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Constraining Arabia-Eurasia convergence accommodated in the Greater Caucasus: Paleomagnetism and kinematic evolution of the Talesh, NW Iran

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The Arabia-Eurasia collision zone is an area of relatively young continental collision of which the kinematic evolution is poorly understood due to complex interactions of blocks accreting to the Eurasian plate after subduction of various oceanic domains, most notably the Paleotethys and Neotethys. The way in which convergence between the Arabian and European plates was accommodated and even the timing of collision is poorly constrained. Quantifying the mechanisms and processes active in the collision zone which extends from the Zagros mountains in the southwest of Iran to the Greater Caucasus in the northwest is a crucial step towards better understanding this young collision zone. Here, we constrain the amount of convergence accommodated by oroclinal bending and block rotation of the Talesh mountains to the west of the South Caspian Basin, in order to estimate the size of a reconstructed Greater Caucasus Basin north of the Talesh. New paleomagnetic data from the Eocene volcanics in the Talesh in NW Iran and Azerbaijan combined with previously published data allow us to provide a new subdivision of structural domains which are in accordance with trends in regional strikes, fold axes and faults. We define three blocks based on variations in both regional structural trends and rotations. These are used in a new Gplates reconstruction of the collision zone since the Eocene. The Talesh and lesser Caucasus were located at similar latitudes at $\sim$35 Ma, allowing for approximately 300 km of Arabia-Eurasia convergence to be accommodated during subduction of the Greater Caucasus Basin, accompanied by $\sim$120 km of arc-parallel extension, as well as $\sim$220 km of convergence between the South Caspian Basin and the Talesh due to rotation. We identify structures which accommodated shortening and extension during block rotation and oroclinal bending. Our results allow for a more detailed understanding of the kinematic development of the Arabia-Eurasia collision zone since the Eocene, providing crucial insight into a young and still active collision zone.