

Évolution de la dorsale de Carlsberg : évidence pour une phase d'expansion très lente entre 40 et 25 Ma (A18 à A7)



The Carlsberg Ridge (CAR) is the present plate boundary between Somalia and India. It extends north of the Equator from 57 degrees E at Owen FZ to 66 degrees E where it joins the Central Indian Ridge (CIR), the NW-SE main ridge trend changing to N-S. In the 1960s, CAR was one of the first mid-oceanic ridges to be surveyed, and in the McKenzie and Sclater (1971) Indian ocean synthesis its evolution appears as one of the soundest results of that work: fast spreading from A28 (anomaly 28 epoch) to A23, slow spreading from A5 to the present. After the identification of the A20-A24 series in the Arabian basin by Whitmarsh (1974), no new specific study was devoted to this ridge, although the extensive survey of the surrounding areas showed its probable complex evolution. New interpretations were proposed only in the late 1980s when, from a complete and detailed Russian survey of the north flank (the Arabian basin) and the axial zone, Karasik et al. (1986) and Mercuriev (1990) published a new magnetic map with complete series from anomalies 1 to 28, in agreement with the preceding interpretations of McKenzie and Sclater (1971) and Whitmarsh (1974). However, in the southeastern part of the Somalia basin, another set of data of disparate origin reveals clear lineations interpreted as A23-A20 by Ribet (1989). When this model is applied to the north flank, it is in total disagreement with Whitmarsh's interpretation and consequently with those of Karasik et al. and Mercuriev: the same anomaly is numbered either A13 by Karasik et al. or A20 by Ribet. This paper compiles the data which led to these alternative identifications in order to arrive at a consistent interpretation and so decipher the CAR evolution since 50 Ma. The results are the following: (1) Whitmarsh's interpretation must be definitively changed, the anomalies 13, 18, 20 and 21, as shown on the maps of Karasik et al. (1986) or Mercuriev (1990), becoming respectively 20, 21, 22 and 23; and (2) both the interpretation of the anomalies younger than A20 and a comparison with the spreading history at the CIR before A5 time suggest a phase of ultra-slow spreading (<8 mm/a) between about A18 and A7 rather than the present spreading rate beginning at A11 and following a period of more than 10 Ma with no spreading at all.

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