

Geowissenschaftliches Kolloquium im SoSe 2022

Von-Seckendorff-Platz 3, 06120 Halle, Hörsaal 3.0.21, Erdgeschoss, Haus 3

Montag 17 Uhr c.t. Prof. Dr. Kamil Ustaszewski

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Vertical motions as indicators of active tectonic deformation. Case studies from the Zagros and Dinarides fold-and-thrust belts

Aggradational river terraces or coastal wavecut platforms constitute geomorphological archives that can be used for deciphering vertical tectonic motions. In my talk, I will present two case studies in which such archives were exploited to better understand the active tectonic evolution of two very contrasting fold-and-thrust belts.

The first case study is situated in the external Zagros mountains of Kurdistan (Northern Iraq), an actively converging fold-and-thrust belt mountain belt. There, flights of several aggradational river terraces constitute markers of relative surface uplift with respect to the present-day level of the Great Zab river traversing the frontal thrust-related anticlines (Zebari et al., 2021). Combining depositional ages of selected terraces and detailed structural models of the thrust-related anticlines underlying the terraces allowed calculating fault-slip rates for the causative faults triggering shortening and surface uplift, averaging across timescales of c. 10⁴ years.

The second case study focuses on the northern Dinarides fold-thrust-belt on the Balkan Peninsula, an orogen currently characterized by low convergence rates and comparatively little seismicity. We have identified an extensive system of elevated coastal terraces for about 500 km along-strike the mountain front and up to 600 m above sea level (Balling et al., 2021). The terraces abrade folded and thrusted structures and hence very likely postdate active tectonic accretion. Conspicuously, the mapped terraces sit atop a low-velocity mantle anomaly interpreted as a lithosphere slab gap. Our current working hypothesis interprets the flights of elevated coastal terraces as documenting rock uplift triggered by post-orogenic mantle delamination and subsequent isostatic readjustment.



Panoramic view of aggradational river terraces along Great Zab River, Kurdish Zagros Mountains (Iraq).
Photo by K. Ustaszewski

Kolloquiumsvortrag am Institut für Geowissenschaften & Geographie
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