



## **Structural and kinematic constraints on the exhumation of the central Menderes Massif along the Büyük Menderes detachment, western Turkey**

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Commencing in the late Oligocene to early Miocene, the Alpine contractional regime, which formed the Anatolide nappe stack in western Turkey, changed into a sustained regime of continental extension leading to the exhumation of the Menderes Massif. The extension was accommodated by low-angle detachment faults and led to the formation of two E-W striking graben systems which separate the central Menderes Massif from the northern and southern sub-massifs (Gessner et al. 2013). The late Cenozoic exhumation of the central Menderes Massif is attributed to the north-dipping Gediz detachment and the south-dipping Büyük Menderes detachment, which exhumed the Bozdağ and Aydın ranges, respectively. Many of the previous structural and thermochronological studies focused on the evolution of the well exposed Gediz detachment and inferred a similar development of the Büyük Menderes detachment. The concurrent activity of both detachments since the middle Miocene was recently supported by thermochronological data of Wölfler et al. (2017), who identified two stages of increased footwall cooling along the Büyük Menderes detachment, in the middle Miocene and latest Miocene/Pliocene. However, a comprehensive tectonic model on the exhumation of the Aydın range is impeded by the scarcity of field data from structures related to the late Cenozoic extension and thermochronological data, which further provide more detailed constraints on the timing and along strike changes of the Büyük Menderes detachment. Therefore, we present new results from structural and geological mapping, which imply that the Büyük Menderes detachment consists of at least two major low-angle normal faults instead of a single continuous extensional detachment fault. New zircon and apatite (U-Th)/He and fission track ages show the middle and latest Miocene cooling event not only in the central part but also in the western part of the Aydın range, with thermo-kinematically modeled exhumation rates of ca. 0.5 km/Myr. Further, the onset of faulting along the high-angle normal fault, which bounds the modern Büyük Menderes graben south of the Aydın range, is documented by late Pliocene apatite (U-Th)/He-ages.

### References

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