

Planktonic foraminiferal bleaching, recovery, and coiling changes at the start of the EECO

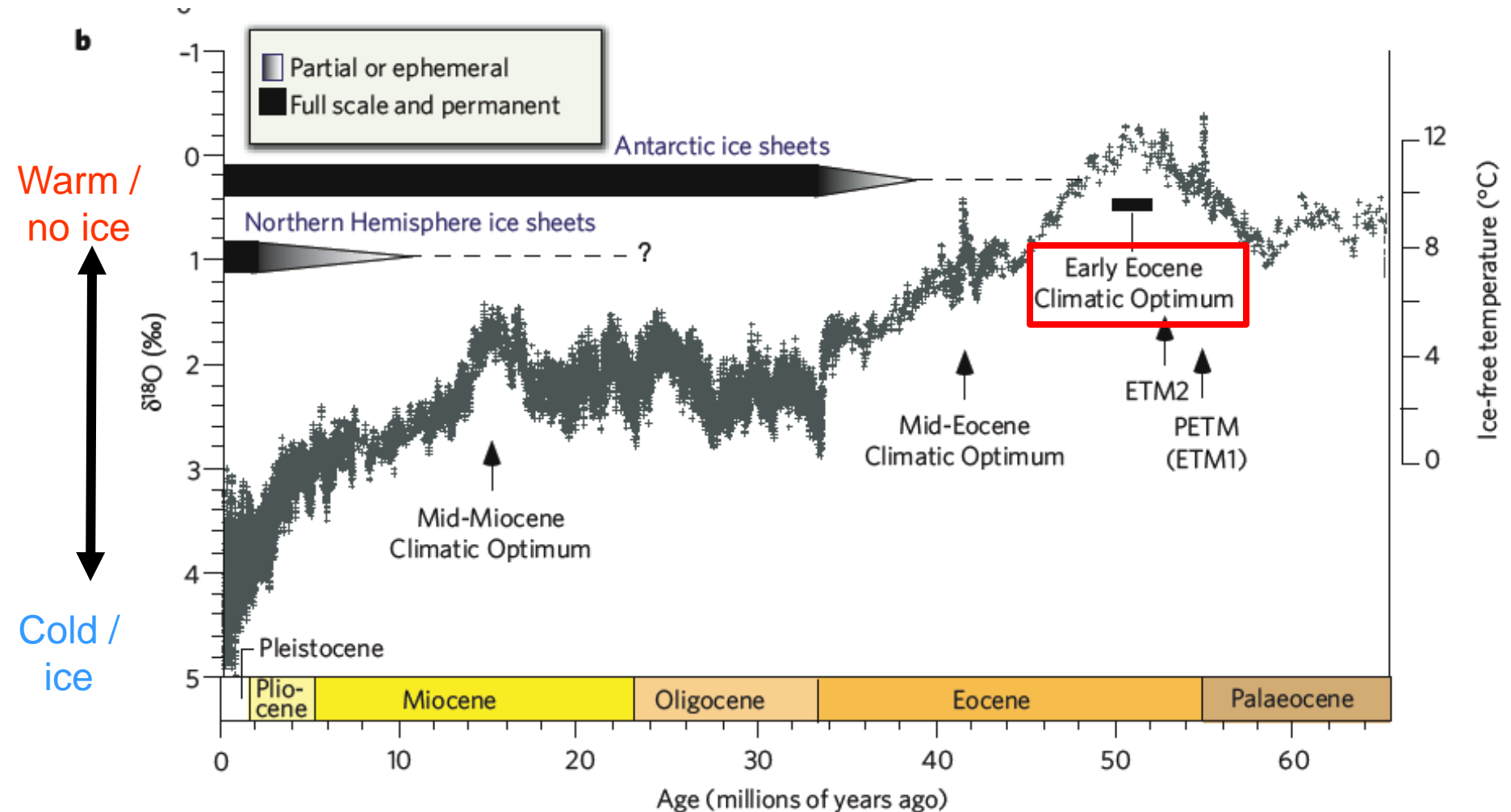


Valeria Luciani, Roberta
D'Onofrio, Gerald Dickens
and Bridget Wade

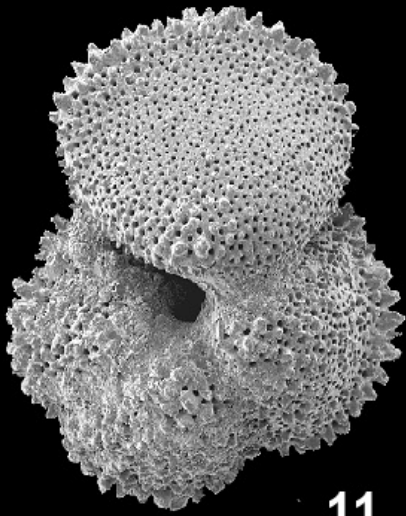


UCL

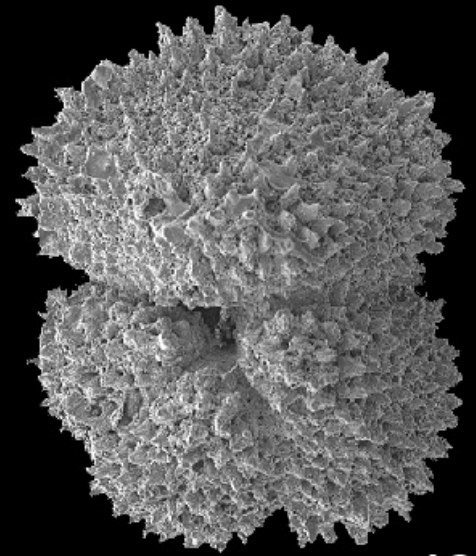
Compilation of benthic foraminifera oxygen isotopes from multiple sites



Morozovella



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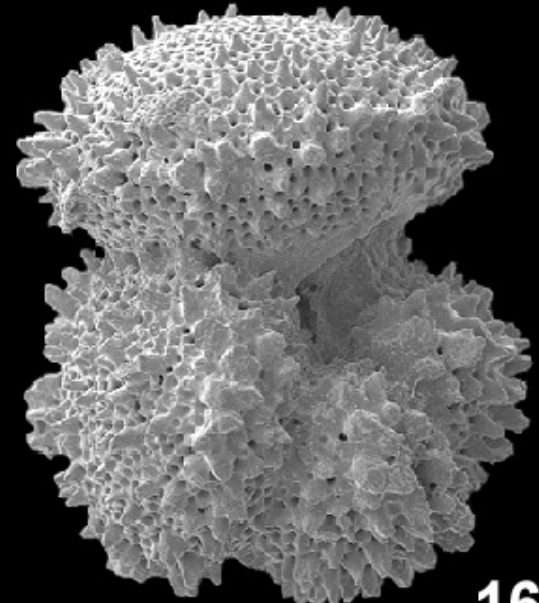


