



## **Detrital zircon study of the Dezful Embayment in the central Zagros, southern Iran**

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The Dezful Embayment of the Zagros Simply Folded Belt (ZFTB) in southern Iran is a foreland basin that formed as a flexural basin during the Miocene by the Zagros orogeny. This study reports a LA-ICPMS analysis of zircon U-Pb geochronology of 13 sedimentary rock samples from the Dezful Embayment, and five others from the Urumieh-Dokhtar magmatic arc (UDMA) and the Sanandaj-Sirjan zone (SSZ). In the northern and central parts of the Dezful Embayment, samples were collected from four principal sedimentary sequences including, from bottom to top, the Gachsaran Formation, Mishan Formation, Agha Jari Formation and Bakhtyari Formation. Our new zircon ages, together with published geochronological data from the UDMA and SSZ, can be used to better constrain the source provenance and tectonic implication of the Dezful Embayment related to the Arabia-Eurasia collision following the closure of Neo-Tethys. Samples of the UDMA and SSZ are characterized by abundant zircon ages of Eocene to Oligocene (55-25 Ma) and Jurassic (176-144 Ma), respectively. In the Dezful Embayment, detrital zircon age populations show significant variations. The age spectra of the northern Embayment show major peaks at the Precambrian (950-550 Ma), Late Carboniferous (323-299 Ma), Jurassic (176-144 Ma) and Eocene to Oligocene (55-25 Ma), with the last two age peaks suggesting an important source provenance from Eurasia, involving the SSZ and UDMA. By contrast, in the central Embayment, detrital zircons are dominated by Precambrian ages (2500 Ma, 1850 Ma, and 950-550 Ma), with rare Jurassic and Cenozoic ages. This suggests a different sedimentary source that we interpret to be the Arabian continent from the south. Moreover, gradual changes in the detrital zircon age spectra and thus in the source provenances are observed in different parts of the Dezful Embayment. The change in the northern Embayment occurred in the Agha Jari Formation, earlier than that in the central Embayment occurring between the Agha Jari and Bakhtyari Formations. This variation is consistent with the notion for oblique and diachronous collision between Arabia and Eurasia.