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# New low temperature thermochronology from the Makran accretionary wedge (SE Iran)

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The Makran Accretionary Prism (MAP) is one of the largest accretionary wedges in the world. It results from convergence, initiated in the late Cretaceous, between the Arabian and Eurasian plates. The MAP has grown seawards by frontal accretion and underplating of trench-fill sediments since the Miocene. Today, the exposed frontal 100–150 km are submarine and >350 km of the Cenozoic accretionary wedge are exposed on land, in Iran and Pakistan.

Low temperature thermochronology (apatite and zircon fission-track ages) provides new time constraints on the evolution of the MAP. All apatite from horizons ranging from Miocene (10 Ma) to Late Cretaceous (68 Ma) in depositional age, has undergone partial annealing since sedimentation. An increase in annealing with stratigraphic age is clear and is due to an associated increase in burial depth (temperature). Samples from horizons as young as 10 Ma show some annealing implying temperatures greater than 60°C were reached prior to cooling and exhumation. Samples from units older than 45 Ma, have been buried to temperatures of almost 110°C (the closure temperature of apatite). This temperature estimate is evidence that the zircon ages are not reset anywhere in the sequence as the closure temperature required is much higher than for apatite. Further confirmation that they have not been reset is that no zircon single grain ages are less than the stratigraphic age from the enclosing horizons. This conclusion allows the zircon ages to be interpreted as detrital grain ages. The resulting lag time is generally very short, <2Ma in many instances implying active tectonic source regions in the hinterland for the time spanning from at least ≈45 to 10 Ma.