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Acarinina

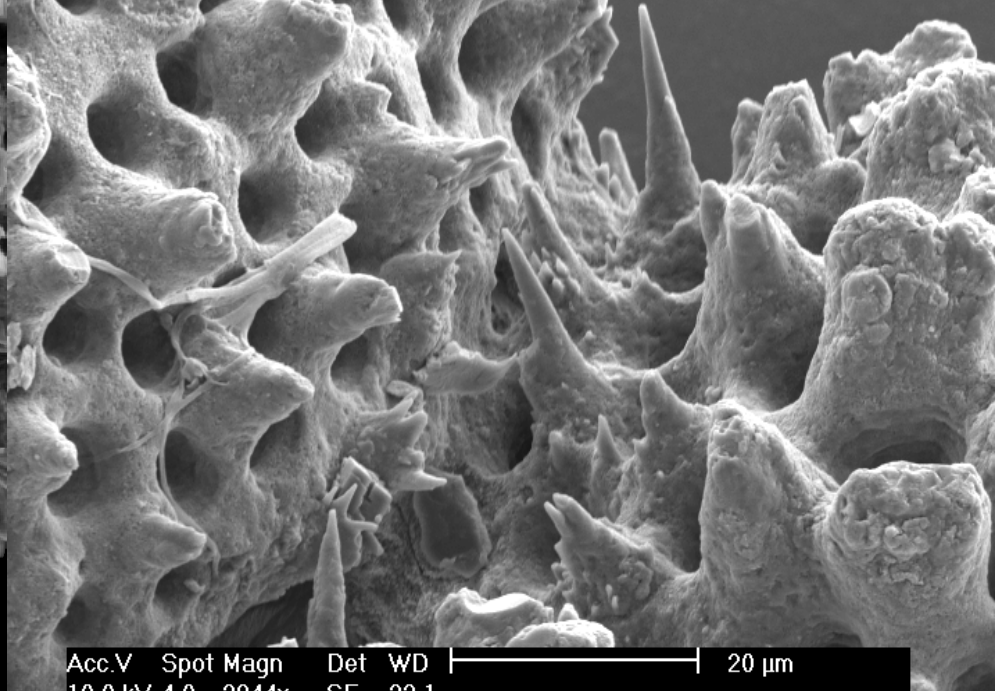
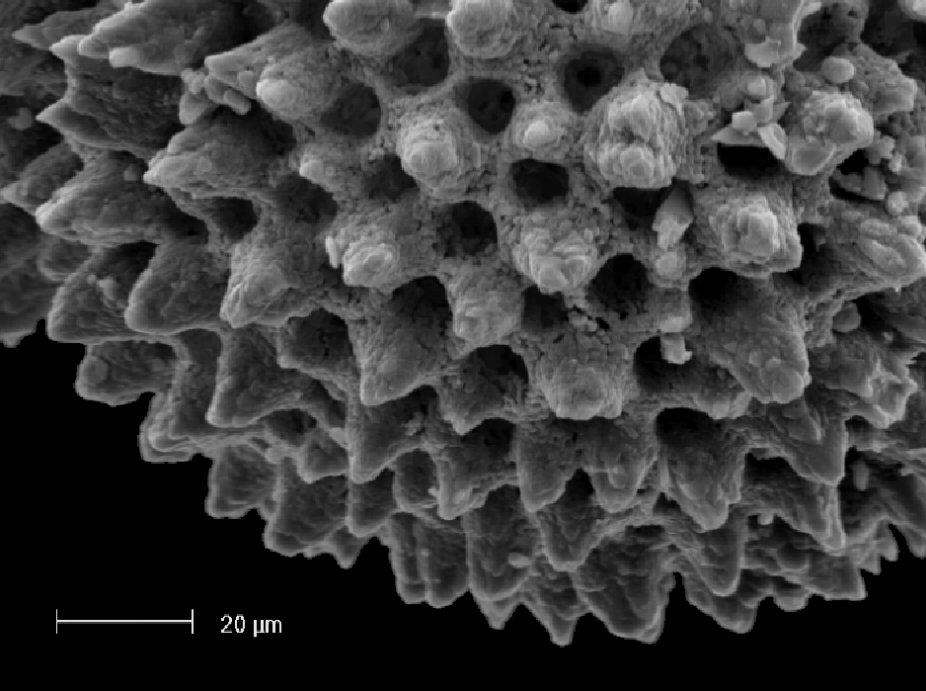


