



## **AN EROSIONAL RECORD OF TIBETAN PLATEAU UPLIFT AND MONSOON STRENGTHENING IN THE ASIAN MARGINAL SEAS**

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In this study we examined the marine sedimentary record of rivers draining eastern Tibet, which deliver sediment to the marginal seas of east and south Asia, by searching for an erosional pulse of material that may be related to Tibetan Plateau uplift and/or climate change. Studies on the plateau itself are necessarily localized, but the marine clastic record reflects erosion across larger areas, making the offshore sedimentary record a more regional indicator of uplift and/or climate change. New regional compilations of seismic and well data from the Arabian Sea, as well as several marine basins of the East Asian marginal seas, show increased rates of offshore sedimentation during the Early to Middle Miocene, ca. 15-20 Ma. Our new sediment budget is different from earlier reconstructions in accounting for sediment deposited across the entire margin from the coast to the abyssal plain. This is important because accumulation rates in shelf basins primarily reflect tectonic subsidence, while accumulation on the continental rise is linked to periods of lower sea level. The increased influx of sediment into several of the east and southeast Asia offshore basins at 15-20 Ma correlates with a change in clay mineralogy in sediments offshore of the Pearl River on the South China margin and indicates a change from a dryer to a wetter climate. Nevertheless, it is not clear how much of increase in sediment flux at this time is due to plateau uplift and how much may be due to an increase in precipitation rate. Recent unpublished data from Clark et al. (2002) indicate that rapid incision of major rivers into the southeastern plateau margin initiated in late Miocene time. Thus the Early-Middle Miocene increase in sediment flux into the offshore basins probably reflects

erosion nearer the headwaters of these rivers in the east-central portion of the plateau. If correct, this suggests that the east-central plateau was high by at least Early Middle Miocene time. Our data support a positive relationship among elevated topography, changes in precipitation and the flux of sedimentary material to the oceans during Cenozoic time, but the spatial and temporal patterns of uplift and their relationship to the Asian monsoon remain to be understood. Comparison of river incision ages on the plateau and the temporal-spatial pattern of sediment supply to the continental margin remains one of the best avenues for establishing this relationship.