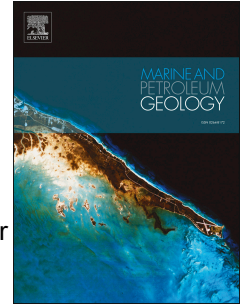


# Accepted Manuscript

New constraints on the age of the opening of the South Atlantic basin

Stuart A. Hall, Dale E. Bird, David J. McLean, Philip J. Towle, James V. Grant, Hunter A. Danque



PII: S0264-8172(18)30109-0

DOI: [10.1016/j.marpetgeo.2018.03.010](https://doi.org/10.1016/j.marpetgeo.2018.03.010)

Reference: JMPG 3275

To appear in: *Marine and Petroleum Geology*

Received Date: 4 December 2017

Revised Date: 22 February 2018

Accepted Date: 7 March 2018

Please cite this article as: Hall, S.A., Bird, D.E., McLean, D.J., Towle, P.J., Grant, J.V., Danque, H.A., New constraints on the age of the opening of the South Atlantic basin, *Marine and Petroleum Geology* (2018), doi: 10.1016/j.marpetgeo.2018.03.010.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**New Constraints on the Age of the Opening of the South Atlantic Basin.**

Stuart A. Hall<sup>1</sup>, Dale E. Bird<sup>1,2</sup>, David J. McLean<sup>3</sup>, Philip J. Towle<sup>3</sup>, James V. Grant<sup>4</sup>, and Hunter A. Danque<sup>3</sup>.

<sup>1</sup> Department of Earth & Atmospheric Sciences, University of Houston, Houston, Texas, USA  
77204

<sup>2</sup> Bird Geophysical DBA, 16903 Clan Macintosh, Houston, Texas 77084

<sup>3</sup> Anadarko Petroleum Corporation, 1201 Lake Robbins Drive, The Woodlands, Texas USA  
77380

<sup>4</sup> Chesapeake Energy Corporation, P.O. Box 18496, Oklahoma City, OK, 73154-0496

**Abstract**

Detailed, high quality, marine total field magnetic data recently acquired over parts of the South Atlantic Ocean off the southwestern margin of South Africa display a pattern of well-defined, NW-SE striking linear magnetic anomalies that can be traced with confidence over distances > 150 km. The magnetic anomalies are interpreted to be M-series seafloor spreading anomalies M9 to M11, which are consistent with the initiation of seafloor spreading at approximately 135 Ma (Late Valanginian/Early Hauterivian). Seafloor spreading models indicate a more rapid (44mm/yr) initial spreading phase between M11 and M4/M5 followed by slower (29 mm/yr) spreading from M4/M5 to M0. This two rate spreading model also matches M-series anomalies previously reported over the conjugate South American margin offshore Argentina where the rates are slightly (<10%) slower. The presence of M11 anomalies over both margins suggests an earlier opening of the southern South Atlantic basin than previously recognized.

Breaks in the continuity of the linear anomaly pattern, observed in map view, are oriented approximately NE-SW and are considered sites of possible fracture zones. One such discontinuity, which we have termed the “Cape Lineament” (CL), marks a significant change in

Download English Version:

<https://daneshyari.com/en/article/8909027>

Download Persian Version:

<https://daneshyari.com/article/8909027>

[Daneshyari.com](https://daneshyari.com)