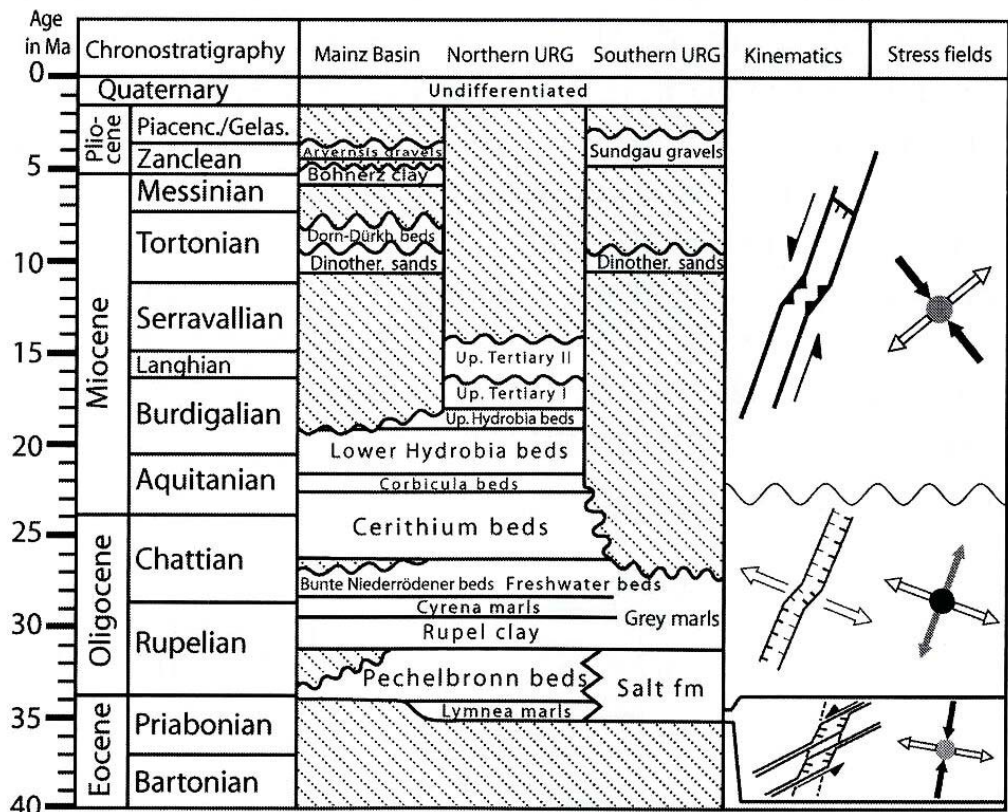
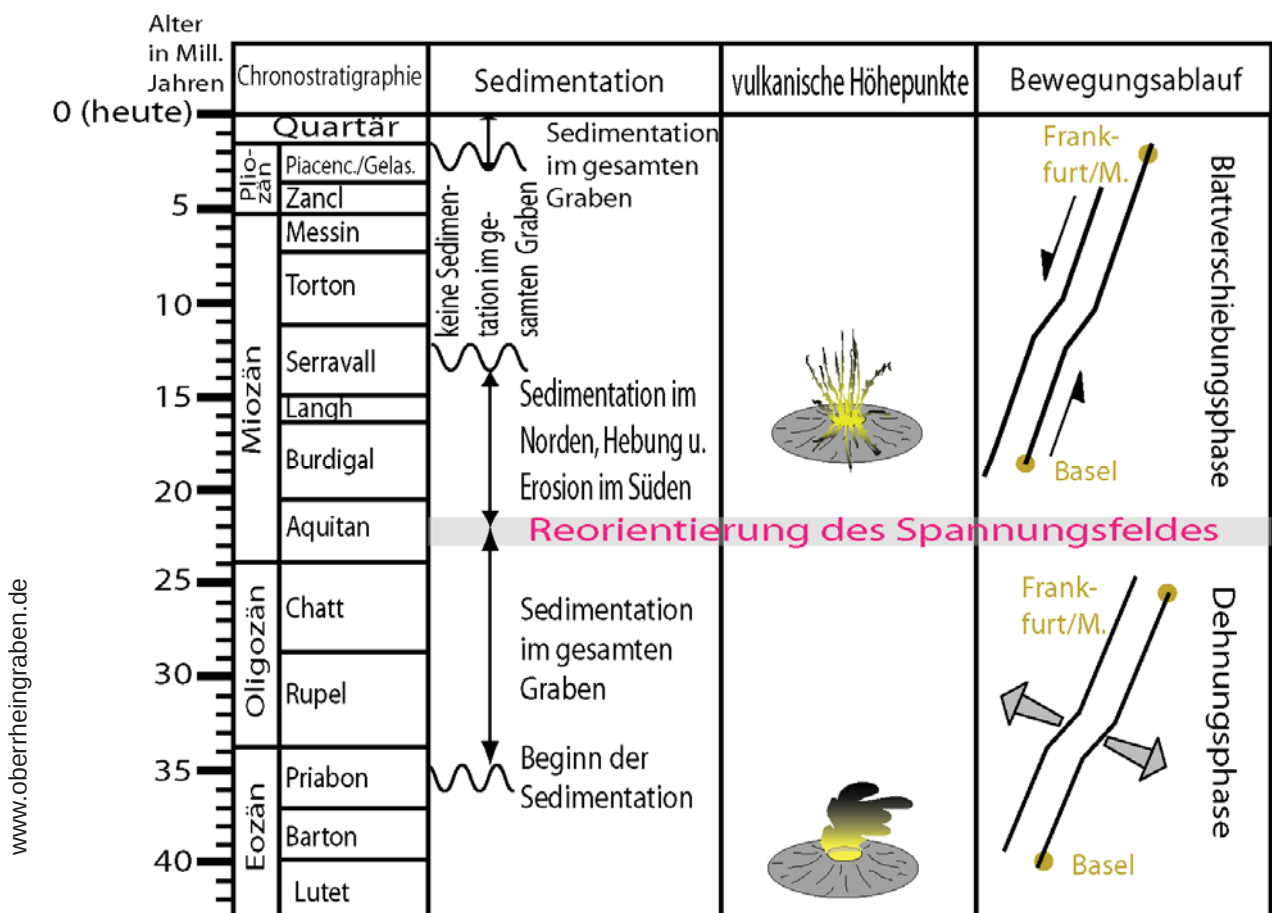


Fig. 2 Diagram showing the lithostratigraphy of the URG, based on Sissingh (1998) and Berger (2002); kinematic phases and stress orientations (black σ_1 , grey σ_2 , white σ_3) modified after Schumacher (2002)

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