

Mass extinction's cause: 'Sick Earth'

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What really caused the largest mass extinction in Earth's history? USC earth scientists will reveal new clues at the annual meeting of the Geological Society of America in Philadelphia Oct. 22-25.

The Permian-Triassic extinction, as it is called, is not the one that wiped out the dinosaurs. Nor does the cause appear to have been a meteorite strike, as in that famous event.

The most likely explanation for the disappearance of up to 90 percent of species 250 million years ago, said David Bottjer, is that "the earth got sick."

Bottjer, professor of earth sciences in the USC College of Letters, Arts and Sciences, leads a research group presenting several new pieces of the P-T extinction puzzle.

Matthew Clapham, a recent Ph.D. graduate of Bottjer's laboratory, has found that species diversity and environmental changes were "decoupled" long before the extinction. Conditions on the planet were deteriorating long before species began to die off, Bottjer said, casting doubt on the meteorite strike theory.

"People in the past used to think this big mass extinction was like a car hitting a wall," he said. Instead, Clapham's interpretation of the geological record shows "millions of years of environmental stress."

Pedro Marengo, a doctoral student in Bottjer's lab, has been testing a

leading theory for the P-T extinction: that a warming of the earth and a slowdown in ocean circulation made it harder to replace the oxygen sucked out of the water by marine organisms. According to the theory, microbes would have saturated the water with hydrogen sulfide, a highly toxic chemical.

For a mass extinction "you really needed a good killer, and it [hydrogen sulfide] is really nasty stuff," Bottjer said.

Marenco has measured large changes in the concentration of sulfur isotopes that support the hydrogen sulfide theory.

Source: University of Southern California

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