



Basement block uplift along steep frontal faults or faulted basement flexures? The example of the Flechtingen uplift (Central Gemany)

F. Jähne , J. Kley

Friedrich-Schiller University Jena, Germany, (jonas.kley@uni-jena.de / Phone: +49-03641-948623)

The Flechtingen basement uplift and the associated Gardelegen and Haldensleben faults are part of the North German basin's inverted southern border. Toward the SE, the Gardelegen and Haldensleben faults merge into a single fault. The faults are commonly interpreted to be very steeply dipping and to delimit tilted but otherwise nearly undeformed basement blocks. In the northern foreland of the Gardelegen flexure, the deep reflection seismic line DEKORP Basin 9601 and other data shows a nearly horizontal basement surface beneath the Zechstein salt overlain by complex contractional deformed structures in the suprasalt sedimentary cover. Yet, there is no indication of large basement thrust faults beneath the faulted salt anticlines in the foreland that could have accommodated an equivalent amount of basement shortening. Contractional structures in the foreland of basement uplifts in absence of basement faults beneath them are an indicator for thin-skinned tectonics. A steep frontal fault of a basement-uplift could not export enough shortening to create substantial fold systems in the foreland. A detachment which links folded and thrust structures in the sedimentary cover of the foreland to a low-angle thrust fault underlying a basement flexure makes shortening in the cover and basement compatible. Folding in the basement was probably caused by the propagating master fault before it broke through onto the detachment. The associated Haldensleben and Wittenberg structures are faulted flexures with smaller amplitude than the Gardelegen flexure. The steep frontal faults of these structures dominate the structural geometry, and their foreland is shortened less than that of the Gardelegen flexure. The magnitude of foreland folding and thrusting close

to the basement faults can thus be taken as a first approximation to the magnitude of basement folding at depth. The Harz uplift and other smaller basement uplifts in central Germany that formed as a consequence of shortening in Late Cretaceous time have a similar range of structural geometries and, by inference, different degrees of basement folding.