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Project duration: June 2015 - May 2018

Evolving carbon sinks in the young South Atlantic: Drivers of global climate in the early Cretaceous Greenhouse?

Aim:

The project aims to reconstruct and quantify the paleoceanographic conditions for black shale deposition in the Aptian/Albian South Atlantic using a wide range of organic, inorganic isotopic techniques, as well as numeric modelling. The modeling efforts focus on the opening phase of the South Atlantic and its effects on regional carbon burial in relation to global climate development.

Working hypothesis:

Gateway development in the South Atlantic appears to be essential for fundamental changes in the sequestration of carbon. This opening needs to be resolved in the best stratigraphic resolution possible, requiring new isotopic tools. Data suggest that the South Atlantic may have acted as a minor carbon sink or even as a carbon source during OAE 1a. Subsequently, the South Atlantic did become a global sink for organic carbon, however, not before the flooding of the Northern sub-basin had commenced. This initial flooding may even have triggered the onset of a brief period of global cooling.

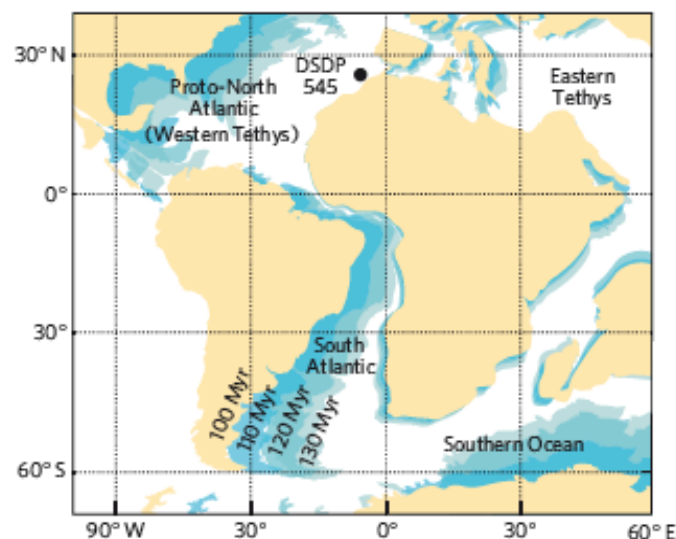


Fig. 1: Reconstruction of the early-mid Cretaceous Atlantic Ocean, Southern Ocean and western Tethys illustrating the progressive opening of the equatorial Atlantic gateway and all ocean basins for four time periods of the Cretaceous.