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RESEARCH ARTICLE

ADDITIONAL GEOGRAPHIC RECORD OF *TURBOROTALIA SEMICUNIALENSIS* ANAN AROUND ARABIA

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ABSTRACT

The Late Eocene planktic foraminiferal species *Turborotalia semicunialensis* Anan was recorded originally from the United Arab Emirates (UAE), and later in two localities around the Arabia in the Southern Tethys: India (east of UAE) and Egypt (west of UAE). In this study, it is recorded also from Tanzania (southwest of UAE). The planktic foraminifera is related to open marine environment, photic zone, middle-upper neritic environment (100-200 m water depth) and in the tropical-subtropical provinces (Lat. 45º N- 30º S).

KEYWORDS

Turborotalia, biostratigraphy, paleogeography, Eocene, UAE, Egypt, Tanzania, India

1. INTRODUCTION

The Late Eocene *Turborotalia semicunialensis* is recorded from four localities around Arabia: UAE, India, Egypt, Tanzania in the Southern Tethys (Figure 1).

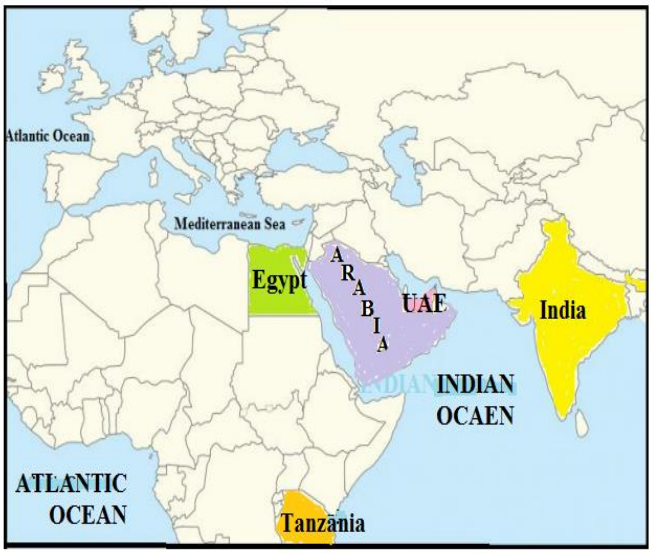

Figure 1: Geographic distribution of the *T. semicunialensis* in the Southern Tethys: UAE, Egypt, Tanzania and India.

This species was recorded from India, and Egypt (Strougo et al., 2013; Mukhopadhyay, 2005).

In this study, the Late Eocene *Turborotalia semicunialensis* is recorded from a drill holes through the Eocene/Oligocene (E/O) boundary in southern Tanzania ,after Wade and Pearson, 2008 (Figure 2).

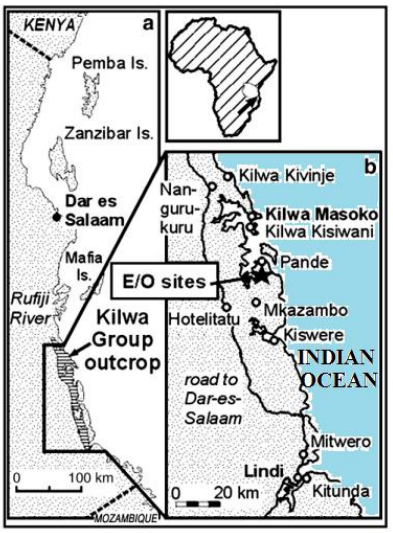

Figure 2: Location of Tanzania Drilling Project Eocene/Oligocene drill cores (after Wade and Pearson, 2008).

2. MATERIAL OF STUDY

The Late Eocene *Turborotalia semicunialensis* was erected originally from Jabal Hafit, UAE, Arabia, and also from India, Egypt, and now from Tanzania in the Southern Tethys.. It possible to elucidate this species with its modern taxonomical consideration, following the Code of Zoological Nomenclature (CZN).

3. FINAL DISCUSSION

Turborotalia semicunialensis differs from *T. cerroazulensis* by its raised keel in the earlier chambers than rounded periphery. *T. semicunialensis* differs from *T. cocoaensis* with its commonly dorso-ventrally flattened

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final chamber than distinctly acute at periphery in edge view, while *T. cunialensis* has strongly compressed biconvex test with 4-5 chambers in the final whorl with imperforate keel around periphery, which can be distinctly raised (Plate 1) (Anan, 2023).

