

Evidence of ocean arc-continental margin collision in the Shyok Suture Zone (Northern Suture), N Pakistan

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The Shyok Suture Zone (Northern Suture) in N Pakistan separates the Karakoram Terrane (Eurasia) from the Cretaceous oceanic Kohistan island arc to the S, but is largely obscured by Tertiary overthrusting along the Main Karakoram Thrust. Our recent sedimentological, structural and geochemical work in the Skardu area shows that the suture can be divided into two main units: i) relatively coherent, or thrust imbricated Cretaceous volcanogenic sediments, volcanics and redeposited limestone, interpreted as marginal to the Kohistan arc, together with slices of serpentinite/lava, of inferred oceanic origin; ii) Palaeozoic/Early Mesozoic? shallow to deeper-marine continental margin successions of Eurasian (Karakoram) affinities. Accreted units e.g. "olistostromes", or exotic tectonic melange that could record a Cretaceous Shyok oceanic basin are restricted to thin tectonic slices between i) and ii). Petrographic studies do not reveal any terrigenous (Eurasian-margin)-derived sediment within the inferred Kohistan arc-margin units, consistent with the existence of a coeval Shyok oceanic basin (of unknown width) separating the Kohistan arc from Eurasia, but little trace of this remains. Regional evidence favours pre-75 Ma collision of the Dras/Kohistan arc with the Eurasian (Karakoram) margin. The arc was exposed and fluvially eroded prior to thrust imbrication, possibly related to Late Cretaceous arc/Eurasian margin collision.