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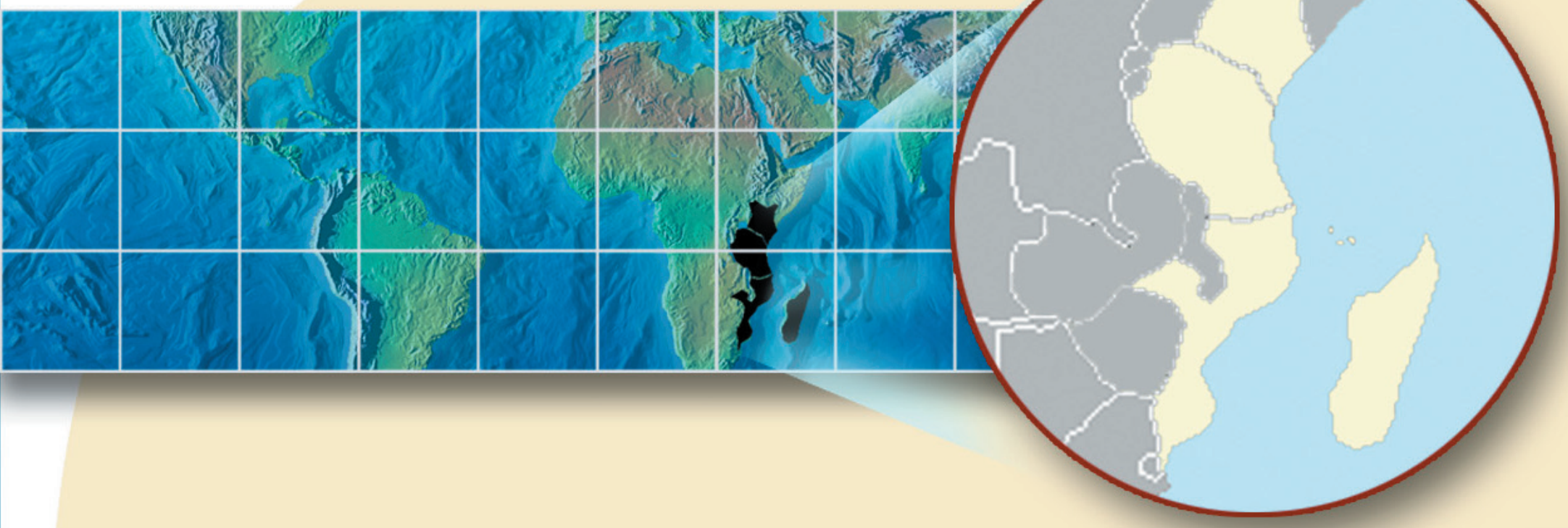
INTERNATIONAL

East Africa Review



A combination of new understanding concerning the dynamics and thermal history of continental margins with previous exploration findings indicates that the East African margin has a far greater potential for new opportunities than traditionally believed.

Satellite-derived gravity maps are initially used to divide the East Africa offshore, from southern Somalia to northern South Africa, into geologically self-consistent segments and then determine the prospectivity of each of these segments. The most favorable areas for reservoir development are those where the drift section is thickest and contains the best quality sand developments. These are associated with either the main river mouths or with clusters of smaller rivers, and are positioned along the hanging wall of the continental hinges in deepwater settings. Sand delivery and the overall sediment supply volume increased in the younger Tertiary, but there are also multiple Cretaceous depocentres, many with reservoir quality sands.

Oil-prone source rocks are expected to be developed in the deepwater Somali and Mozambique Basins from the mid-Jurassic rift-drift transition upwards into the drift section and possibly in beds as young as Turonian. The source sequence is predicted to be of regional extent in the Somali Basin. It may also be more widespread in the Mozambique Basin than presently visualized. Excellent quality and richness characterize the rift-drift transition source sequences of Tanzania and Madagascar. An end-Jurassic to probably Turonian source section is predicted for the Durban Basin, where oil-prone sources are expected in present-day deepwater settings.

Basin modelling using PresRo® shows that the Oil Window is preserved, where the section is over-pressured beneath a thicker section, and extends further out into the deepwater, than indicated by conventional time-temperature models. In addition to the deepwater sand opportunities, footwall traps positioned along the hinge line present attractive targets for charges released following the failure of over-pressured cells. Ongoing tectonism related to the growth of the East Africa Rift and the reactivation of the Davie Fracture Zone has created multiple opportunities for this novel method of hydrocarbons delivery.

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