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India-Asia collision paleogeography constrained by Burma Terrane (Myanmar) Late Cretaceous to Miocene paleomagnetic data

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The paleogeographic evolution of the India-Asia collision and the resulting formation of the Himalayan orogen remain an intensely debated topic. A variety of disputed models propose different collision ages for the numerous terranes incorporated into the collision with variable paleolatitudes and tectonic rotations that can be constrained using paleomagnetism. Recent plate tectonic reconstructions have shown that the Burma Terrane (BT), a microplate at the eastern edge of the Himalayan orogen, is a key element to solve the India-Asia collision puzzle. Here we provide new paleomagnetic and geochronological data of Paleocene, Eocene, Oligocene and Miocene age, in addition to our previously published Late Cretaceous and late Eocene results. We present a robust plate tectonic reconstruction for the BT with GPlates software, and show that the BT moved towards southern hemisphere latitudes between the Late Cretaceous and Paleocene without significant rotation. Starting in the Paleocene, the BT and India coevally moved northwards and the BT started to undergo a major clockwise rotation of ~60 □. By the late Eocene, most of this rotation was completed and the BT was translated ~2000 km northward from near-equatorial latitudes without significant rotation. This northward translation culminated with the early Miocene indentation of the BT into the eastern Himalayan collision zone, leading to the setup of the modern Eastern Himalayan Syntaxis. These first order constraints are used to infer a Trans-Tethyan arc collision model including timing of rollback, extrusion and initiation of strike-slip systems. Our model has important implications for Asian biotic and climatic evolution.