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## Low-temperature thermochronology and vitrinite reflectance data reveal longwavelength uplift in the Alpine foreland basin

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Foreland basin sediments mirror the history of an orogeny. Deformation and geodynamic processes in low spatial extend (e.g. dozens of km) can be quantified using kinematic restoration. Processes happening deep underneath an orogen show a large spatial manifestation that is difficult to quantify in time and space. Marine units at surface outcrops show 900 m of net uplift since deposition in undeformed parts of the alpine foreland basin. Existing low-temperature thermochronology data from the Swiss part of the Molasse Basin show a thermal overprint that indicates exhumation of more than 1.5 km. We quantify the wavelength of deep seated processes of the Alpine orogen by generating and analyzing a holistic dataset of the entire alpine foreland basin. In addition to compiling existing data from the western part of the basin we have generated a new apatite (U-Th)/He and vitrinite reflectance data set from the central and eastern part of the basin. The new apatite (U-Th)/He ages in the German part of the basin show exhumation below or close to the detection limit (~1.5 km). Within the folded and thrustured Molasse, exhumation is localized along thrusts and the thermochronological data indicates thrusting between 10 to 20 Ma. Vitrinite reflectance data reveals a trend of exhumation increasing from East to West. Parts of the central German Molasse basin have been exhumed as well. Thus, on the large scale we can see longwave exhumation patterns in the western part of the basin that affect both the deformed and undeformed parts of the basin which cannot only be related to Jura thrusting.