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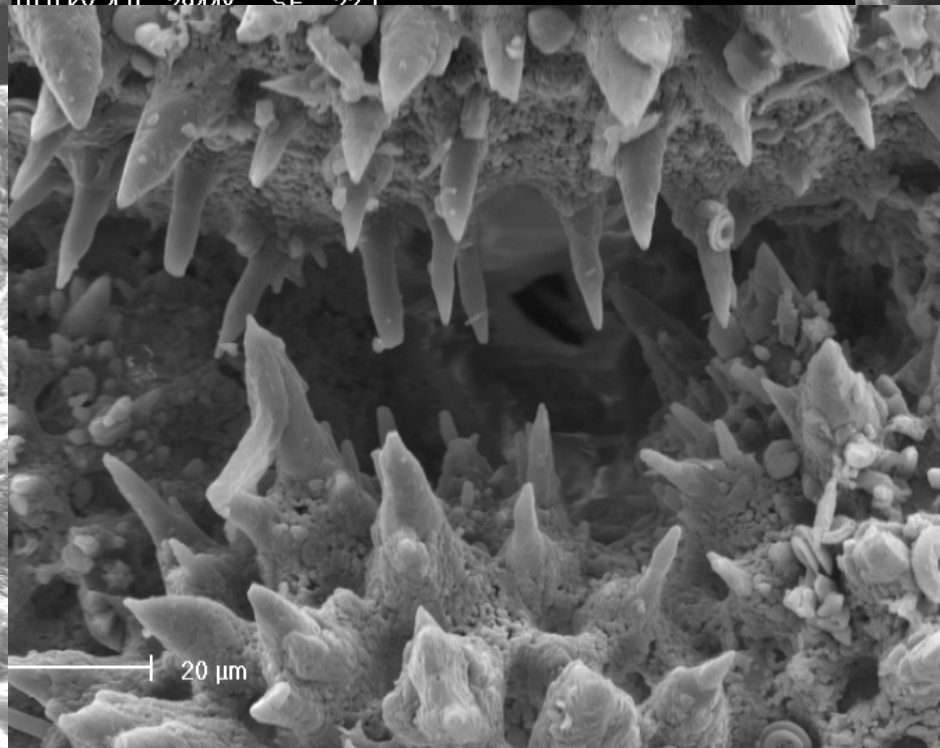
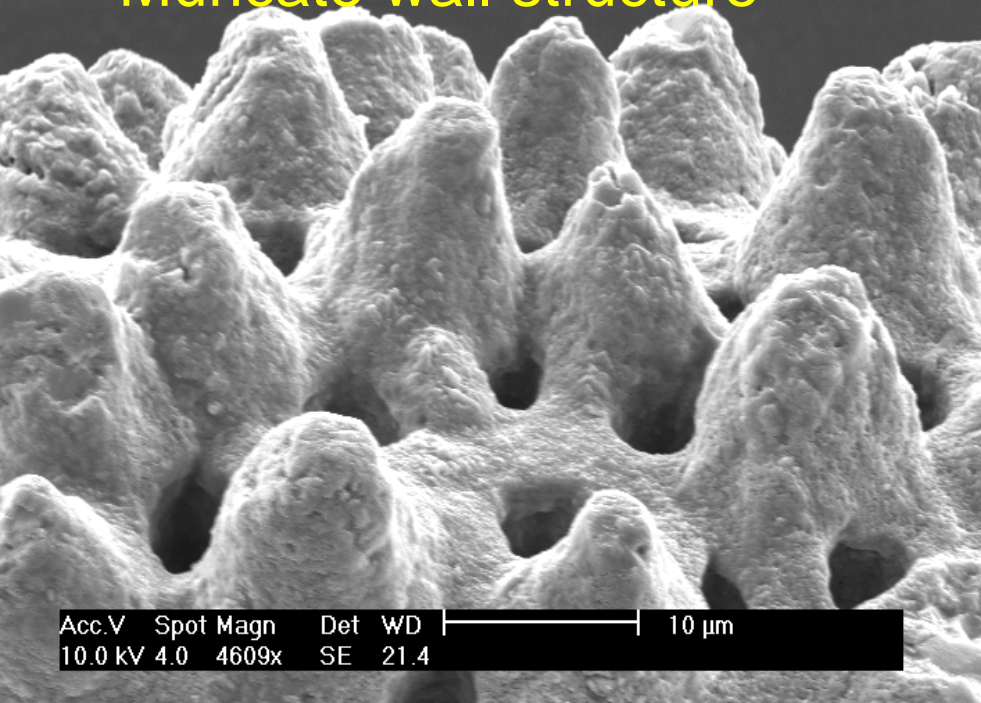


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Images from Berggren et al. (2006)



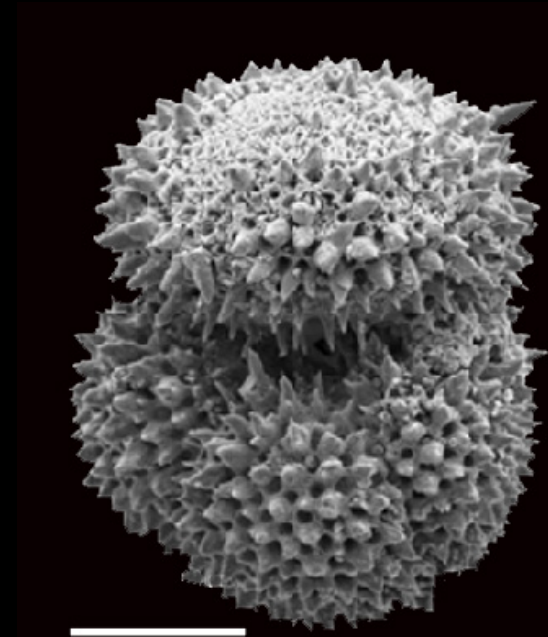
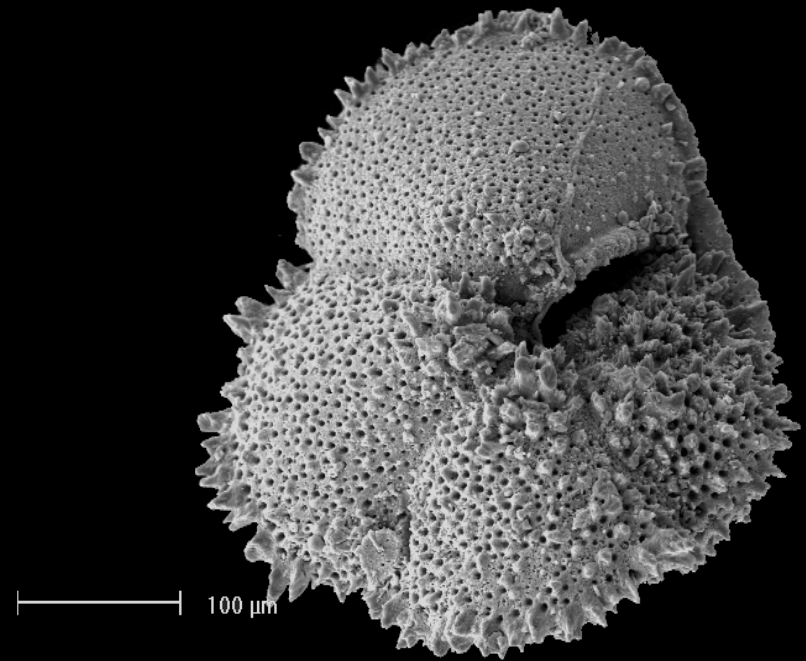
Muricate wall structure

