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### **Late Miocene/Pliocene Inversion History of the North Alpine Foreland Basin**

The North Alpine Foreland Basin of Switzerland is the peripheral foreland basin to the Alps with a history of sedimentation from early Oligocene to mid-Miocene times (approx. 11 Ma). Crystalline massifs in the northern Alps were rapidly uplifted and exhumed at approximately 5Ma. At a similar time the external, cratonic boundary of the basin, that is now formed by the Jura mountains was uplifted and deformed. However, the post-10Ma thermal and structural history of the intervening foreland basin is poorly constrained. This study uses cuttings from wells to generate age/elevation profiles using apatite fission track (AFT) analysis. The results are used to reveal a tectonic model for the late history of the basin.

Data from three wells that are aligned perpendicular to the strike of the basin, indicate varying cooling histories. The Entlebuch well penetrates tilted thrust-blocks in the proximal part of the basin, and records a low paleogeothermal gradient, and at least 1600 m of erosional unroofing since 15 Ma. The Boswil and Hünenberg wells are located in the centre of the basin and also record low paleogeothermal gradients, and a distinct cooling event after 5 Ma, associated with at least 1000 m of erosional unroofing. The vertical AFT age profiles indicate that the foreland basin was uplifted and eroded as part of a late-stage tilting of the basin, probably linked to shortening in the Jura Mountains. At this time, the basin no longer acted as a depocentre, but was incorporated as part of the Alpine thrust wedge.