

EARLY CRETACEOUS TO TERTIARY THRUSTING IN THE THIERSEE STRUCTURE: RESULTS FROM STRATIGRAPHIC AND PALEOMAGNETIC INVESTIGATIONS

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The Thiersee syncline is an E-W-trending structure stretching for about 30km in the western part of the Northern Calcareous Alps. The Thiersee structure has traditionally been interpreted as a simple syncline with an overturned southern limb and a normal northern limb. The TRANSALP seismic line revealed the presence of a deep-reaching thrust plane inside the structure (Thiersee thrust).

In the Achensee region, the thrust plane is exposed at the surface. Measuring the distance between hanging- and footwall cutoff, 7 km of shortening within the structure can be deduced (SAUSGRUBER 1994). Several stages of thrust activity can be distinguished:

Sedimentation in the Thiersee syncline ends with middle Albian carbonate sandstones (RISCH 1985). No Upper Cretaceous deposits are known from the Thiersee structure west of Thiersee. If the structure had not been closed by thrusting, Upper Cretaceous deposits should be present.

Upper Cretaceous deposits are present at the northern flank of the southerly adjacent Guffert-Pendling anticline. Onlap of Turonian alluvial fan sediments indicate a (pre-) Turonian growth of the anticline, presumably above a thrust plane reaching the surface in the Thiersee structure.

Tertiary thrust activity along the Thiersee thrust is indicated by paleomagnetic investigation of the Ampelsbach section in the Achensee area in the overturned southern limb of the Thiersee structure. Upper Triassic to Lower Cretaceous rocks were sampled; no primary magnetisations were encountered. The remagnetisations are

interpreted to be caused by Tertiary overprint. The interpretation is based on the inclination of the characteristic remanent magnetisation. The paleomagnetic vectors are arranged along a small circle indicating a synfolding magnetisation (Fig. 1, inset c). The magnetisation was acquired when the beds were in a north-dipping to overturned position. Minor clockwise rotation of 20° post-dating the magnetisation brought the trace of the Thiersee thrust into an E-W-trending position. Before rotation, it was NW-directed.

References

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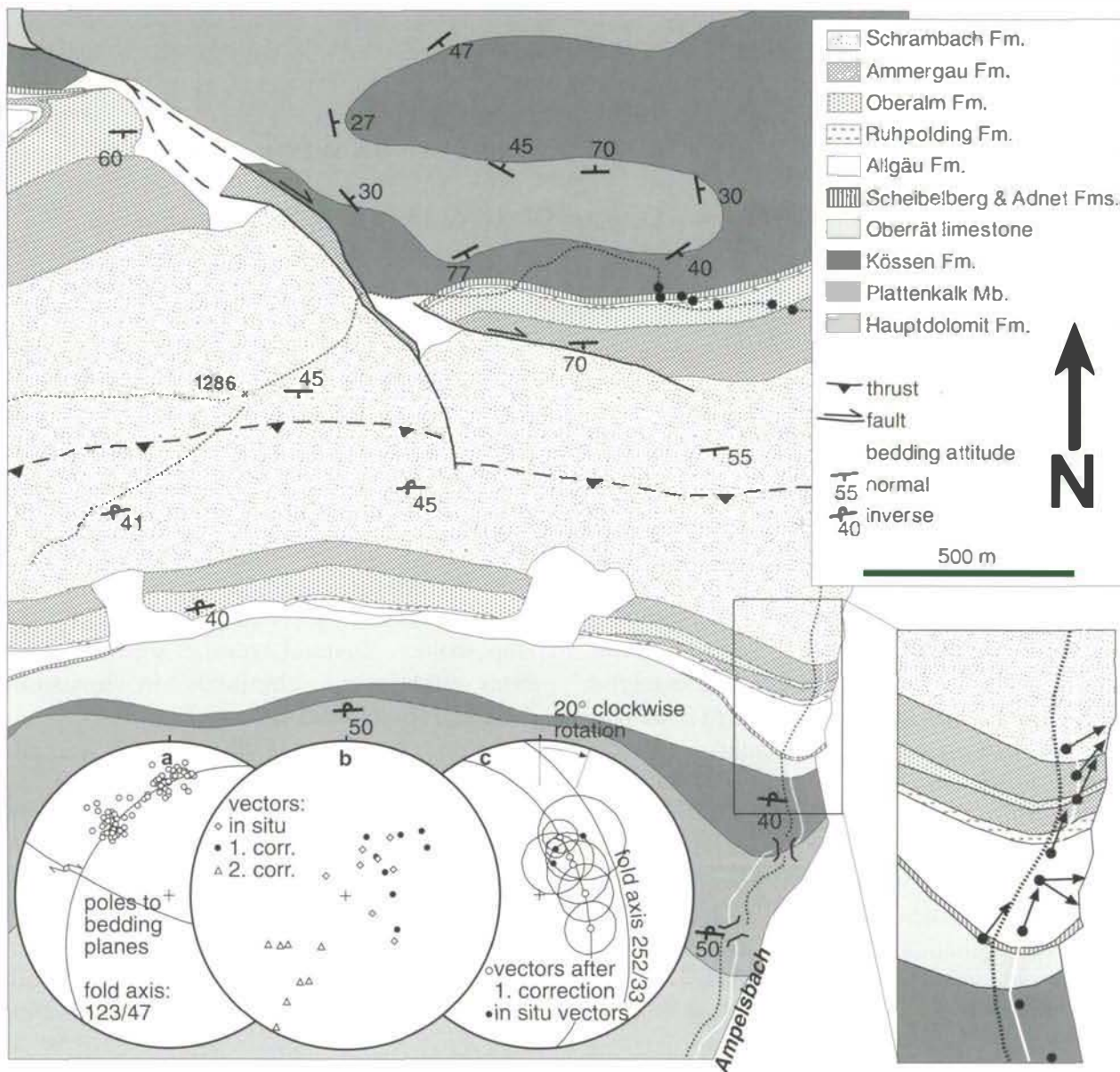


Fig. 1: Geological sketch of the Ampelsbach area. Geology redrawn from Sausgruber 1994. Declinations of magnetisation are indicated by arrows. Inset a) local fold axes related to fault activity calculated from bedding planes. Inset b) orientation of paleomagnetic vectors. Inset c) orientations of paleomagnetic vectors with cones of confidence arranged along a small circle. This is interpreted to be the result of a remagnetisation acquired during folding.