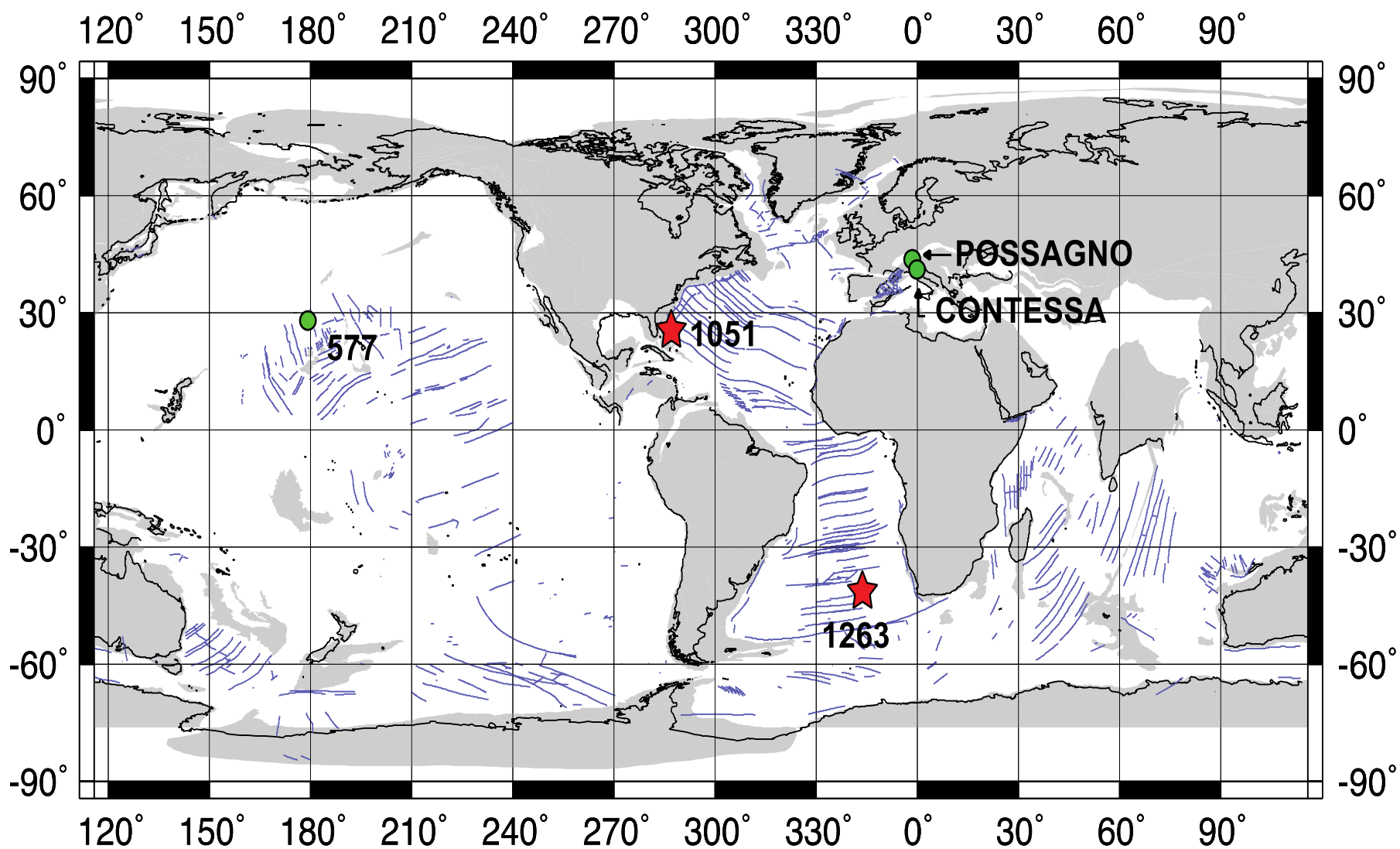


Morozovella and *Acarinina*

Examine assemblage changes across the EECO

- Higher resolution analysis (~2 kyr)
- Document the timing of biotic change
- Record details at the species level







Paleoceanography

RESEARCH ARTICLE

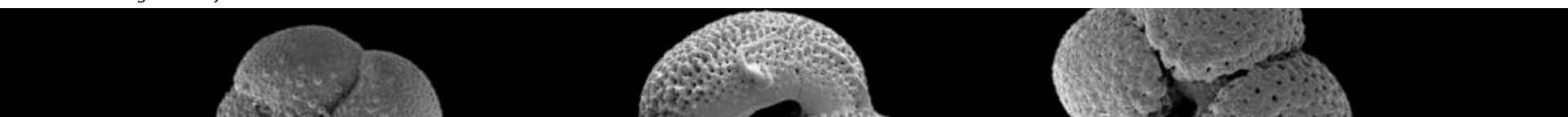
10.1002/2017PA003138

Key Points:

- The relative abundance of the *Morozovella* genus permanently decreased significantly at the J carbon

Did Photosymbiont Bleaching Lead to the Demise of Planktic Foraminifer *Morozovella* at the Early Eocene Climatic Optimum?

Valeria Luciani¹ , Roberta D'Onofrio¹ , Gerald R. Dickens² , and Bridget S. Wade³ 



