

New study investigates lithosphere of the Central Iranian plateau

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July *GSA Today* cover image: Khosoumi Mountains in the southern part of the Chapedony metamorphic core complex of Central Iran. The high mountains in the back are represented by Eocene plutonic rocks of the footwall unit. Eocene volcanoclastic rocks in the foreground form the hanging-wall unit. Credit: Franz Neubauer of the University of Salzburg and Fariba Kargaranbafghi of the University of Yazd, and *GSA Today*.

In the July issue of *GSA Today*, Franz Neubauer of the University of Salzburg and Fariba Kargarabafghi of the University of Yazd describe thinning of the lithosphere that they associate with the formation of a metamorphic core complex in the Central Iranian plateau.

The core complex is located within a continental rift and was exhumed at a rate of approx. 0.75 to 1.3 km per million years during the main phase of oceanic subduction of the Arabian plate beneath the Central Iranian block between ca. 30 and 49 million years ago.

The authors indicate that lithosphere and [continental crust](#) were thinned beneath regions of surface extension. The thinning of the underlying [lithosphere](#) appears to have been compensated by hot asthenosphere, as indicated by low seismic velocities in the Central Iranian block.

The authors conclude that the development of the core complex involved lithospheric removal associated with extension and upwelling of hot asthenosphere. Later processes, like slab break-off and associated uplift of the Central Iranian plateau, may have modified the structure.

More information: Lithospheric thinning associated with formation of a metamorphic core complex and subsequent formation of the Iranian plateau, Fariba Kargarabafghi, et al. *GSA Today*, v. 25, no. 7, p. 4–8; [DOI: 10.1130/GSATG229A.1](https://doi.org/10.1130/GSATG229A.1)

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