Teleconnections between the South American monsoon and southern African rainfall are investigated for years with Benguela Niño (Niña) events in the tropical Southeast Atlantic. Analysis of the temporal evolution of South American and African rainfall prior and during these events, as well as of the Atlantic SST anomalies, shows that strong South American summer rainfall anomalies precede the peak anomalies of Atlantic SST and African rainfall, and may influence the evolution of these anomalies.

The atmospheric rotational and divergent circulation anomalies during Benguela Niño episodes show a tropics-extratropics wave-train propagating southeastward from central South America towards the extratropical Atlantic in peak summer, whereas over the tropics between South America and Africa they suggest a tropics-tropics teleconnection between the two continents. These teleconnections are able to enhance the Benguela Niño (Niña) SST anomalies off the western African coast and furthermore, are able to directly influence the African rainfall.

To investigate these teleconnections, a linear vorticity equation model, including the divergence of the basic state and advection of vorticity by the divergent wind, is forced with anomalous divergence patterns observed during the Benguela Niño episodes. The simulations show that convection anomalies during the South American monsoon produce the main circulation anomalies observed during those episodes and hence influence rainfall and circulation patterns over southern Africa. An influence function analysis confirms this result, indicating South America as the most efficient source region of the observed anomalies, and shows that the influence of African anomalous convection on the South American monsoon is much weaker.