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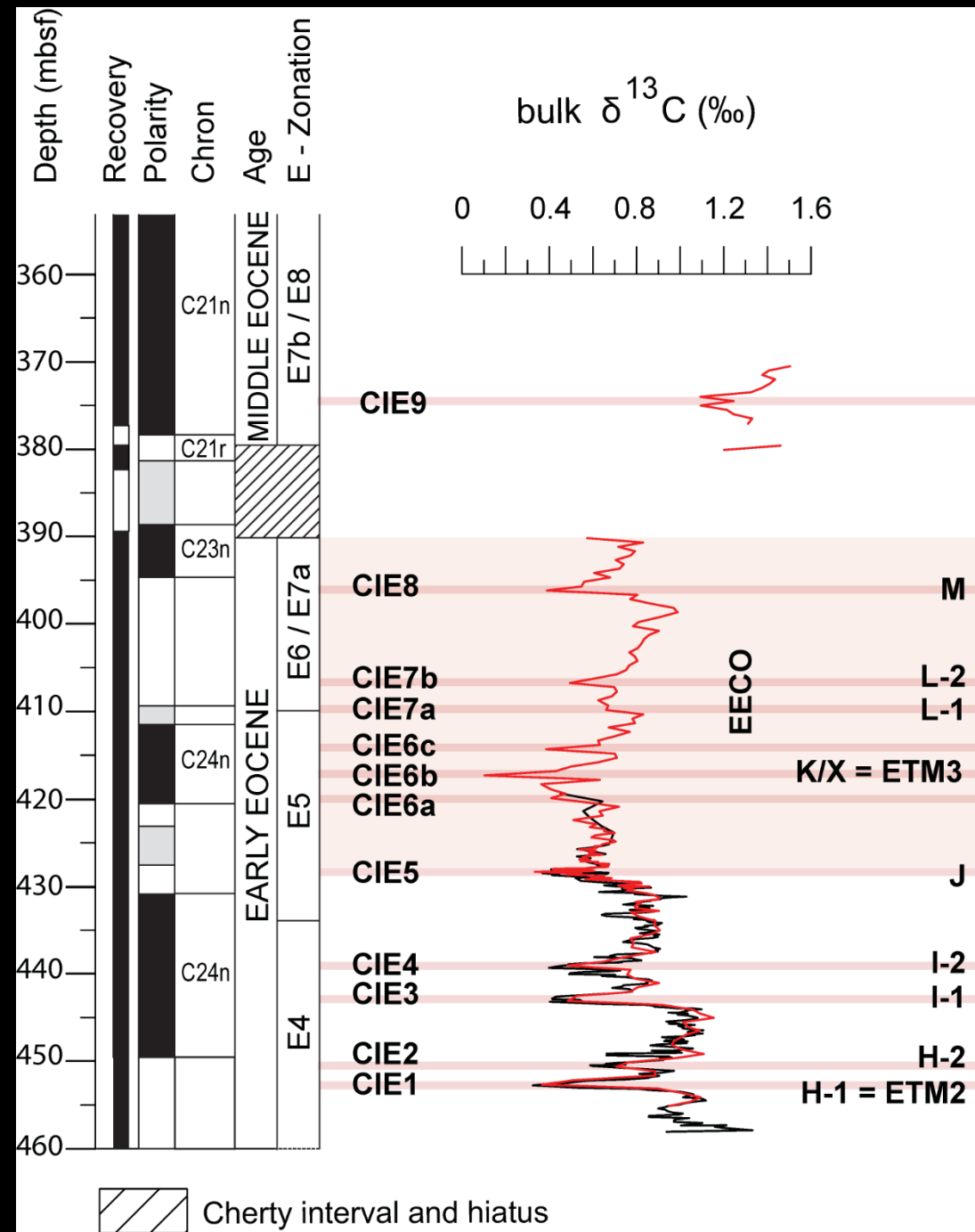


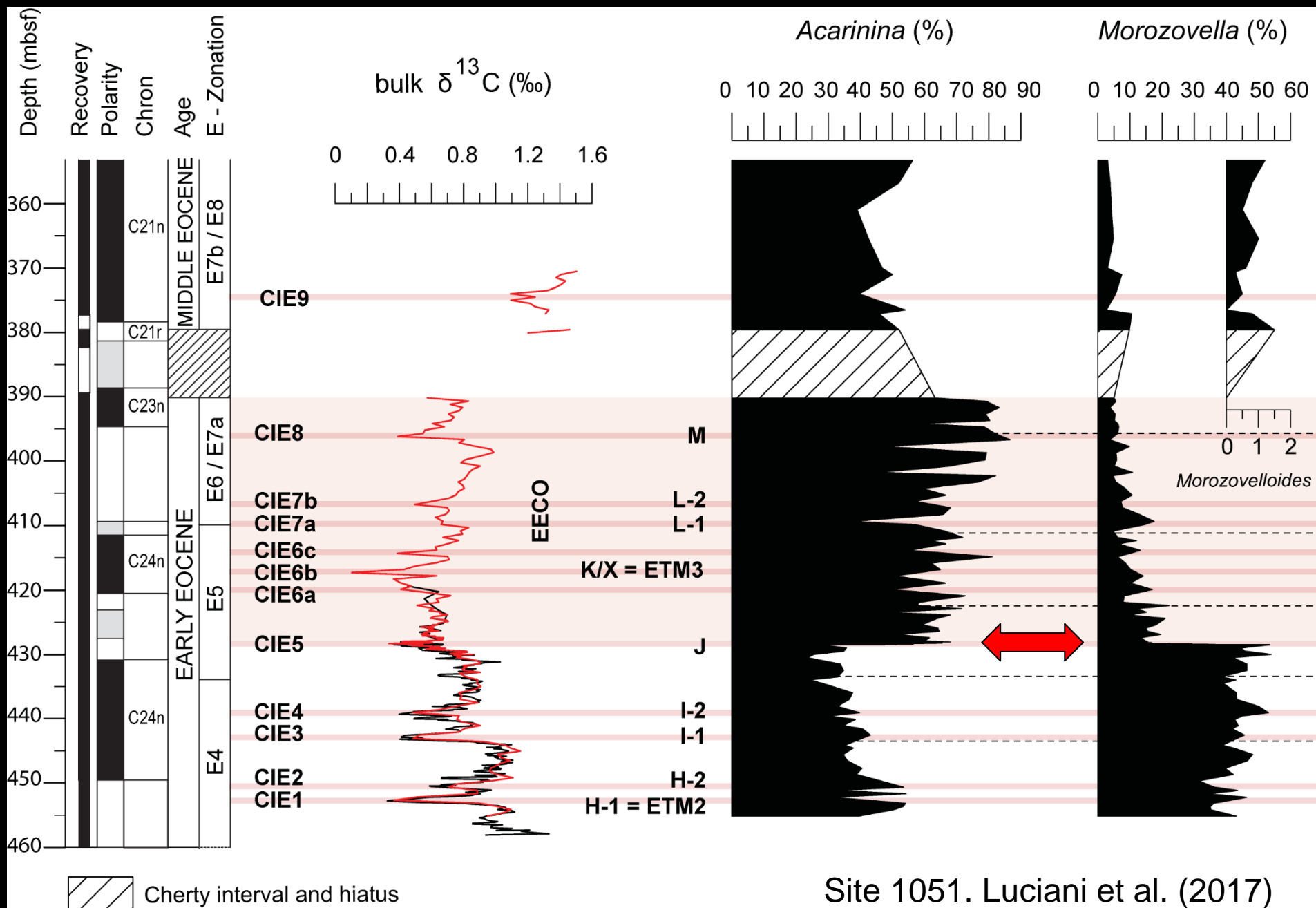
Planktic foraminiferal response to early Eocene carbon cycle perturbations in the southeast Atlantic Ocean (ODP Site 1263)

