

Eruption Rates of Large Igneous Province Volcanic Rocks Since 150 Ma

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Large Igneous Provinces (LIPs) constitute broad areas, $>10^5$ km², of predominantly mafic rocks erupted over $\sim 10^6$ yr. LIPs originate in the mantle, via mass and energy transfer which acts both independently of, and in conjunction with, the wide-ranging upwelling systems producing new oceanic crust by sea floor spreading along the mid-oceanic ridge system. We evaluate all categories of LIPs - continental flood basalts, volcanic divergent margins, oceanic plateaus, submarine ridges, and ocean basin flood basalts - emplaced since 150 Ma, estimate their subaerial and submarine volcanic components, and combine volume and age information to produce subaerial and submarine volcanic output curves for Cretaceous and Cenozoic time. The post-150 Ma LIP record reveals both many events and voluminous volcanism from 135-85 Ma, and a distinct decline since 50 Ma. These trends may reflect variations in mantle circulation and have links to global environmental change.