



*Supplement A: Examples of cross-sections from different model runs.*

The sections provide some additional insights in internal deformation structures. All sections represent the status after the last (unloading) stage. In runs 1 and 2, normal faults originating from the top of the salt analog bound the crestal graben structures that follow the long axis of the GS pillow structure (run 1, section 53; run 2, section 45). In contrast, the comparably small vertical displacement of the NB domes was not accompanied by the development of discernable faults, which might be a resolution issue due to the used grain sizes (run 1, section 31; run 1, section 68). In runs 3 and 4, a fault reaching from the source layer up to the surface had developed at the load margin (run 3, section 44). In run 3, the fault occurred near the inflection point of the lobate edge of the load (ca. -80 cm E / 100 cm N in Fig. 8), highlighting the significance of the geometry of the load. The high load conditions of run 3, which caused extrusions at the surface, resulted in the complete expulsion (welding) of an area of the source layer into the not loaded structures north of the GS pillow in (run 3, section 97).