



## **Modeling shows that the time of rifting need not be the same as the time of uplift of an Elevated Passive Continental Margin.**

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Elevated Passive Continental Margins (ECPMs) in different parts of the world have similar morphologies; in particular a steeper slope towards the ocean than towards the hinterland and extensive low-relief plains at altitudes of more than a kilometer. Much discussion in the literature is based on the assumption that ECPMs have been elevated since the time of last rifting or the onset of sea-floor spreading and that the elevated plateau represents either a pre- or syn-breakup surface or is a weathered remnant of such a surface. The steep seaward slope of several ECPMs has eroded to form an escarpment and calculations of the rates of retreat of these escarpments commonly assume that they have been retreating since the time of rifting or continental break-up. Modeling using continental-stretching theory predicts, however, that the width of the uplifted area of a flexed rift margin should be substantially narrower than the observed widths of ECPMs and that post-rift cooling should cause the uplifted area to subside again during a few tens of millions of years. The time of rifting does not, therefore, provide any constraint on the time at which the EPCM formed, and that models that attempt to calculate erosion rates on the assumption that the uplift has been there since the time of rifting may underestimate the rates of erosion substantially.