



The effects of mountain growth in Tibet and changes in plate geometry on the motion of the Indian plate

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Plate reconstructions show that the convergence velocity between India and Asia changed dramatically between ~ 50 and ~ 35 Ma. This change is coincident with the onset of continent-continent collision in the area which is now the Tibetan Plateau, and with changes in the geometry of the plate boundaries in the Indian Ocean. By calculating the torques exerted upon the Indian plate by the mid-ocean ridges, subduction zones, and mountain belts along its margins, we have calculated Euler poles for the plate for recent times and in the past. By comparing these poles to those calculated from published plate reconstructions we are able to suggest the reasons for the changes in convergence velocity and the position of the Euler pole, and assess the relative importance of changing plate geometry and the growth of topography in the region which is now the Tibetan Plateau.