

# Charting the growth of the Turkish-Iranian plateau

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Stretching from the Persian Gulf up through Turkey, the northwest-southeast running Zagros fold-and-thrust belt is a region of extensive crustal deformation and seismic activity. Near the Zagros Mountains the structure of the Middle Eastern region is the result of the intersection of three tectonic plates, with the Eurasian plate being squished on both sides by the Arabian and Indian plates. Convergence of the plates is driving the formation of the Turkish-Iranian plateau, a high-elevation expanse of relatively smooth terrain reaching in some places more than 2 kilometers (1.24 miles) into the sky and lying northeast of the Zagros belt.

How the Turkish-Iranian plateau formed and attained its dramatic height, however, is relatively unknown. Researchers are unsure whether the plateau grew vertically at one spot and then expanded laterally, or if the entire surface area of the plateau rose concurrently. Furthermore, research suggests that the uplift related to seismic thrusts (a process largely occurring within the Zagros fold-and-thrust belt) can only account for surface elevations of up to about 1,250 meters (0.78 miles), because after this point the gravitational potential energy of the crust counterbalances the horizontal compressive forces. Also, scientists are uncertain whether the Turkish-Iranian and other similar plateaus (such as the [Tibetan plateau](#)) grow incrementally, or through periodic bursts of activity.

Combining in-the-[field measurements](#) with existing seismicity data and [global positioning system](#) observations of surface motion, Allen et al.

describe in detail the complex interactions in and around the Zagros belt to better understand the formation of the Turkish-Iranian plateau. Based on their findings, the authors suggest that the Turkish-Iranian plateau grew incrementally, with the rate of uplift varying over time, and that both aseismic basement shortening and seismic upper- crustal thickening drove the plateau's ascent.

**More information:** Orogenic plateau growth: expansion of the Turkish-Iranian Plateau across the Zagros fold-and-thrust beltT, tectonics, [doi:10.1002/tect.20025](https://doi.org/10.1002/tect.20025), 2013 [onlinelibrary.wiley.com/doi/10.1002/tect.20025/abstract](https://onlinelibrary.wiley.com/doi/10.1002/tect.20025/abstract)

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