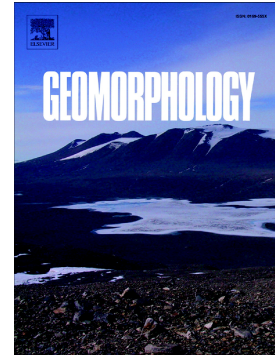


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Losing ground - scenarios of land loss as consequence of shifting sediment budgets in the Mekong Delta

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Abstract

With changing climate and rising seas, proliferation of hydroelectric dams, instream sand mining, dyking of floodplains, accelerated subsidence from groundwater pumping, accelerated sea-level rise, and other anthropic impacts, it is certain that the Mekong Delta will undergo large changes in the coming decades. These changes will threaten the very existence of the landform itself. The multiplicity of compounding drivers and lack of reliable data lead to large uncertainties in forecasting changes in the sediment budget of the Mekong Delta, its morphology, and the ecosystems and human livelihoods it supports. We compile information on key drivers affecting the sediment budget of the Mekong Delta and compare them to quantify the magnitude of effects from different drivers. We developed a set of likely scenarios for the future development of these drivers and quantified implications for the future of the Mekong Delta using a simplified model of the delta's geometry. If sediment supply to the delta is nearly completely cut off, as would be the case with full buildout of planned dams and current rates of sediment mining, and with continued groundwater pumping at current rates, our model forecasts that the delta will almost completely disappear by the end of this century due to increased rates of delta subsidence and rising sea levels. While local management cannot prevent global sea level rise, model results suggest that there are important management steps that could prolong the persistence of the delta ecosystem and the livelihoods it

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