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Freshwater on the route of hominids "out of Africa" during the last interglacial revealed by U-Th in northern Red Sea fossil reefs

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The migration of Anatomically Modern Hominids (AMH) “out of Africa” is a fundamental problem in the study of human culture concerning that the route passed through the presently hyperarid deserts surrounding the Red Sea. Here, we outline the evidence for significant presence of freshwater in a well developed phreatic coastal aquifer along the Red Sea shores during the last interglacial period. The fringing coral reefs were tectonically uplifted through the freshwater lens resulting in extensive recrystallization of reef framework from the primary aragonite into calcite. We developed a novel open-system U-Th dating methodology that enabled us estimating two ages for the calcitic reef terrace: 1. The original age of the reef terrace, deposited at $\sim$190 ka BP; and 2. the time of freshwater recrystallization (from the primary aragonite into calcite) at $\sim$140 ka BP. The age of freshwater recrystallization is consistent with other geological lines of evidence placing the time of AMH migration “out of Africa” at the onset of the last interglacial. It is likely therefore that during that time the hyperarid Red Sea area was wetter than today facilitating the migration of AMH to Europe and Asia.