

Post-breakup basin evolution along the South-American and South-African margins, southern Atlantic

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Considerable attempts have been made to compare the sedimentary basin evolution and the associated tectonic framework on both sides of the South-Atlantic. There are however still unresolved questions concerning the tectono-sedimentary styles of margin basin evolution and margin geometries that markedly differ from north to south. Amongst the most striking observations is that multiple phases of uplift and subsidence are recorded after the break-up of the southern South Atlantic margin segment on both sides of the Florianopolis-Walvis Ridge volcanic complex, features that are regarded as atypical when compared to published examples of other post-breakup margin successions. Adding to the heterogeneity of the system, the northernmost segment of the South Atlantic margin comprising rift and salt basins is also characterized by a pronounced asymmetry, with the Brazilian margin now containing narrower and deeper rift basins with less salt than along the Congo–Gabon conjugate margin. To gain detail of the basin evolution, we focus on a regional comparison between the post-breakup records archived in the large offshore southern Brazil basins (Pelotas, Santos, Campos) and the post-breakup continental margin successions of offshore Namibia (e.g. Namibe and Walvis Basin) and southern Angola (e.g. Kwanza and Lower Congo Fan Basin). A tectonic-stratigraphic comparison of representative geological transects provides a comprehensive basin-to-basin documentation, which implies that the complexity of syn- and post-rift basement deformation strongly influenced subsequent basin evolution. Especially the along-strike variation of salt deformation, related to the different styles of basement structures in the salt-prone basins north of the Florianopolis-Walvis Ridge, highly affected the development of the sedimentary systems as well as margin slope evolution. Most complex interactions of basement structure, salt tectonics, evolution of the post-breakup sedimentary system, and margin morphology have been identified in the Campos Basin and the conjugated Kwanza Basin, whilst complexity continuously decreases in the basins further north and south. We propose that this interaction is amongst the key parameters controlling differential post-rift margin development and along-strike variation in modern margin geometry.