

# Shortening of southern Tibet

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The Himalayan orogeny began approximately 50 million years ago with the collision of the Indian and Eurasian plates, which caused deformation and uplift of the Himalayas and Tibetan Plateau. As this deformation propagated it deformed lithotectonic units independently allowing us to study the deformation of a specific time. The Tethyan Himalaya lithotectonic unit is a fold-and-thrust belt in southern Tibet between the crest of the Himalaya and the India-Eurasia suture (the Indus-Tsangpo suture Zone) that developed during the Eocene and Oligocene. We know from seafloor data that the rate of Indian plate movement has always been faster in the east than in the west, and that during the Eocene and Oligocene was faster than during Miocene, however, current shortening estimates across the Tethyan Himalaya do not reflect this. There are two principal objectives of this project. The first is to calculate the amount of shortening of the Tethyan Himalaya. Secondly, we aim to determine the geometry of the basal detachment of the Tethyan Himalaya. The current hypothesis is that the basal detachment of this fold-and-thrust belt was a south-vergent thrust during Eocene and Oligocene, which was reactivated during Miocene as a low-angle normal fault geometry shear zone. This structure out crops in the northern Himalaya as the South Tibetan Detachment. The objectives of this project will be implemented through construction of a series of balanced, retrodeformable cross sections using MOVE® software. The cross sections will be constructed based on published geological maps and field observations. The long-term aim of the project is to determine if there were spatial and temporal changes in the shortening rate of the southern Tibet and the Himalaya.