



# New limits on the timing of India-Asia collision from the stratigraphic record of southern Tibet

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The India-Asia collision has produced Earth's highest mountains--the Himalaya--and the massive Tibetan-Pamir Plateau. The timing of initial collision remains a topic of debate, with published ages ranging between 70 and 30 Ma. New detrital geochronology on Paleocene strata that accumulated upon Indian continental crust prior to and during the India-Asia collision provide the most accurate age yet for timing of the collision. This newly documented stratigraphic section is located at Sangdanlin, along the southern boundary of the accretionary wedge that formed above the India-Asia trench. Coarse-grained quartz-rich turbidites at the base of the section contain detrital zircons that record exclusively Indian provenance. These deposits probably represent base-of-slope (Indian) turbidite fans. A sharp disconformity is overlain by laminated radiolarian cherts and siliceous shale, which could have been deposited upon a submarine bathymetric swell that formed as the Indian plate flexed into the subduction trench. Sandy turbidites again become predominant up-section, but these sandstones have feldspatholithic, arc-derived modal framework compositions, and contain abundant detrital zircons of late Cretaceous-Paleocene age; youngest age populations cluster at ca. 60 Ma. In the upper part of the section a tuff layer yielded a U-Pb age of 58.5 Ma. We take this to be the minimum age of collision. Correlation and integration of the Sangdanlin record with records located farther south in the Tethyan Himalaya, the Lesser Himalaya, and in the frontal Subhimalayan foothills allows for an analysis of the complete Himalayan foreland basin system from 60 Ma to the present, and demonstrates that Indian continental crust was within a flexural wavelength of the Asian margin by that time. In turn, this result has significant implications for plate-tectonic reconstructions of the India-Asia approach and collision.

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