# Equatorial convergence of India and changes in atmospheric $CO_2$ and climate during the Cenozoic

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Conflicting estimates of seafloor production rates over the Late Cretaceous and Cenozoic have variously indicated generally decreasing (e.g., (*1, 2*)), steady (*3*), or even increasing trends (*4*) that raise questions about the often presumed linkages of variations in sea-floor spreading with changes in eustatic sea level (e.g., (*5*)) and especially volcanic outgassing as a principal control on the evolution of atmospheric $CO_2$ (*6*). Elaborating on ideas expressed several years ago by D. Schrag (*7*) and J. Edmond and Y. Huh (*8*), we suggest that India's northward flight and collision with Asia was a major driver of atmospheric $CO_2$ concentration ($pCO_2$) and thus global climate in the late Cretaceous and Cenozoic (*9*). Subduction of Tethyan oceanic crust with a carpet of carbonate-rich pelagic sediments deposited during transit beneath the high productivity equatorial belt resulted in a component flux of $CO_2$ delivery to the atmosphere that maintained high $pCO_2$ levels and warm climate until the decarbonation factory waned with the collision of Greater India with Asia at ~50 Ma (*10*), closely coinciding with the Early Eocene climatic optimum. At about this time, the India continent and the highly weatherable Deccan Traps drifted into the equatorial humid belt where uptake of $CO_2$ by silicate weathering further perturbed the equilibrium towards progressively lower $pCO_2$ levels *(11)* and a cooling trend that eventually triggered the expansion of Antarctic ice sheets in the earliest Oligocene (*12*), even if global seafloor production rates remained steady.

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