

Earth News

from Kevin Dermody, CPRMC

Paleo

Diatoms were thought to have undergone an immense increase in numbers and diversity 16 million years ago because of an increase in nutrients washed into the seas as grasslands became abundant. One reason this theory came about was that over 90% of diatom fossils are less than 18 million years old. But Dan Rabosky of Cornell's Department of Ecology and Evolutionary Biology and Cornell Laboratory of Ornithology, and Ulf Sorhannus of the University of Pennsylvania at Edinboro, didn't accept this. Fossil diatoms seem to increase gradually through time, and did not correspond with the adaptations that herbivores made, such as larger teeth with higher crowns for grazing. So they carefully examined sea floor drill cores for diatoms going back to 40 million years. What they discovered was that diatoms were far diverse and abundant toward the end of the Eocene Epoch, and then crashed 33 million years ago, long before grasslands became a major ecosystem on land.

Why diatoms reached their peak in the Eocene, why they crashed, and why they are so prevalent today is not known. However, the world's climate turned from tropical world-wide to much colder 33 million years ago. The atmosphere had a great deal of carbon dioxide during the Eocene. The overabundance of diatoms could have consumed much of it. The Himalayas were approaching great heights, thus shifting air currents. The circum-Antarctic current, which has a refrigerating effect on the world's climate, was fully formed by this time. All these effects might have been the reason the diatoms died out in great numbers.