

ABSTRACT

THESIS: Foraminiferal Paleoecology Across the Early to Middle Eocene Transition (EMET) of the Western Caribbean

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Foraminiferal faunas across the early to middle Eocene transition (EMET) were studied from three locations in the western Caribbean: Calle G section in Cuba, ODP site 998 B the Cayman Rise, and ODP site 999 B the Colombian basin. There were three primary objectives of this project 1) to observe changes in physical and biological paleoceanographic parameters in the Western Caribbean, more directly in the Cayman Ridge and the Colombian Basin, by the use of planktonic foraminifera data, 2) determine the cause of an oxygen isotope anomaly seen in Cuba by Fluegeman (2007) and that is expected to be present in the Western Caribbean, and 3) determine if the anomaly is a local or a more widespread regional event.

The Calle G section in northwestern Cuba consists of early to middle Eocene age foraminiferal chalks. The planktonic foraminiferal fauna at

this section is characterized by subbotinids and acarininids but does not contain morozovellids. Oxygen isotopes were obtained across the EMET from the planktonic foraminiferan *Acarinina collactea*. The resultant curve shows widely fluctuating values during the early portion of the EMET with more stable values occurring in the middle Eocene. The foraminiferal paleoecologic index *tau* curve at the Calle G section produced is similar to the oxygen isotope curve.

ODP site 998 B, Cayman Rise, contains a series of foraminiferal limestones across the EMET. Unlike the Calle G section, this interval contains an abundant planktonic foraminifera fauna including *Morozovella*. The *Morozovella:Acarinina* ratio studied at ODP site 998 shows high, fluctuating values in the early part of the EMET with low, stable values during the middle Eocene.

ODP site 999 B in the Colombian Basin consists of a series of foraminiferal chalks throughout the EMET. Similar to ODP site 998 this location also has an abundant assemblage of planktonic foraminifera including *Morozovella*. Evidence supporting turbidities have been observed at this locale as layers of shell hash and large benthic foraminifera. The *Morozovella:Acarinina* ratio studied at ODP site 999 is similar to that of ODP site 998 showing a high fluctuating values in the early part of the EMET with low, stable values in the middle Eocene.

The presence of fluctuating values of oxygen isotopes, *tau*, and the *Morozovella:Acarinina* ratio followed by stable values across the EMET may be related to a change in circulation patterns through the Caribbean caused by a developing oceanic

gateway. The widely fluctuating oxygen isotope values in the latest Ypresian may also be related to an influx of freshwater in the North Atlantic associated with the coeval *Azolla* event in the Arctic Ocean.