

---

---

## Disruption of Community Structure at Isthmus Closure

Sreepat Jain, Martin A. Buzas, and Lee-Ann C. Hayek

Department of Paleobiology, MRC 121, Smithsonian Museum of Natural History, Washington, D.C. 20013-7012

---

---

### ABSTRACT

Two deep-sea sites, ODP 999a and DSDP 502a, 320 km (199 mi) apart within the Colombian Basin, western Caribbean, from depths of 2828 m (9278 ft) and 3051 m (10,010 ft), respectively, were examined to assess the effects on the benthic foraminiferal community of the rise of the Isthmus of Panama and the subsequent closure of the Central American Seaway (CAS). Each site was subjected to SHE (S = number of species, N = number of individuals, and E = evenness) analysis, an information-theoretic method of biofacies identification and analysis of community structure.

Preliminary results indicate that at bathyal-abyssal depths in the Caribbean, changes in the overall benthic foraminiferal species diversity were minor. In contrast, changes in benthic foraminiferal community structure are easily recognized at around 4.2 Ma, the approximate time of the CAS closure. Additionally, the community structure within the Colombian Basin changed at both sites 999a and 502a before the CAS closure, but the events were asynchronous. After the closure no further oceanographic events disrupted community structures.

Thus, this study demonstrates that oceanographic events are easily recognizable through changes in community structure even when changes in traditional proxies are minor.