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Evidence of El Niño driven desiccation cycles in a shallow estuarine lake: the evolution and fate of Africa's largest estuarine system, Lake St Lucia

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Abstract

Projections of an increase in drought frequency and intensity over the next century are expected to have severe implications for a number of globally important coastal ecosystems. In this paper, we present geochemical data from three sediment cores extracted from the main depositional basins of Lake St Lucia, Africa's largest estuarine system. St Lucia is subject to extreme natural variations in salinity. The sedimentary record documents the evolution of the system from a relatively deep-water, open lagoon to a confined, shallow estuarine lake that today is highly sensitive to changes in freshwater supply. This is particularly evident in the northern portions of the system, where the presence of distinct halite-enriched horizons document episodes of prolonged drought. The lateral persistence of these halite layers, as

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