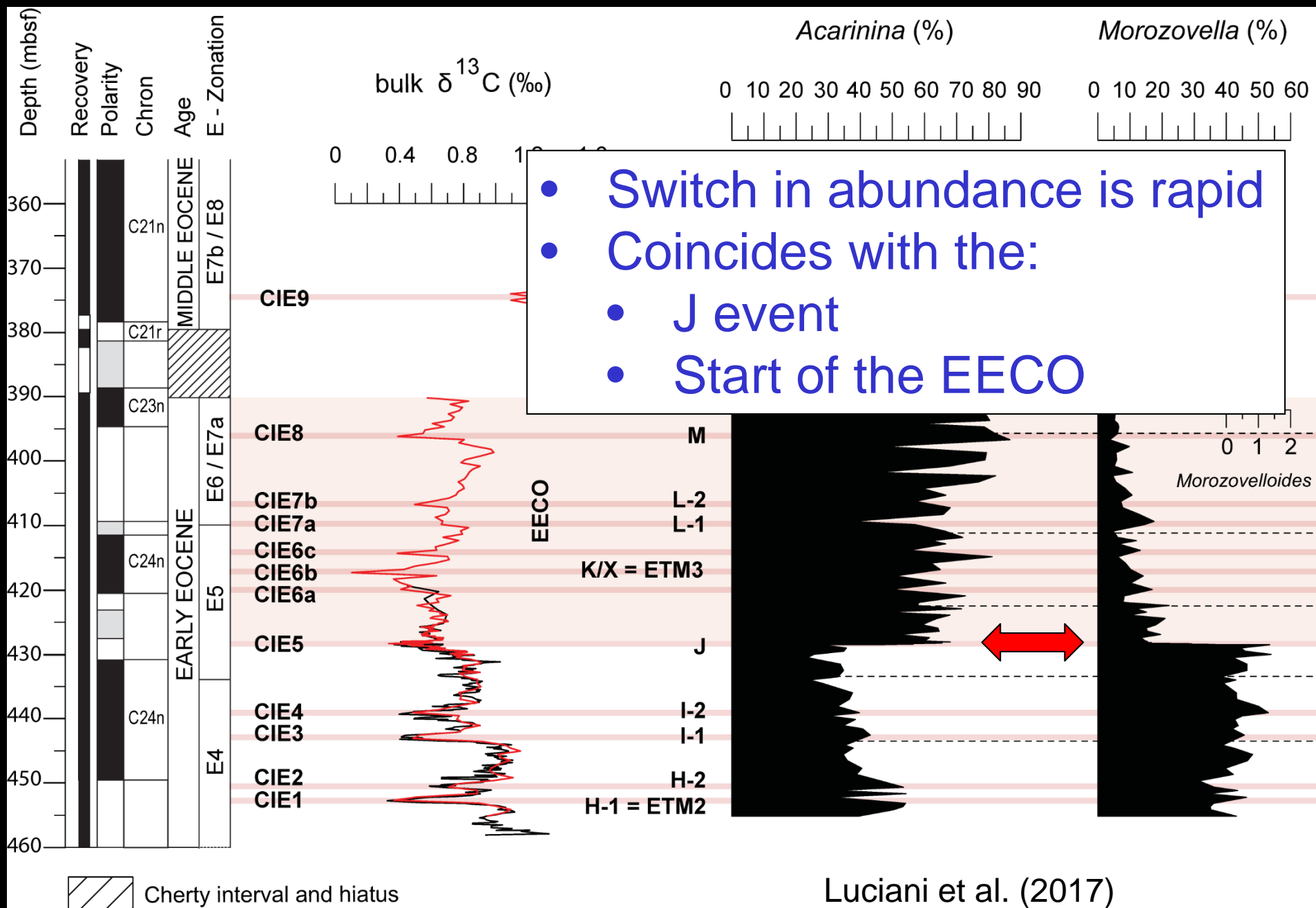
Valeria Luciani^{a,*}, Roberta D'Onofrio^a, Gerald R. Dickens^b, Bridget S. Wade^c



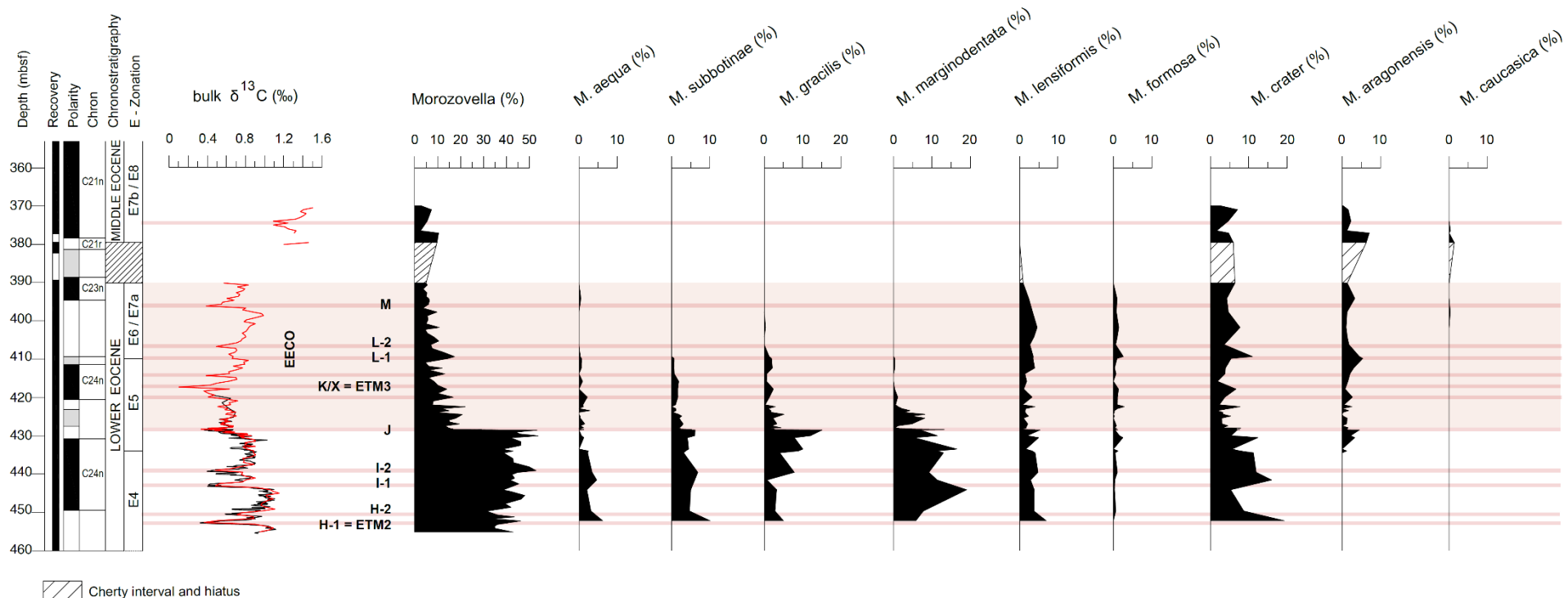
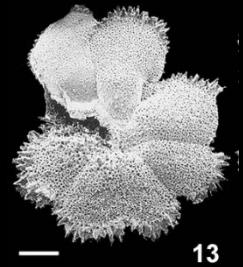
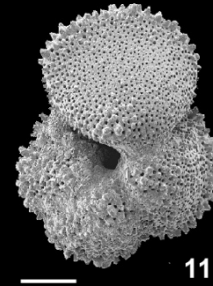
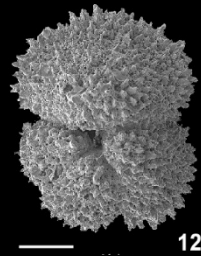
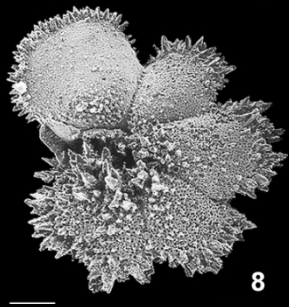
CIE = carbon isotope excursion



