



Indentation of the Pamirs with respect to the northern margin of Tibet: Constraints from the Tarim basin sedimentary record

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The Pamirs represent the indented westward continuation of the northern margin of the Tibetan Plateau, dividing the Tarim and Tajik basins. Their evolution may be a key factor influencing aridification of the Asian interior, yet the tectonics of the Pamir Salient are poorly understood. We present a provenance study of the Aertashi section, a Paleogene to late Neogene clastic succession deposited in the Tarim basin to the north of the NW margin of Tibet (the West Kunlun) and to the east of the Pamirs. Our detrital zircon U-Pb ages coupled with zircon fission track, bulk rock Sm-Nd, and petrography data document changes in contributing source terranes during the Oligocene to Miocene, which can be correlated to regional tectonics. We propose a model for the evolution of the Pamir and West Kunlun (WKL), in which the WKL formed topography since at least ~200 Ma. By ~25 Ma, movement along the Pamir-bounding faults such as the Kashgar-Yecheng Transfer System had commenced, marking the onset of Pamir indentation into the Tarim-Tajik basin. This is coincident with basinward expansion of the northern WKL margin, which changed the palaeodrainage pattern within the Kunlun, progressively cutting off the more southerly WKL sources from the Tarim basin. An abrupt change in the provenance and facies of sediments at Aertashi has a maximum age of 14 Ma; this change records when the Pamir indenter had propagated sufficiently far north that the North Pamir was now located proximal to the Aertashi region.

Reference: Blayney, T., et al. (2016), Indentation of the Pamirs with respect to the northern margin of Tibet: Constraints from the Tarim basin sedimentary record, *Tectonics*, 35, doi:10.1002/2016TC004222.