**Supplementary information**

**The paleogeographic maps**

The Paleozoic maps are from Blakey (2007). The Mesozoic and Cenozoic maps have been provided by Sewall (Sewall et al., 2007), or are derived from a synthesis of paleomagnetic data, hot spot tracks and geologic constraints (Besse & Courtillot, 2002; Dercourt, Ricou & Vrielynck, 1993). The spatial resolution of the climatic simulations is 7.5° longitude x 4.5° latitude.

**References**

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