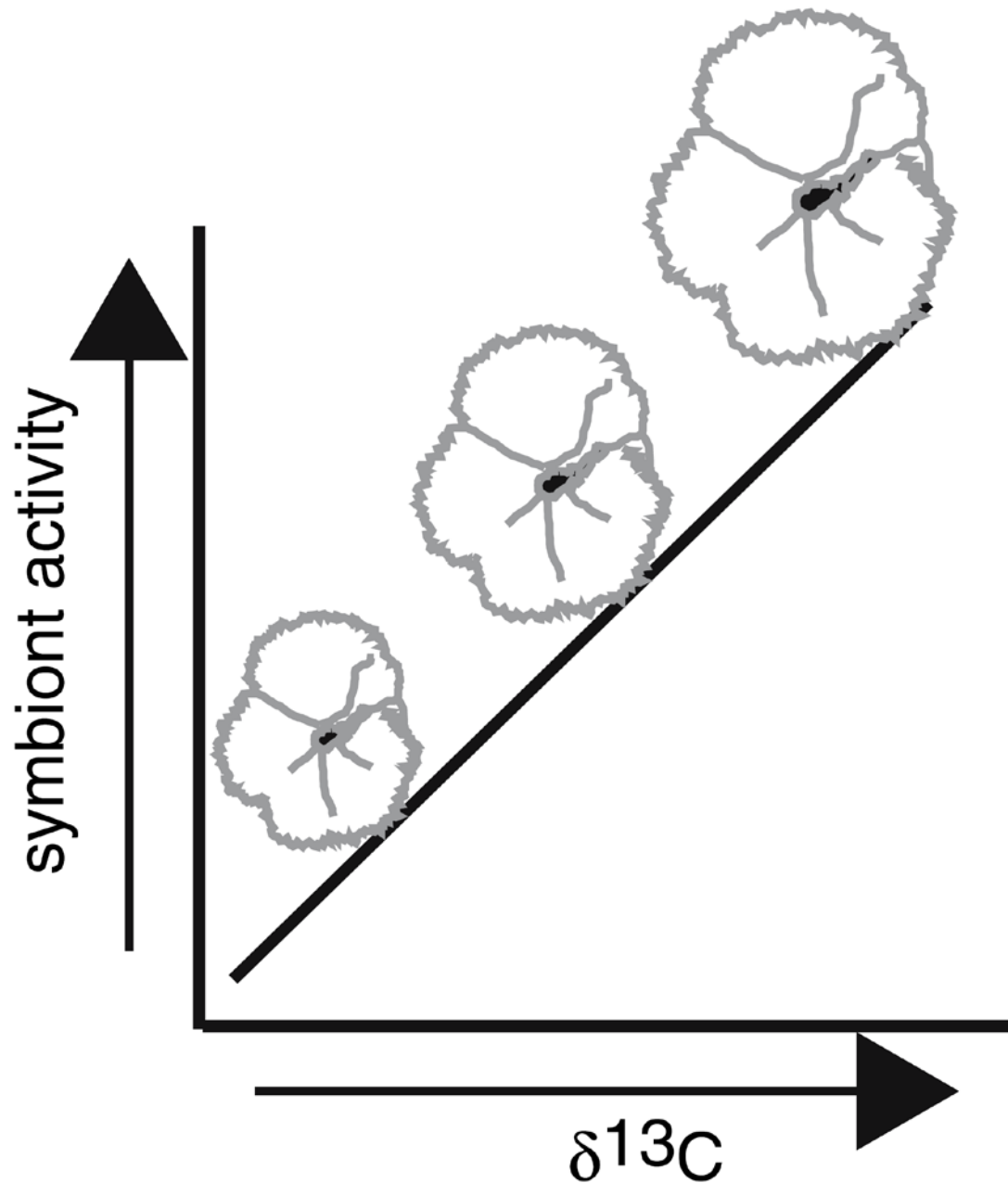




- Crash in *Morozovella* abundance at the beginning of the EECO not caused by extinction



Schematic of $\delta^{13}\text{C}$ compared with shell size in photosymbiotic species.