Plate 1: Figure 1: *Turborotalia cerroazulensis* (Cole), **2.** *Turbrotalia cocoaensis* (Cushman), **3.** *Turborotalia semicunialensis*, **4.** *Turbrotalia cunialensis* (Toumarkine and Bolli, 2023; Anan, 2023).

4. Taxonomy

The classification is followed in this study. The planktic foraminiferal species of the *Turborotalia semicunialensis* Anan in different localities in the Southern Tethys (UAE, India, Egypt, Tanzania) are illustrated in Plate 2 (Pearson et al., 2006).

Plate 2: Figure 2: *Turborotalia semicunialensis* of UAE, **2.** *T. semicunialensis* of India, **3.** *T. semicunialensis* of Egypt , **4.** *T. semicunialensis* of Tanzania (Wade and Pearson, 2008; Strougo et al., 2013; Mukhopadhyay, 2005; Anan, 2023).

1. *Turborotalia semicunialensis* Anan, 2023, p. 36, pl. 1, Figure 9 (=Transitional specimen between *Turbrotalia cocoaensis* (Cushman) and *Turbrotalia cunialensis* Toumarkine and Bolli, 2023, p. 37, pl. 3, Figure 20).

2. *Turborotalia semicunialensis* Anan, 2023(=*Turborotalia cerroazulensis*(Cole) - Mukhopadhyay, 2005, p. 39, pl. 2, Figure 5, Late Eocene).

3. *Turborotalia semicunialensis* Anan, 2023(=*Turborotalia cerroazulensis* (Cole) - Strougo et al., 2013, p. 128, Figure 12D, Late Eocene)

4. *Turborotalia semicunialensis* Anan, 2023(=*Turborotalia cerroazulensis* (Cole) - Wade and Pearson, 2008, p. 246, Figure 2, Late Eocene.

5. Paleogeography

The ancestral Tethyan Ocean in the Paleogene time is connected with the ancestral Indian, Atlantic, and Pacific Oceans (Figure 4).

Figure 4: Paleogene paleogeography of the Tethys Ocean (Salahi, 2021).

The normal Late Eocene planktic foraminiferal assemblage are restricted in the tropical-subtropical provinces, Lat. 45º N- 30º S (Figure 5).

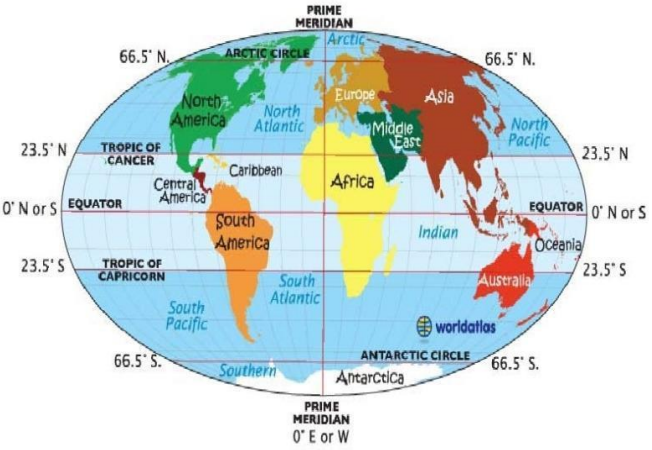

Figure 5: The geographic distribution of the Tropical-Subtropical provinces (after The Tropical and the Subtropical Region Basic Geography / By Shubham Yadav / February 3, 2024).

6. Paleoenvironment

The planktic foraminifera are floating organism lived in the photic zone (~200m) and moving by surface currents which reflect the wide geographic distribution in all open sea water and oceans (Figure 6).

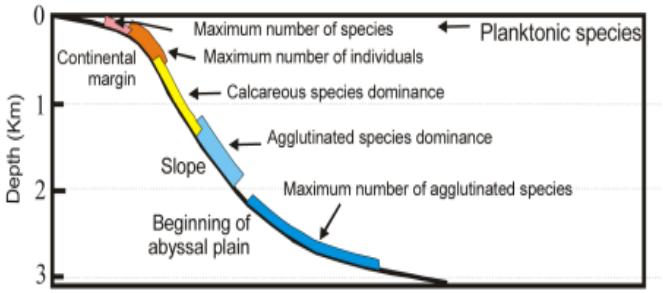

Figure 6: Depth distribution of planktic and benthic foraminifera (after Bolstovsky and Wright, 1976).

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