

Implications of Models for Opening of the South Atlantic on Geometry and Timing of Salt Deposition

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Variable age of the continent-ocean boundary (COB) in the South Atlantic reflects diachronous separation between Africa and South America. South of the Walvis Ridge, the COB is about 5 million years younger in than in the far south. This age progression has generally been interpreted to continue to the north as far as the Niger Delta, with first oceanic crust at the delta younger still than at the Walvis Ridge. Along the non-volcanic margins north of the Walvis Ridge there are extensive salt basins developed on highly extended continental crust. Seismic and potential field evidence suggests that the COBs in these basins coincide with the outer edge of salt. It is generally assumed that the edge of salt is an isochron, i.e. salt deposition stopped at the same time along the entire 2,000 km strike length of the salt basins.

Plate reconstructions that attempt to match the COBs from South America and Africa along the entire South Atlantic demonstrate, however, that it is not possible to match the COBs along the length of the salt basin margins. This means that the edges of salt and thus the COBs are not isochrons. We favor a diachronous model for salt deposition. This talk discusses our tectonic observations and implications of the diachronous model for our understanding of salt deposition in evolving rift basins and the transition from continental to oceanic crust.