Larger (adult) hosts support greater symbiont density and enhanced photosynthetic activity

EECO

SAMPLE (E)



EECO

SAMPLE (D)



INITIAL EECO

SAMPLE (C)



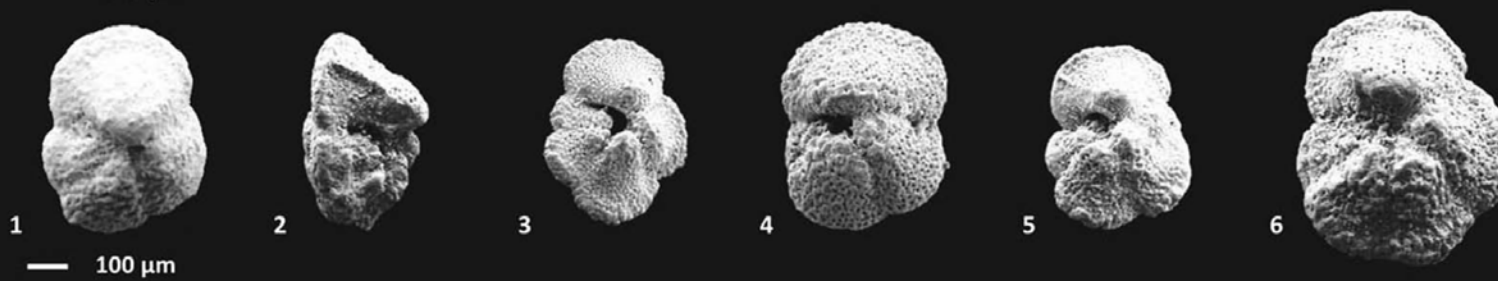
PRE EECO

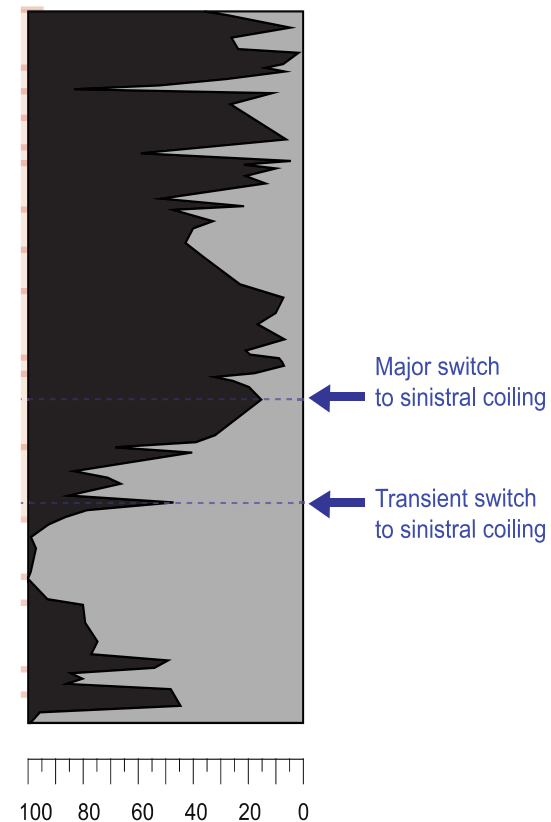
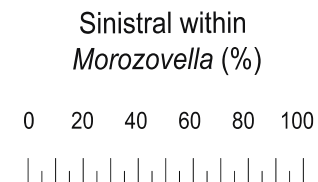
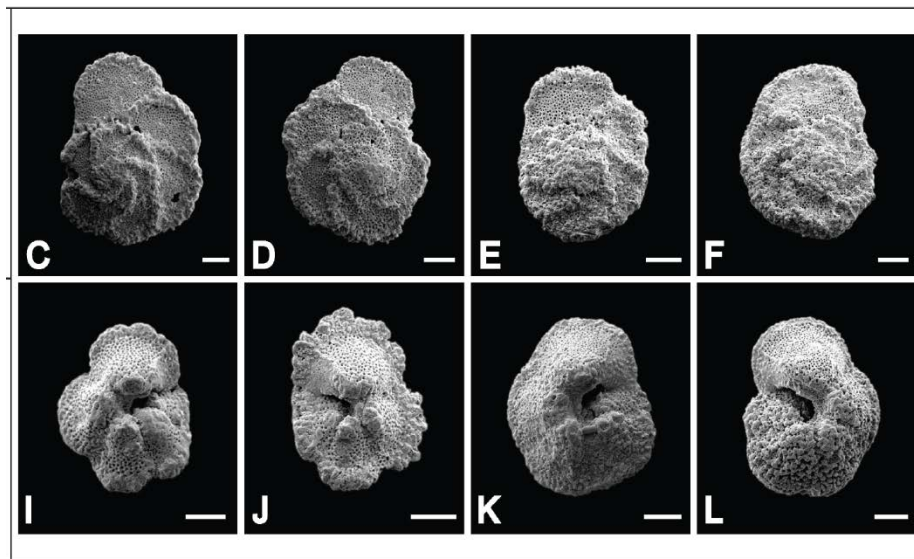
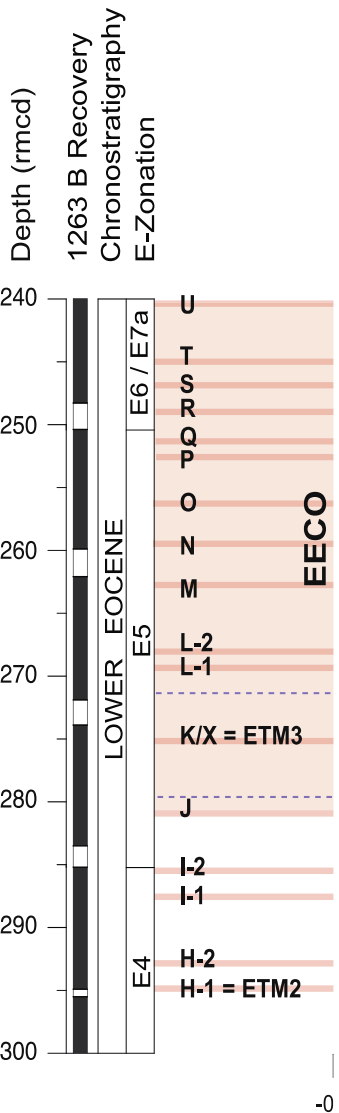
SAMPLE (B)



PRE EECO

SAMPLE (A)





Luciani et al. (in review)

Biotic change across the EECO

- Rapid shift in abundance between two key genera
- Occurred at the start of the EECO, coinciding with the J event
- Decrease in abundance accompanied by size reduction
- Carbon isotopes indicate short-term bleaching
- Shift in coiling from dextral to sinistral
- Opportunity to tie the biotic and climate records

